Unity Creative Core pathway

All lesson plans

Pathway description

Creative Core is your next step towards becoming a Unity creator. This free learning path will teach you all the core elements you will need to bring your imagination to life with Unity. Once you've completed Unity Essentials as an introduction to the fundamentals of the Unity Editor, take this pathway to learn VFX, Lighting, Animation, Audio, UI, and other creative skills, no programming required.

Skills covered in this course

Beginner Job Preparation
- ➔ Prepare yourself for a freelance job search
- ➔ Refine your job search priorities and goals
- ➔ Practice continuous personal and professional growth

Absolute Beginner Design Process
- ➔ Implement an iterative design process
- ➔ Coordinate a user feedback and testing session
- ➔ Practice putting the user first

Absolute Beginner Project Management
- ➔ Plan projects in the real-time development cycle
- ➔ Manage projects in the real-time development cycle

Beginner Render Pipelines
- ➔ Choose an appropriate render pipeline for a project, given certain requirements
- ➔ Explain the basic concepts of real-time graphics rendering
- ➔ Given a scenario, determine the appropriate rendering methods that should be used

Absolute Beginner Digital Citizenship
- ➔ Engage in digital citizenship best practices
- ➔ Act in compliance with relevant intellectual property laws

Absolute Beginner Research
- ➔ Conduct research using online technical documentation

Beginner Critical Thinking
- ➔ Conduct critical evaluation in decision making for creative projects

Beginner Shader scripting
- ➔ Create a simple shader and material using Shader Graph

Beginner Materials
- ➔ Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements

- ➔ Create materials for the URP/Lit Shader on a 3D GameObject
- ➔ Simulate common substances with physically-based materials
- ➔ Synthesize your new shaders and materials skills in response to project requirements

Beginner Shaders

- ➔ Decide among common shaders to use for a given project

Beginner Lighting

- ➔ Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light
- ➔ Decide the appropriate lighting system in order to achieve common outcomes in a Universal Render Pipeline (URP) project
- ➔ Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism
- ➔ Generate a lightmap in order to implement baked lighting in a scene
- ➔ Configure light sources and shadows in order to functionally light a scene
- ➔ Configure Light Probes in order to increase the realism of baked lighting
- ➔ Configure Reflection Probes in order to achieve accurate reflections
- ➔ Troubleshoot common lighting errors in order to appropriately light a scene
- ➔ Synthesize your new lighting skills in response to project requirements

Beginner Animation Systems

- ➔ Describe key components of an animator controller
- ➔ Describe the relationship between different animation components
- ➔ Synthesize your new animation skills in response to project requirements

Beginner 3D Animation (Native Unity)

- ➔ Create simple keyframed 3D animation sequences

Beginner 3D Animation (Imported)

- ➔ Configure Animation Clips imported from digital content creation third-party 3D modeling software or the Asset Store for use in a project
- ➔ Configure a humanoid rig for use with the Humanoid Animation system

Beginner Particles and Visual Effects

- ➔ Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene
- ➔ Produce environmental and burst effects by configuring Unity's Particle System object
- ➔ Interpret a simple VFX Graph asset
- ➔ Synthesize your new VFX skills in response to project requirements

Beginner Unity Cameras

- ➔ Decide which camera setup to use, given a project’s requirements
- ➔ Configure a single Unity camera in a 2D or 3D scene
- ➔ Synthesize your new camera skills in response to project requirements

Beginner Post-Processing

- ➔ Evaluate whether post-processing is an appropriate tool for a given goal
- ➔ Implement a particular visual style in a project by configuring a post-processing profile
- ➔ Synthesize your new post-processing skills in response to project requirements

Beginner Audio Design Principles

- ➔ Implement audio in Unity
- ➔ Create interactive experiences by synthesizing audio experience design principles
- ➔ Solve accessibility challenges in an audio design

Beginner Audio Implementation

- ➔ Produce customized results by correctly configuring audio in a scene
- ➔ Refine existing audio in a Unity project
- ➔ Synthesize your new audio skills in response to project requirements

Beginner User Interface

- ➔ Decide on a user interface approach for a project
- ➔ Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions
- ➔ Create and configure interactive UI components such as buttons, toggles, and sliders, in order to implement simple UI functionality

Beginner Prototyping

- ➔ Determine the appropriate prototyping approach for a specific project
- ➔ Decide the critical project features required in order to create a functional prototype
- ➔ Create a functional prototype in Unity
- ➔ Integrate external assets and tools into your prototype
- ➔ Refine a prototype environment using ProBuilder
- ➔ Refine a prototype environment using Terrain
- ➔ Test a basic experience prototype
- ➔ Synthesize your new prototyping skills in response to project requirements

How to use the pathway		
The Unity Creative Core pathway is broken up into 10 "missions," with each mission containing multiple tutorials and assessments. The following missions make up the complete pathway:		
	Introduction to Creative Core	2 hours
	Shaders and materials	6 hours 45 minutes
	Lighting	9 hours and 20 minutes
	Animation	6 hours
	VFX	3 hours 30 minutes
	Cameras	30 hours 10 minutes
	Post-processing	3 hours
	Audio	4 hours 40 minutes

	UI	4 hours 45 minutes
	Prototyping	5 hours 45 minutes
Students are encouraged to complete all the missions in the correct sequence to ensure the best learning experience.		

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Mission 1: Getting started with Unity

Part of the Creative Core

Mission overview

This mission is your first step on the Creative Core pathway. Start here to learn about the topics covered, the activities required, and the skills you will gain along the way.

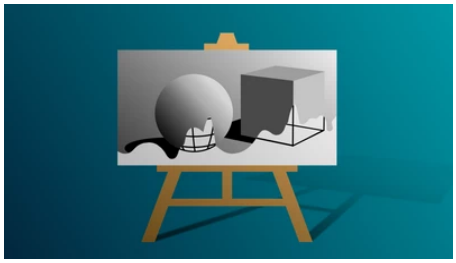
In this mission, you will:

- Learn about the topics covered in Creative Core.
- Select a guided project in which to apply your new skills.
- Create a new project in Unity and make some technical decisions about that project.
- Learn how to use other people's works in your projects responsibly.
- Tour Unity's technical documentation as another resource for your learning.
- Conduct critical evaluation in decision making for creative projects.

Tutorials in this mission

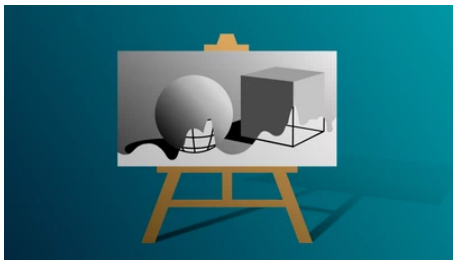
1. Welcome to Creative Core
2. Meet the creators
3. Select your guided project
4. Get started with Unity documentation
5. Develop your critical evaluation skills
6. Guided project setup checkpoint
7. Mission checkpoint

Welcome to Creative Core

Lesson link	Welcome to Creative Core
Length	**10 minutes**
Summary Welcome to the Creative Core pathway! In this tutorial, you will learn what the Creative Core pathway is, who it's for, and how it's structured. **Materials** Creative Core	
Steps 1. Overview 2. What is the Creative Core pathway?	

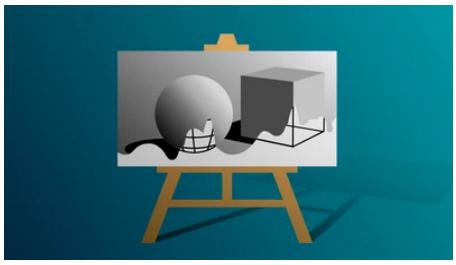
3. What's the purpose of this pathway? 4. How is the Creative Core pathway structured? 5. What are the core missions? 6. What are the guided projects? 7. What is the independent project? 8. Next steps	

Meet the creators

Lesson link	Meet the creators
Length	**10 minutes**
Overview Meet the creators who will help guide you along your Creative Core learning journey. In this tutorial you'll: ● Describe a variety of different creator journeys in real-time 3D. ● Identify job roles to consider in preparation for refining your personal goals. ● Identify a method for evaluating the ongoing learning journey that will help you synthesize the experience. **Skills** ● Beginner Job Preparation ○ Refine your job search priorities and goals	
Steps 1. Overview 2. Established creator insights 3. Who are Unity creators? 4. How did they get started? 5. What have they learned so far? 6. Next steps	

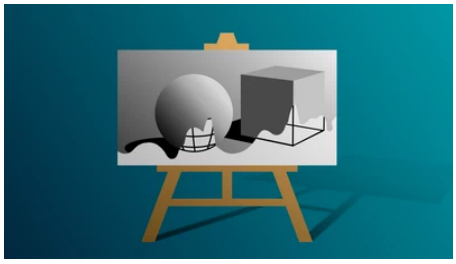
Select your guided project

Lesson link	Select your guided project
Length	**15 minutes**

Summary In the Creative Core pathway, your guided project is where you will apply your skills. We have provided three guided projects for you to choose from so that you don't have to come up with a concept on your own in order to get started in the pathway. In this tutorial, you'll select the guided project that's right for you. By the end of this tutorial, you'll be able to: ● Define key terms of real-time graphics including rendering, render pipeline, and scriptable render pipeline. ● Identify the differences between Unity's provided render pipelines, including advantages, disadvantages, and common use cases for each. ● Create a new project using a particular render pipeline. **Materials** GuidedProjectStarterFiles.zip **Skills** ● Beginner Render Pipelines ○ Choose an appropriate render pipeline for a project, given certain requirements	
Steps 1. Overview 2. Before you begin 3. Browse possible templates for your project 4. What is rendering? 5. What are render pipelines? 6. Choose a render pipeline 7. Create a new URP project 8. Make a new scene and import the assets 9. Next steps	

Get started with Unity documentation

Lesson link	Get started with Unity documentation
Length	**20 minutes**

Summary In your learning journey, you will (we hope!) become curious about the many features and capabilities of the Unity Hub, Editor, packages, and scripting API. Unity provides a comprehensive library of documentation on these products that's available online. Unity documentation is an excellent resource to review what you have learned, investigate intermediate and advanced features, and expand your learning. By the end of this tutorial, you will be able to: ● Define documentation.	

- Identify the major sections of Unity documentation.
- Find information on a specific topic in Unity documentation.

Skills
Absolute Beginner Research
Conduct research using online technical documentation

Steps

1. Overview
2. What is documentation?
3. Get started with Unity Docs
4. Finding what you need
5. Challenge: Find information in Unity documentation
6. Next steps
7. Answers

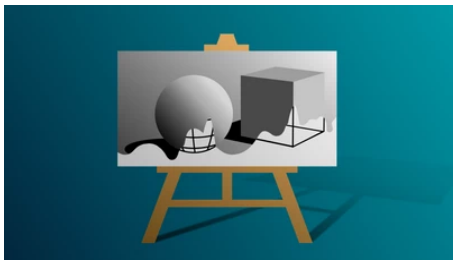
Develop your critical evaluation skills

Lesson link	Develop your critical evaluation skills
Length	**20 minutes**

Summary
Making the best possible decisions in a moment can sometimes feel like a mysterious quality that some people have and others just don't. That's not actually the case — anyone can work to improve the set of skills that decision-making relies on! Critical evaluation is at the heart of this.

By the end of this tutorial, you'll be able to:

- Explain the importance of critical evaluation in a creative project.
- Identify approaches to obtain and evaluate information required to make a decision in a creative project.
- Consider the role of critical evaluation in your journey as a creator.



Steps

1. Overview
2. What is critical evaluation?
3. What variables are involved in complex decisions?
4. How do I get the information I need?
5. Find a framework for asking questions
6. Try the decision-making framework
7. How do I evaluate information to make a decision?
8. Evaluate your own example
9. What happens after I've made a decision?
10. Next steps

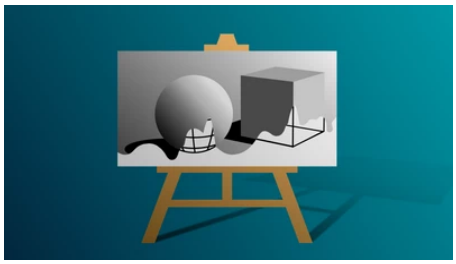
Guided project setup checkpoint

Lesson link	Checkpoint
Length	**5 minutes**

Summary
In this checkpoint, you will confirm that you are ready to continue with your Creative Core learning journey.

Quiz objective
In this checkpoint, you will confirm that you have:

- Downloaded and installed Unity 2020.3 LTS.
- Set up a new Unity project for your guided project.
- Imported the guided project assets.



Steps

1. Have you downloaded and installed Unity 2020.3 LTS?
2. Have you created a new Universal Render Pipeline (URP) Unity project using Unity 2020.3 LTS for your guided project?
3. Have you imported the guided project assets that we provided into your new Unity project?

Mission checkpoint

Quiz: Guided project setup checkpoint

Mission 2: Shaders and materials

Part of the [Creative Core pathway]

Overview

Shaders and materials let you define how your 3D objects look: their colors, reflectivity, and physical texture. With shaders and materials, you can bring realism into your projects or express your own artistic style.

In this mission, you will explore concepts of light and reflection, including common terms that many 3D artists use every day. You'll apply these concepts to create your own materials and shaders that simulate real-world objects — and even some other-worldly objects. You'll complete this mission by creating a still life composition in which you can demonstrate a variety of shaders and materials.

By the time you complete this learning experience, you will be able to:

- Explain how surfaces in Unity are defined and rendered.
- Select a type of shader for your own project.
- Create materials for a common shader, using a wide variety of properties.
- Create your own simple shader using Shader Graph.

Skills

Beginner Materials

- Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements
- Create materials for the URP/Lit Shader on a 3D GameObject
- Simulate common substances with physically-based materials
- Synthesize your new shaders and materials skills in response to project requirements

Beginner Shader Scripting

- Create a simple shader and material using Shader Graph

Beginner Shaders

- Decide among common shaders to use for a given project

Tutorials in this mission

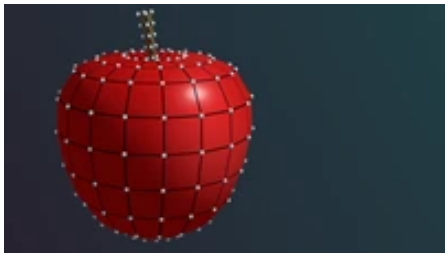
1. Get started with shaders and materials
2. Explore meshes and rendering
3. Explore shaders
4. Manage materials in a project
5. Simulate solid surfaces
6. Map materials with textures
7. Create translucent and transparent effects
8. Add physical texture with bump mapping
9. Refine surfaces with more texture maps
10. Get started with Shader Graph
11. Challenge: Create your still life composition
12. Apply materials and shaders to your guided project
13. Mission checkpoint

Get started with shaders and materials

Lesson link	Get started with shaders and materials
Length	**15 minutes**

Summary
Shaders and materials are to a 3D scene as paint is to a painting — they are the media for expressing the artistic look and feel of your real-time 3D projects. In this tutorial, you will get acquainted with the art gallery project that we'll use in this learning experience.

Materials
CC_Shaders.zip



Steps

1. Overview
2. Before you begin
3. Welcome to Creative Core: Shaders and materials
4. Welcome to the gallery
5. Your work of art
6. Next steps

Explore meshes and rendering

Lesson link	Explore meshes and rendering
Length	**20 minutes**

Summary
In technical terms, shaders and materials operate on meshes, which are the surfaces of GameObjects. They instruct Unity's renderer how to render each mesh. In this tutorial, you'll learn about meshes and rendering.

By the end of this tutorial, you'll be able to:

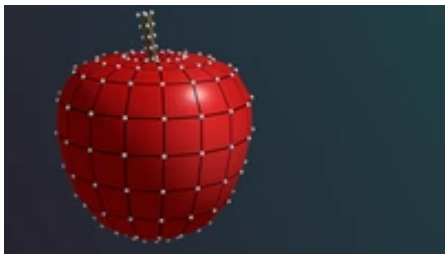
- Define a mesh, its characteristics, and its use in rendering a 3D GameObject.
- Explain the role of shaders in the rendering process.
- Assign a material to a GameObject.

Skills
Beginner shaders

- Decide among common shaders to use for a given project

Beginner materials

- Create materials for the URP/Lit Shader on a 3D GameObject



Steps

1. Overview
2. Look closely at meshes
3. What exactly is a mesh?
4. Mesh filter and renderer components
5. Apply a material in the Mesh Renderer
6. Next steps

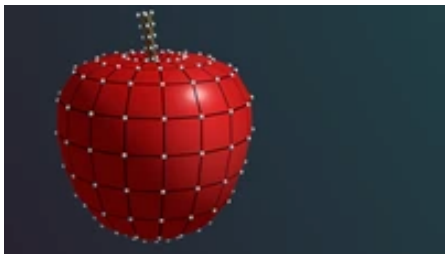
Explore shaders

Lesson link	Explore meshes and rendering
Length	**15 minutes**

Summary
Shaders do the work of computing how meshes will be rendered. In this tutorial, you'll learn about the types of shaders and see how they fit into the rendering process.

By the end of this tutorial, you'll be able to:

- Determine the shader type for an object based on the design requirements.
- Explain the difference between physically-based and non-physically-based rendering, and reasons for using each.
- Explain the difference between a lit and unlit shader, and the reasons for using each.
- Explain vertex and fragment (pixel) shaders.
- Describe use cases for the Universal Render Pipeline shaders provided with Unity.



Related documentation
Standard Shader Docs

Skills
Beginner Shaders

- Decide among common shaders to use for a given project

Steps

1. Overview
2. Types of shaders
3. Physically based shaders and rendering
4. Shaders in the Universal Render Pipeline
5. Explore: Shaders
6. Next steps

Manage materials in a project

Lesson link	Manage materials in a project
Length	**25 minutes**

Summary
You will do much of your more artistic work using materials to color, texture, and stylize your 3D objects. In this tutorial, you'll learn how materials work, and how to use, troubleshoot, and organize them in your projects.

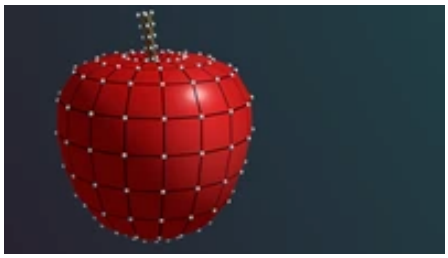
By the end of this tutorial, you'll be able to:

- Define material.
- Create a new material.
- Assign a material to a GameObject.
- Manage materials as project assets.
- Fix broken (magenta) materials.

Related documentation
Project Window

Skills
Beginner materials

- Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements
- Create materials for the URP/Lit Shader on a 3D GameObject



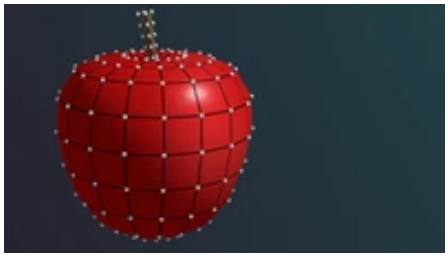
Steps

1. Overview
2. What is the relationship between shaders and materials?
3. Fix magenta materials
4. Observe the default material
5. Find materials in the Project window
6. Apply a material to a GameObject
7. Change a material
8. Locate a material applied to a GameObject
9. Create a new material
10. Duplicate a material
11. Explore materials and begin creating
12. Next steps

Simulate solid surfaces

Lesson link	Simulate solid surfaces
Length	**30 minutes**

Summary
Materials define the ways that light will behave on an object.
In this tutorial, you'll begin learning about materials by learning how light behaves with solid objects. Along the way, you'll be creating materials for solid objects, and you'll be able to simulate objects in the real world.



By the end of this tutorial, you'll be able to:

- Explain specular and diffuse reflectivity.
- Distinguish between Specular and Metallic properties and explain how each is configured.
- Adjust the Base Map of a material using a color.
- Apply the Specular and Metallic workflows to achieve desired effects.
- Identify the characteristics of a real-world surface to be configured in a new material.
- Adjust material properties to simulate a given solid substance.

Related documentation
Material Charts

Skills
Beginner Materials

- Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements
- Create materials for the URP/Lit Shader on a 3D GameObject
- Simulate common substances with physically-based materials

Steps

1. Overview
2. How light behaves
3. Specular and diffuse reflections
4. Diffuse reflectivity: The base map
5. Metals in the Specular workflow
6. Metals in the Metallic workflow
7. Smoothness
8. Explore: Create a solid material
9. Next steps

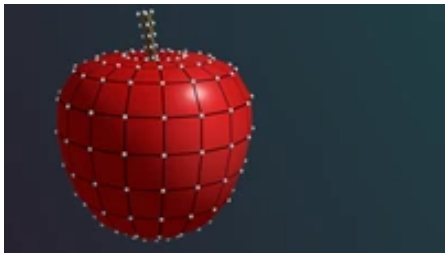
Map materials with textures

Lesson link	Map materials with textures
Length	**15 minutes**

Summary
Textures are 2D maps that wrap around 3D objects to create variations in color, reflectivity, and other properties. In this tutorial, you'll learn how textures work, and you'll begin applying them to objects using materials.

By the end of this tutorial, you'll be able to:

- Define texture and map as they are used in materials.



- Explain the maps that are configurable on the URP/Lit Shader and their various effects.
- Define UVs.
- Explain how 3D modeling programs are used to create assets for Unity materials.
- Adjust the Base Map of a material using an image.
- Given a collection of texture files, select appropriate maps to simulate a material.

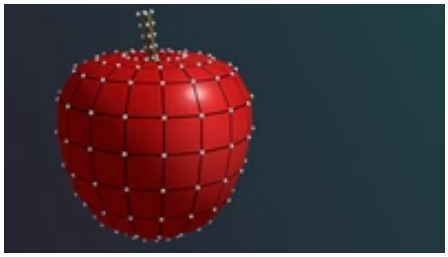
Skills
Beginner Materials
- Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements
- Create materials for the URP/Lit Shader on a 3D GameObject
- Simulate common substances with physically-based materials

Steps
1. Overview
2. What are textures?
3. Examine texture files
4. Change colors with base map textures
5. Tiled textures
6. UV mapped textures
7. Change reflective properties with textures
8. Match the textures to the model
9. Explore texture files
10. Next steps

Create translucent and transparent effects

Lesson link	Create translucent and transparent effects
Length	**20 minutes**

Summary
Light doesn't only bounce off objects — sometimes it passes through them. In this tutorial, you'll use transparency to create a translucent object that looks like glass, and the technique of alpha clipping to create realistic looking leaves from simple rectangular meshes.



By the end of this tutorial, you'll be able to:
- Apply more maps that are configurable on the URP/Lit Shader .
- Apply alpha clipping in a material.
- Apply the transparent surface type to a material.

Skills
Beginner Materials

- Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements
- Create materials for the URP/Lit Shader on a 3D GameObject

Steps

1. Overview
2. Transparency with the alpha channel
3. Create a glass material
4. Add detail with alpha clipping
5. Explore transparent effects
6. Next steps

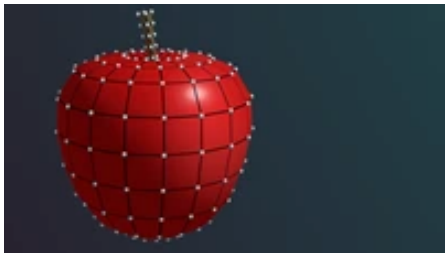
Add physical texture with bump mapping

Lesson link	Add physical texture with bump mapping
Length	**15 minutes**

Summary
Textures are commonly used to add the look of a physical texture to the surface of a mesh without changing the mesh itself. In this tutorial, you'll learn how bump mapping adds the illusion of relief to a surface.

By the end of this tutorial, you'll be able to:

- Apply more maps that are configurable on the URP/Lit Shader.
- Add a normal map and a height map to a material.



Related documentation
Normal Maps

Skills
Beginner Materials

- Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements
- Create materials for the URP/Lit Shader on a 3D GameObject

Steps

1. Overview
2. What are bump maps?
3. Add surface detail with normal maps

4. Add relief with height maps
5. Next steps

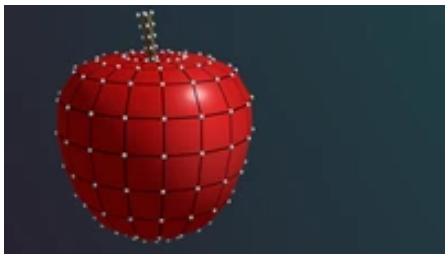
Refine surfaces with more texture maps

Lesson link	Refine surfaces with more texture maps
Length	**25 minutes**

Summary
Once you are familiar with the basic properties of the URP/Lit shader, you will know how to use many shaders, materials, and textures that you'll encounter as a 3D creator. This tutorial will complete your education on this shader.

By the end of this tutorial, you'll be able to:
- Explain the use of Detail Inputs for the URP/Lit shader.
- Explain High Dynamic Range color.

Skills
Beginner Materials
- Decide the best approach for creating materials for the URP/Lit shader on 3D GameObjects, given project requirements



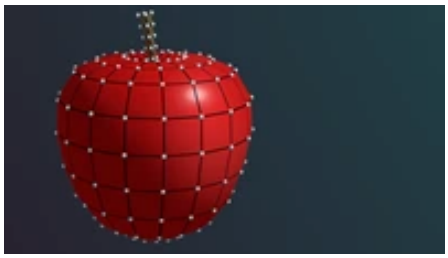
Steps
1. Overview
2. Intensify shadows with occlusion maps
3. Add detail with microsurface maps
4. Light up surfaces with emission maps
5. Next steps

Get started with Shader Graph

Lesson link	Get started with Shader Graph
Length	**30 minutes**

Summary
Now that you know the basics of shading, you have the knowledge to go even further — to create your own shader. With Shader Graph, you can easily apply your knowledge to create new and exciting effects.

By the end of this tutorial, you'll be able to:
- Explain Shader Graph and its uses.



- Create a new shader in Shader Graph.
- Navigate in the Shader Graph editor window.
- Connect commonly used Shader Graph nodes to create desired effects.
- Make a shader with configurable material properties.
- Make a material from a custom Shader Graph shader.

Materials
Make a Flag Wave with shadergraph
Shader Graph shaders in the Unity Asset Store

Related documentation
Shader Graph Window
About Shader Graph

Skills
Beginner Shader Scripting
- Create a simple shader and material using Shader Graph

Steps
1. Overview
2. Open Shader Graph
3. Add a procedural map
4. Create motion over time
5. Add input material properties
6. Combine maps
7. Group nodes to stay organized
8. Allow texture scaling in the materials
9. Adjust contrast
10. Adjust color and transparency
11. Finalize the shader
12. Create a test material
13. Explore Shader Graph
14. Next steps

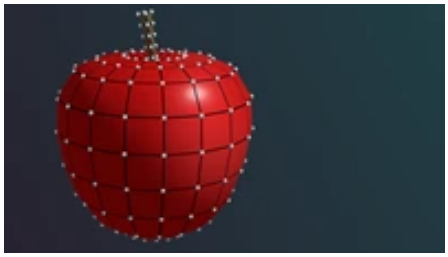
Challenge: Create your still life composition

Lesson link	Challenge: Create your still life composition
Length	**2 hours**

Summary
It's time to create your own work of art! We challenge you to create a still life composition with a variety of surfaces, demonstrating what you've learned about shaders and materials.

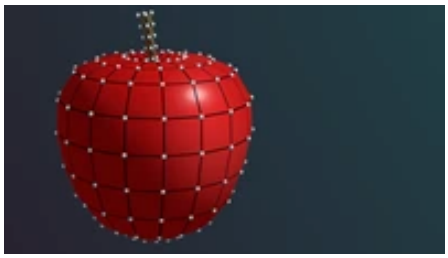
By the end of this tutorial, you'll be able to demonstrate your new skills in shaders and materials.

Related documentation



Unity Recorder User Manual Using Shader Graph **Skills** Beginner Materials • Synthesize your new shaders and materials skills in response to project requirements	
Steps 1. Overview 2. Review your skills 3. About still life 4. Create your still life composition 5. Success criteria 6. What will you do next with shaders and materials? 7. Next steps	

Apply materials and shaders to your guided project

Lesson link	Apply materials and shaders to your guided project
Length	**35 minutes**
Summary Now it's time to apply what you have learned about shaders and materials to your guided project!	
Steps 1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps	

Mission checkpoint

Lesson link	Creative Core: Shaders and materials quiz
Length	**30 minutes**
Summary	

Now it’s time to apply what you have learned about shaders and materials to your guided project!	

Mission 3: Lighting

Part of the [Creative Core pathway]

Overview

Whether you're exploring the architectural design of your new house, sneaking through a haunted castle in a stealth game, or immersing yourself in the world of a cinematic animation, good lighting takes a real-time experience to the next level. From the basics of illuminating a space to telling evocative stories through your design, lighting will help you get there.
In this mission, you will light an indoor and outdoor space in the Unity Editor and learn about the fundamental principles of lighting for Unity experiences along the way. You'll finish by applying what you've learned to complete your own lighting study.

Skills
By the time you complete this learning experience, you'll be able to:

- Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light.
- Decide on the appropriate lighting system in order to achieve common outcomes in a Universal Render Pipeline (URP) project.
- Configure light sources and shadows in order to functionally light a scene.
- Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism.
- Generate a lightmap in order to implement baked lighting in a scene.
- Configure Light Probes in order to increase the realism of baked lighting.
- Configure Reflection Probes in order to achieve accurate reflections.
- Troubleshoot common lighting errors in order to appropriately light a scene.

Tutorials in this mission

1. Get started with lighting in Unity
2. Get started with lighting
3. Configure the Directional Light and skybox
4. Add light sources to your scene
5. Configure shadows in your scene
6. Bake a lightmap for your scene
7. Improve your lighting with Light Probes
8. Examine and complete the indoor scene
9. Refine and troubleshoot the indoor scene
10. Improve reflections in your scene
11. Showcase your work with lighting
12. Challenge: Complete a cinematic lighting study
13. Apply lighting to your guided project
14. Mission checkpoint

Get started with lighting

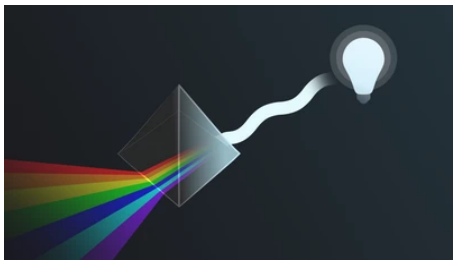
Lesson link	Get started with lighting
Length	**20 minutes**

Summary
Whether you're exploring the architectural design of your new house, sneaking through a haunted castle in a stealth game, or immersing yourself in the world of a cinematic animation, good lighting takes a real-time experience to the next level. From the basics of illuminating a space to telling evocative stories through your design, lighting will help you get there.

By the end of this tutorial, you'll be able to:
- Describe the fundamentals of the behavior of light.
- Identify light sources in an image.

Materials
CC_Lighting.zip

Skills
Beginner Lighting
- Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light.



Steps
1. Overview
2. Before you begin
3. Welcome to Creative Core: Lighting
4. Identify the light sources
5. How does light work?
6. How do you perceive light?
7. What changes the direction of light?
8. What is the artistic impact of lighting?
9. What does a lighting artist do?
10. Extend: Examine the light sources
11. Next steps

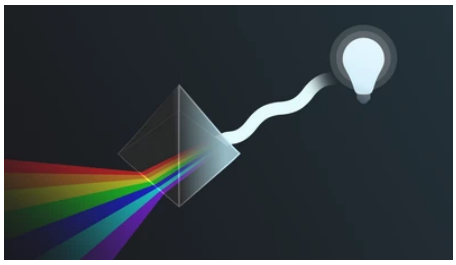
Get started with lighting in Unity

Lesson link	Get started with lighting in Unity
Length	**20 minutes**

Summary
Now that you've explored the role of a lighting artist and the basic behavior of light, you're ready to think more specifically about lighting in Unity.

By the end of this tutorial, you'll be able to:
- Explain the difference between direct and indirect light.
- Define the term global illumination.
- Identify Unity's global illumination system for URP.
- Explain the main differences between real-time and baked lighting in Unity.

Skills
Beginner Lighting
- Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light
- Decide on the appropriate lighting system in order to achieve common outcomes in a Universal Render Pipeline (URP) project.



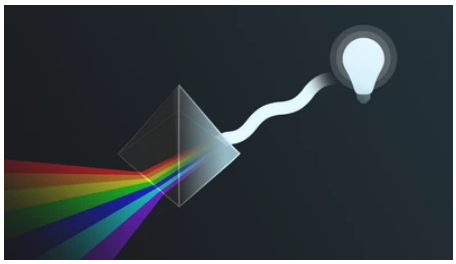
Steps
1. Overview
2. Examine the outside lighting example
3. What is the difference between direct and indirect light?
4. Unity's global illumination systems
5. Real-time lighting in Unity
6. Baked lighting in Unity
7. Next steps

Configure the Directional Light and skybox

Lesson link	[Configure the Directional Light and skybox]()
Length	**25 minutes**

Summary
When you create a new scene in the Unity Editor, your Scene view loads to a bright blue sky. The Directional Light is one of the two GameObjects created for you. These two things are the absolute basics of lighting in Unity, present by default to help creators get started.

By the end of this tutorial, you'll be able to:
- Identify key considerations for lighting outdoor scenes realistically.
- Describe the role of the Directional Light in a scene.
- Configure the Directional Light in a scene to achieve common effects.
- Describe the role of a skybox in a scene.
- Create a procedural skybox.



Skills
Beginner Lighting

- Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light
- Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism
- Configure light sources and shadows in order to functionally light a scene

Steps

1. Overview
2. How do you light a scene realistically?
3. Identify the types of light source
4. Configure the Directional Light
5. Advanced uses of Directional Lights
6. Get started with the skybox
7. Create a new procedural skybox
8. Create a late-night look
9. Next steps

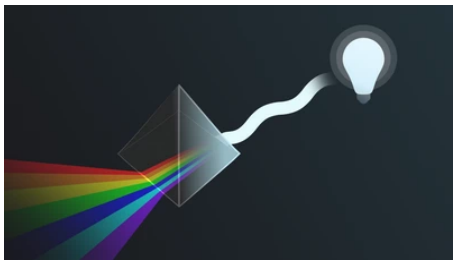
Add light sources to your scene

Lesson link	Add light sources to your scene
Length	**25 minutes**

Summary
At the moment, the amphitheater space in the outdoor scene is lit by natural light in the scene you're working on — now you're ready to add additional light sources.

By the end of this tutorial, you'll be able to:

- Identify the differences between the different types of Light components.
- Configure Light components to achieve common lighting effects.
- Configure the ambient (diffuse environmental) light in your scene.



Skills
Beginner Lighting

- Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism
- Configure light sources and shadows in order to functionally light a scene

Steps

1. Overview
2. Add a street lamp

3. Configure your streetlamp
4. How do light and color work?
5. Add and configure more lights in the space
6. Check your color space
7. Configure the ambient lighting
8. Next steps

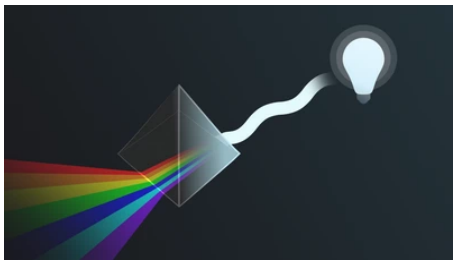
Configure shadows in your scene

Lesson link	Configure shadows in your scene
Length	**20 minutes**

Summary
Now that you've configured both real-time light sources and ambient light in your scene, you're ready to configure the shadows.

By the end of this tutorial, you'll be able to:
- Explain the relationship between lighting and post-processing.
- Configure shadows in your scene to achieve realistic effects.

Skills
Beginner Lighting
- Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light
- Configure light sources and shadows in order to functionally light a scene



Steps
1. Overview
2. Configure the render pipeline asset
3. Enable Soft Shadows in the Directional Light
4. Consider the impact of post-processing on lighting
5. Explore: Change the mood of your scene
6. Next steps

Bake a lightmap for your scene

Lesson link	Bake a lightmap for your scene
Length	**35 minutes**

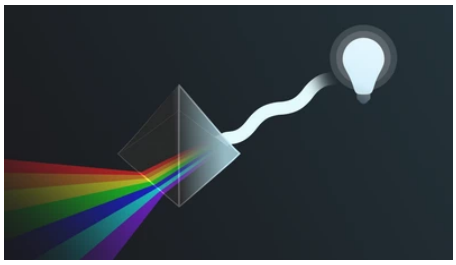
Summary
Now that you've set up real-time lighting in your outdoor scene, you're ready to set up the second type of lighting for your project: baked lighting. When you've implemented this and made some adjustments to the lighting configuration throughout your scene, you'll have covered the basics of lighting an outside space!

By the end of this tutorial, you'll be able to:

- Configure light sources appropriately so that they can be baked.
- Create a new Lighting Settings asset.
- Explain why any changes to the baked lighting require an update to the lightmap.
- Customize lightmap properties for your scene.

Skills
Beginner Lighting

- Generate a lightmap in order to implement baked lighting in a scene



Steps

1. Overview
2. What is baked lighting?
3. Change the Light Mode
4. Set your light sources as static
5. Bake a lightmap
6. Add an Area Light
7. Set the Light Mode to Mixed
8. Next steps

Improve your lighting with Light Probes

Lesson link	Improve your lighting with Light Probes
Length	**35 minutes**

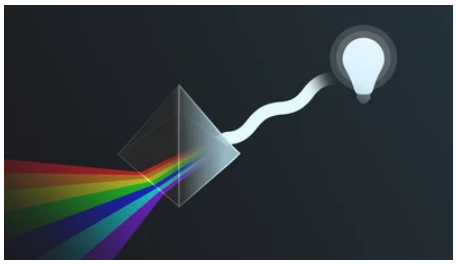
Summary
You've almost finished working on the outdoor scene! In this tutorial, you'll learn about the role of Light Probes in making lighting in your scene more realistic.

By the end of this tutorial, you'll be able to:

- Explain how Light Probes improve the realism of lighting in a scene.
- Place Light Probes appropriately within a scene.
- Evaluate the impact of Light Probes using a diagnostic view.

Skills
Beginner Lighting

- Configure Light Probes in order to increase the realism of baked lighting



Steps

1. Overview
2. What about dynamic objects?
3. What are Light Probes?
4. How do I know where to place them?
5. Place Light Probes in your scene
6. Test your changes
7. Try some tools for reviewing your scene
8. Explore: Customize your lightmap
9. Next steps

Examine and complete the indoor scene

Lesson link	[Examine and complete the indoor scene]()
Length	**35 minutes**

Summary

Now that you've worked on implementing lighting in an outdoor scene, it's time to turn your attention indoors. The same basic principles of lighting apply to indoor environments, but just as light indoors and outdoors tends to be different in the physical world, there are particular considerations that it's important to make when lighting an indoor space for a real-time experience.

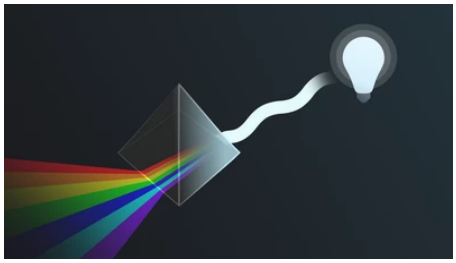
By the end of this tutorial, you'll be able to:

- Identify key considerations for lighting indoor scenes realistically.
- Add emissive materials to a scene.
- Check emissive materials in a diagnostic view.
- Place Light Probes in a 3D volume arrangement within a scene.

Skills

Beginner Lighting

- Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light
- Configure light sources and shadows in order to functionally light a scene
- Configure Light Probes in order to increase the realism of baked lighting



Steps

1. Overview
2. What makes a great lighting artist?
3. Identify the indoor light sources
4. Examine the working scene lighting
5. What are the key considerations for indoor lighting?
6. Create and configure an emissive material
7. Check the Emissive diagnostic view

8. Place and configure Light Probes
9. Next steps

Refine and troubleshoot the indoor scene

Lesson link	[Refine and troubleshoot the indoor scene]()
Length	**30 minutes**

Summary
You're nearly at the end of your indoor and outdoor scene journey. So far you've lit the outdoor scene from scratch and made some minor additions to the indoor scene. Now you're ready to refine the lighting in this scene.

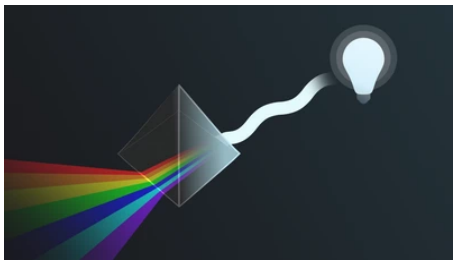
By the end of this tutorial, you'll be able to:

- Configure indirect lighting to improve the overall lighting level in an indoor scene.
- Identify common troubleshooting issues for beginner-level lighting in Unity.
- Improve light leaks through exploratory adjustment of lighting properties.
- Identify when an important model has incorrect lightmap UVs.
- Generate lightmap UVs for a model imported without them.

Materials
Apple_BrokenLightmapUVs.fbx

Skills
Beginner Lighting

- Configure ambient (diffuse environmental) lighting in order to convey mood or enhance realism
- Troubleshoot common lighting errors in order to appropriately light a scene



Steps

1. Overview
2. Check the shadow configuration
3. Increase the light in the room
4. Improve the light leaks
5. Import a new model
6. Check the Baked Lightmap diagnostic view
7. Generate Lightmap UVs for the model
8. Next steps

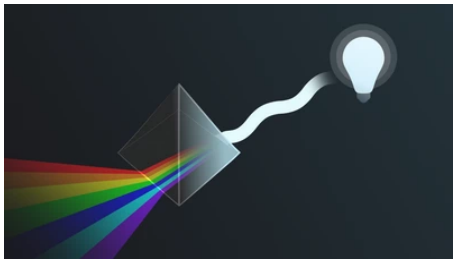
Improve reflections in your scene

Lesson link	Improve reflections in your scene
Length	**25 minutes**

Summary
You’ve almost completed your work on the indoor scene, but there’s a little more to do. Before you finish the indoor scene, you need to make the scene more realistic by addressing issues with reflection that are currently present.

By the end of this tutorial, you'll be able to:
- Explain how Reflection Probes improve the accuracy of reflections in a scene.
- Configure a Reflection Probe.

Skills
Beginner Lighting
- Configure Reflection Probes in order to achieve accurate reflections



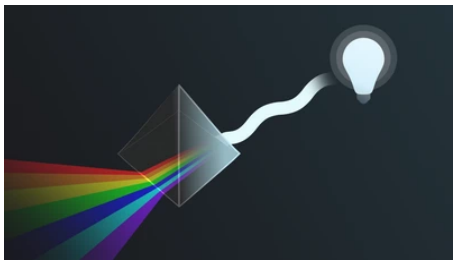
Steps
1. Overview
2. How does reflection work in Unity?
3. How do Reflection Probes work?
4. Place and configure a Reflection Probe
5. Test the Reflection Probe
6. Why take this approach to reflection?
7. Explore: Establish a mysterious atmosphere in the gallery
8. Next steps

Showcase your work with lighting

Lesson link	Showcase your work with lighting
Length	**35 minutes**

Summary
In the previous tutorials in this learning experience, you lit an outdoor scene and an indoor scene, developing your understanding of lighting in Unity as you did so. Now it’s time to apply your understanding of lighting in Unity to a slightly different context: showcasing a product.

By the end of this tutorial, you'll be able to:



- Identify research topics and resources to develop your understanding of foundational lighting science and design principles.
- Configure Light components to showcase an object in Unity.

Related documentation
Unity Recorder User Manual

Skills
Beginner Lighting
- Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light
- Configure light sources and shadows in order to functionally light a scene

Steps
1. Overview
2. Examine the example studio scene
3. Three-point lighting
4. Review the studio lighting setup
5. Establish mood with your lighting
6. Customize your own product lighting study
7. Explore: Set up traditional three-point lighting
8. Next steps

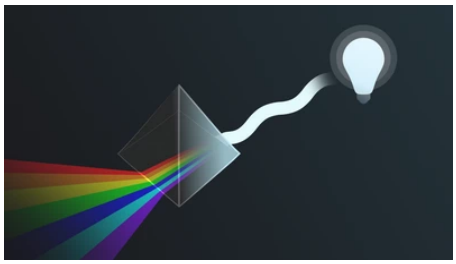
Challenge: Complete a cinematic lighting study

Lesson link	Challenge: Complete a cinematic lighting study
Length	**3 hours**

Summary
In this challenge, you'll complete a cinematic lighting study using your own choice of inspiration.

By the end of this tutorial, you'll be able to:
- Identify research topics and resources to develop your understanding of foundational lighting science and design principles.
- Demonstrate your new skills in lighting.

Skills
Beginner Lighting
- Implement appropriate lighting in a scene in a manner that will simulate the real-world behavior of light
- Synthesize your new lighting skills in response to project requirements



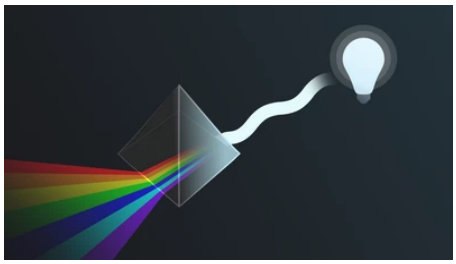
Steps

1. Overview
2. How can I develop my lighting skills further?
3. Complete a cinematic lighting study
4. Challenge success criteria
5. Continue your lighting learning journey

Apply lighting to your guided project

Lesson link	Apply lighting to your guided project
Length	**1 hours**

Summary
Now it's time to apply what you have learned about lighting to your guided project!



Steps
1. Overview
2. Review the design document requirements
3. Apply what you learned in your project
4. Alien video games shop requirements
5. Beachside town requirements
6. Architectural rendering requirements
7. Next steps

Mission checkpoint

Lesson link	Creative Core: Lighting quiz
Length	**15 minutes**

Mission 4: Animation

Part of the Creative Core pathway

Overview
The world around you is in constant motion. The same is true for digital worlds. A static environment tends to appear unfinished or cold and unfeeling; animation is all about creating the illusion of life.
In this mission, you will learn how to create animations in the Unity Editor and how to configure animations imported from an external program. You'll apply these concepts to add animation to objects and characters in your scenes, and even control when the animation gets played.

By the end of this mission, you'll be able to:
- Describe the relationship between different animation components.
- Create simple keyframed 3D animation sequences.
- Describe key components of an Animator Controller.
- Configure Animation Clips imported from third-party 3D modeling software or the Asset Store for use in a project.
- Configure a humanoid rig for use with the Humanoid Animation system.

Skills
- Beginner Animation Systems
- Describe key components of an animator controller
- Describe the relationship between different animation components
- Synthesize your new animation skills in response to project requirements
- Beginner 3D Animation (Native Unity)
- Create simple keyframed 3D animation sequences
- Beginner 3D Animation (Imported)
- Configure Animation Clips imported from third-party party 3D modeling software or the Asset Store for use in a project
- Configure a humanoid rig for use with the Humanoid Animation system

Tutorials in this mission
1. Get started with animation
2. Create your first 3D animations
3. Refine your animation
4. Control animation with an Animator
5. Import animation
6. Challenge: Bring the scene to life
7. Apply animation to your guided project
8. Mission checkpoint

Get started with animation

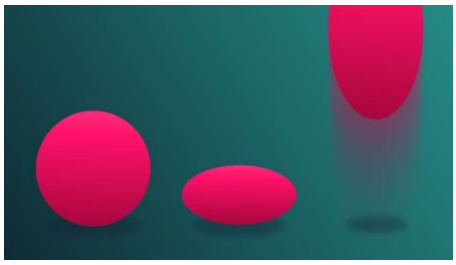
Lesson link	Get started with animation
Length	**20 minutes**

Summary
In this tutorial you'll learn about the role and responsibilities of animators and set up your project to begin animating.

By the end of this tutorial, you'll be able to:
- Define the different rig types and their uses.

Materials
CC_Animation.zip

Skills
Beginner Animation Systems
- Describe the relationship between different animation components



Steps
1. Overview
2. Before you begin
3. Welcome to Creative Core: Animation
4. What does an animator do in Unity?
5. Why is animation important?
6. Next steps

Create your first 3D animations

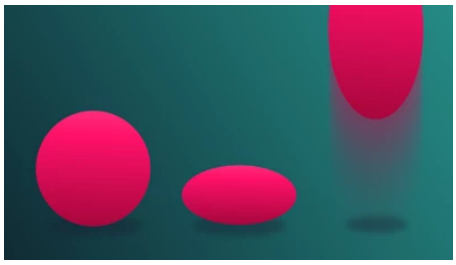
Lesson link	Create your first 3D animations
Length	**40 minutes**

Summary
In this tutorial, you'll learn the basic principles of animation and the tools available to you in Unity by animating a ball. This is a classic exercise for new animators, both digital and traditional alike.

By the end of this tutorial, you'll be able to:
- Set up a new Animation Clip.
- Record a GameObject animation using Record Mode.
- Add keyframes to an Animation Clip.
- Adjust multiple Keyframes at once.

Related documentation
Using the Animation view
Creating a new Animation Clip
Animating a GameObject

Skills
Beginner 3D Animation (Native Unity)
- Create simple keyframed 3D animation sequences



Steps

1. Overview
2. Create an Animation Clip
3. Set the animation keyframes
4. Create a second clip
5. Create the bounce animation
6. Next steps

Refine your animation

Lesson link	Refine your animation
Length	**40 minutes**

Summary
In this tutorial, you'll learn about the Curve editor and explore some basic animation principles.

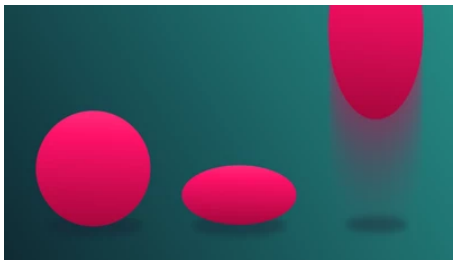
By the end of this tutorial, you'll be able to:

- Edit the values of an Animation Curve.
- Add keyframes to an Animation Clip.
- Record a GameObject animation using Record Mode.
- Adjust multiple Keyframes at once.

Related documentation
Key manipulation in Curves mode
Editing Curves
Using Animation Curves

Skills
Beginner 3D Animation (Native Unity)

- Create simple keyframed 3D animation sequences



Steps

1. Overview
2. Refine the animation with Curves
3. Adjust the easing of the ball
4. Create squash keyframes
5. Create stretch keyframes
6. Move your animation throughout the scene
7. Explore: Bounce over distance

Control animation with an Animator

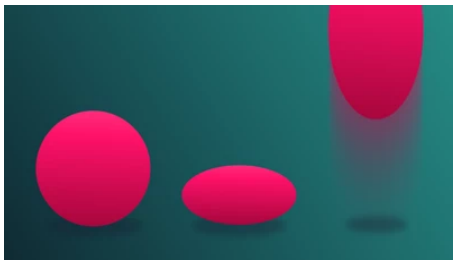
Lesson link	Control animation with an Animator

Length	**50 minutes**

Summary
In this tutorial, you'll create a door that animates based on the proximity of the player. In doing so, you'll learn about Animators, Animator Controllers, and basic State Machines.

By the end of this tutorial, you'll be able to:

- Set up a new Animation Clip.
- Record a GameObject animation using Record Mode
- Add keyframes to an Animation Clip.
- Identify the purpose of a specified parameter.
- Describe the relationship between parameters and transitions.



Related documentation
Animator Component
Animator Controller
Colliders

Skills
Beginner 3D Animation (Native Unity)

- Create simple keyframed 3D animation sequences

Beginner Animation Systems

- Describe key components of an Animator Controller

Steps

1. Overview
2. Create the door animation
3. Explore the Animator Controller
4. Explore State Machines
5. Create the default state
6. Open the door
7. Close the door
8. Reset the State Machine
9. Create the proximity trigger
10. Explore: More triggered animations
11. Next steps

Import animation

Lesson link	Import animation
Length	**30 minutes**

Summary
In this tutorial, you'll learn how to configure imported animation and use it in an already existing project.

By the end of this tutorial, you'll be able to:

- Define the different rig types and their uses.
- Describe how an avatar is used with a humanoid rig to share animation.
- Describe how an avatar is used with an Animator Controller to control animation.
- Apply imported Animation Clips to rigged models in Unity.
- Configure a humanoid rig to share animations between characters.
- Trim Animation Clips to access specific keyframed sequences within them.
- Create a new Animator Controller for an imported rig.
- Share Animator Controllers between humanoid rigs.
- Identify the purpose of a specified parameter.
- Describe the relationship between parameters and transitions.

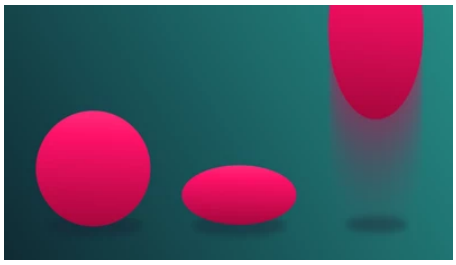
Related documentation
Importing a model with humanoid animations
Animation

Skills
Beginner Animation Systems

- Describe key components of an Animator Controller
- Describe the relationship between different animation components

Beginner 3D Animation (Imported)

- Configure Animation Clips imported from third-party modeling software or the Asset Store for use in a project
- Configure a humanoid rig for use with the Humanoid Animation system

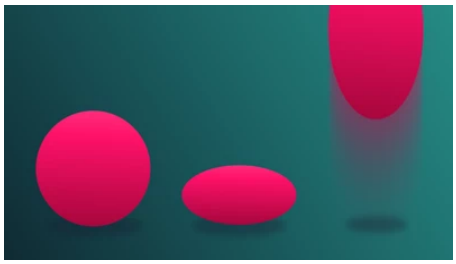


Steps

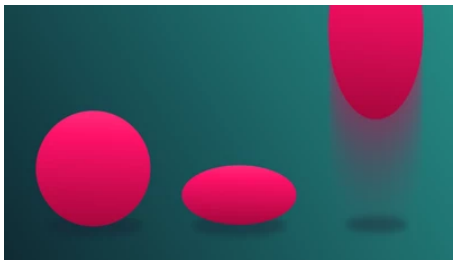
1. Overview
2. Can animation be shared?
3. Share the Controller
4. Configure the animation type
5. Configure the first Animation Clip
6. Configure the two remaining clips
7. Add the new clips to the Animation Controller
8. Explore: Dance Party!

Challenge: Bring the scene to life

Lesson link	Challenge: Bring the scene to life

Length	**1 hour 30 minutes**
Summary In this challenge, you'll be tasked with creating at least five new in-editor animations and configuring at least one character to use three new imported animations that you source yourself. By the end of this tutorial, you'll be able to demonstrate your new skills in animation. **Skills** Beginner Animation Systems • Synthesize your new animation skills in response to project requirements	
Steps 1. Overview 2. Review your skills 3. Use the keycode trigger script 4. Create your animations 5. Criteria 6. Next steps	

Apply animation to your guided project

Lesson link	Apply animation to your guided project
Length	**1 hour**
Summary Now it's time to apply what you have learned about animation to your guided project! **Skills** Beginner Animation Systems • Synthesize your new animation skills in response to project requirements	
Steps 1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps	

Mission checkpoint

Lesson link	Creative Core: Animation Quiz
Length	**30 minutes**

Mission 5: VFX

Part of the Creative Core pathway

Overview
VFX are simulated motion effects added to enhance a scene, ranging from a subtle splash of water to a massive fiery explosion.
In this mission, you will learn to create your own visual effects, including fire, weather effects, and a puff of smoke.

By the time you complete this learning experience, you will be able to:

- Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene.
- Produce environmental and burst effects by configuring Unity's Particle System object.
- Interpret a simple VFX Graph asset.

Skills
Beginner Particles and Visual Effects

- Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene
- Produce environmental and burst effects by configuring Unity's Particle System object
- Interpret a simple VFX Graph asset
- Synthesize your new VFX skills in response to project requirements

Tutorials in this mission

1. Get started with VFX
2. Play around with a Particle System
3. Create an environmental Particle System
4. Create a burst particle
5. Experiment with VFX Graph
6. Challenge: Add some magic to your scene
7. Apply VFX to your guided project
8. Mission checkpoint

Get started with VFX

Lesson link	Get started with VFX
Length	**10 minutes**

Summary
VFX are simulated motion effects added to enhance a scene, ranging from a subtle splash of water to a massive fiery explosion. In this tutorial, you will learn what VFX are, who makes them in the industry, and then you will tinker with a fire effect in Unity.

By the end of this tutorial, you'll be able to:

- Define the acronym VFX.
- Explain different applications of VFX in real-time 3D experiences, such as gameplay and environmental effects.
- Describe the impact that VFX can have on the level of polish in a project.
- Understand the differences between Unity's Particle System and VFX Graph.

Materials
CC_VFX.zip

Skills
Beginner Particles and Visual Effects

- Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene
- Produce environmental and burst effects by configuring Unity's Particle System object

Steps

1. Overview
2. Before you begin
3. What are VFX?
4. Identify the VFX
5. What does a VFX artist do?
6. Particle Systems vs VFX Graph
7. Open the project and run the scene
8. Play, pause, and restart the fire effect
9. Next steps

Play around with a Particle System

Lesson link	Play around with a Particle System
Length	**10 minutes**

Summary
More complex effects, like a campfire, might actually be made up of multiple individual Particle Systems. A fire could have flames, smoke, and sparks. In this tutorial, you'll explore the individual elements of a fire, and then play around with the properties of those elements to produce a unique result.

By the end of this tutorial, you'll be able to:

- Explain how individual Particle Systems can be combined to create more complex effects.
- Understand the purpose of the three default modules in a Particle System: Emission, Shape, and Renderer.

Skills
Beginner Particles and Visual Effects
- Produce environmental and burst effects by configuring Unity's Particle System object

Steps
1. Overview
2. Enable the sparks element
3. Enable additional modules for the sparks
4. Explore: Play around with the fire
5. Next steps

Create an environmental Particle System

Lesson link	Create an environmental Particle System
Length	**20 minutes**

Summary
Particle Systems are surprisingly versatile. With just a few changes to a Particle System's modules, you can produce a wide variety of effects. In this tutorial, you will create a brand new Particle System and configure its modules to create snow or rain in the scene.

By the end of this tutorial, you'll be able to:
- Set up a new Particle System in the scene.
- Configure a Particle System's main properties, such as lifetime, size, and max particles, by modifying the Main module.
- Control the location and initial direction of particles by modifying the Shape module.
- Control the rate and timing of particles by modifying the Emission module.
- Control the appearance of individual particles by modifying the Renderer module.

Skills
Beginner Particles and Visual Effects
- Produce environmental and burst effects by configuring Unity's Particle System object

Steps
1. Overview
2. Add and position a new Particle System

3. Configure the main module properties
4. Configure the Shape and Emission modules
5. Configure the Renderer module
6. Save your VFX as a Prefab
7. Explore: Make other weather effects
8. Next steps

Create a burst particle

Lesson link	[Create a burst particle]()
Length	**30 minutes**

Summary
Some VFX are triggered by a user's actions, which makes the application feel more responsive and dynamic. In this tutorial, you will create a new smoke burst effect, then allow the user to generate that effect whenever they want to ignite or extinguish the fire.

By the end of this tutorial, you'll be able to:

- Create a single burst of particles, rather than a continuous emission over time by using the Bursts section of the Emission module.
- Add randomness to a Particle System by using the Random Between Two Constants feature.
- Change the color of a particle over its lifetime by using the Gradient editor and the Color Over Lifetime module.
- Change the size of a particle over its lifetime by using the Curve editor in the Size Over Lifetime module.

Skills
Beginner Particles and Visual Effects

- Produce environmental and burst effects by configuring Unity's Particle System object

Steps

1. Overview
2. Clear the work area
3. Add a new burst of particles
4. Make the particles move like smoke
5. Add randomness to the particles
6. Edit Color over Lifetime with the Gradient editor
7. Edit the Renderer and Texture Sheet Animation
8. Use a curve to change size over lifetime
9. Customize the curve
10. Trigger the animation
11. Explore: Ignite and extinguish
12. Next steps

Experiment with VFX Graph

Lesson link	Experiment with VFX Graph
Length	**20 minutes**

Summary
VFX Graph is a powerful feature that allows users to create incredibly complex effects and simulations, which are still highly optimized. In this tutorial, you will add a few new VFX Graph effects to your scene and play around with their properties in the VFX Graph editor.

By the end of this tutorial, you'll be able to:

- Understand the differences between Unity's Particle System and VFX Graph in order to select the appropriate tool for a given use case.
- Recognize whether a particle effect has been created using the Particle System or VFX Graph.
- Add a new VFX Graph to the scene.
- Explain the role of each of the four default context nodes in a VFX Graph asset: Spawn, Initialize Particle, Update Particle, and Output Particle.
- Navigate in the VFX Graph editor window by using the keyboard and mouse.
- Perform simple edits to an existing VFX Graph asset, such as changing the emission rate or particle lifetime.

Materials
Visual Effect Graph Samples
Spaceship demo

Related documentation
Visual Effect Graph

Skills
Beginner Particles and Visual Effects

- Decide whether to use Unity's Particle Systems or VFX Graph in order to produce an effect in your scene
- Interpret a simple VFX Graph asset

Steps

1. Overview
2. How is VFX Graph different from the Particle System?
3. Position a VFX Graph effect in the scene
4. Open the VFX Graph editor window
5. Navigate the VFX Graph window
6. Explore the VFX Graph contexts
7. Create a brand new VFX Graph asset
8. Examine a complex VFX Graph
9. Explore: Recreate the fire using VFX Graph
10. Next steps

Challenge: Add some magic to your scene

Lesson link	Challenge: Add some magic to your scene
Length	**30 minutes**

Summary
VFX have the power to add intrigue, mystery, and whimsy to your environments. In this tutorial, you will attempt to add a sense of magic to your scene with fireflies, shooting stars, or some other effect of your choice.

By the end of this tutorial, you'll be able to demonstrate your new skills in particles and visual effects.

Skills
Beginner Particles and Visual Effects
- Synthesize your new VFX skills in response to project requirements

Steps
1. Overview
2. Determine a creative direction
3. Create some magical particles
4. Challenge criteria
5. Next steps

Apply VFX to your guided project

Lesson link	Apply VFX to your guided project
Length	**1 hour**

Summary
Now it's time to apply what you have learned about VFX to your guided project!

Skills
Beginner Particles and Visual Effects
- Synthesize your new VFX skills in response to project requirements

Steps
1. Overview
2. Review the design document requirements
3. Apply what you learned in your project
4. Alien video games shop requirements
5. Beachside town requirements
6. Architectural rendering requirements

7. Next steps

Mission checkpoint

Lesson link	Creative Core: VFX Quiz
Length	**30 minutes**

Mission 6: Cameras

Part of the Creative Core pathway

Overview
Cameras are your eyes in an interactive experience. They can be fully dynamic, fixed, or tied to a character. In this mission, you'll explore the different camera types common to interactive experiences. You'll also learn some basic camera shot terminology and practice recreating iconic scenes from popular media.

By the end of this mission, you'll be able to:

- Decide which camera setup to use, given a project's requirements.
- Configure a single Unity camera in a 2D or 3D scene.

Skills
Beginner Unity Cameras

- Decide which camera setup to use, given a project's requirements
- Configure a single Unity camera in a 2D or 3D scene
- Synthesize your new camera skills in response to project requirements

Tutorials in this mission

1. Get started with cameras
2. Select your camera projection type
3. Control what your camera sees
4. Explore camera views
5. Explore camera shot types
6. Challenge: Recreate the scene
7. Apply cameras to your guided project
8. Mission checkpoint

Get started with cameras

Lesson link	Get started with cameras
Length	**25 minutes**

Summary
In this project, you'll learn how to work with cameras both from a technical and design perspective.

By the end of this tutorial, you'll be able to:
- Distinguish between various camera viewpoints in order to give end users the appropriate orientation to the scene.
- Explore the effects of camera setup on the user's experience.

Materials
CC_Cameras.zip

Related documentation
Cameras Overview Documentation

Skills
Beginner Unity Cameras
- Decide which camera setup to use, given a project's requirements

Steps
1. Overview
2. Before you begin
3. Welcome to Creative Core: Cameras
4. Who sets up cameras in Unity?
5. The importance of cameras in interactive experiences
6. Explore: Review your favorite media
7. Next steps

Select your camera projection type

Lesson link	Select your camera projection type - Unity Learn
Length	**20 minutes**

Summary
In this tutorial, you'll learn about projection settings: the parameters that control how the camera renders what appears inside its frame.

By the end of this tutorial, you'll be able to:
- Identify use cases for a perspective camera view in a 2D or 3D scene.
- Identify use cases for an orthographic camera view in a 2D or 3D scene.
- Capture the desired view of the scene by controlling the position and rotation of the Main Camera.
- Set up a camera for a specified/predetermined point of view.

- Set up a perspective camera view in a 3D scene.
- Set up an orthographic camera view in a 3D scene.

Materials
[Game accessibility guidelines]

Related documentation
[Camera Documentation]

Skills
Beginner Unity Cameras
- Decide which camera setup to use, given a project's requirements.
- Configure a single Unity camera in a 2D or 3D scene.

Steps
1. Overview
2. Adjusting the Camera in the Editor
3. Explore the qualities of a perspective camera
4. Set the field of view
5. Explore the qualities of an orthographic camera
6. Adjust the camera size
7. Extend: Make the scene more dramatic
8. Next steps

Control what your camera sees

Lesson link	[Control what your camera sees]
Length	**15 minutes**

Summary
In this tutorial, you'll learn how to fine tune what appears within the camera view with clipping planes, culling masks, and environment properties.

By the end of this tutorial, you'll be able to:
- Fill in the background of the Main Camera view.
- Control the field of view of the Main Camera by adjusting the frustum.
- Control the depth of view of the Main Camera by configuring the clipping planes.

Related documentation
[Manual: Camera Documentation]

Skills
Beginner Unity Cameras
- Configure a single Unity camera in a 2D or 3D scene

Steps

1. Overview
2. Define the limits of the camera view with clipping planes
3. Use culling masks to show or hide objects
4. Change the background type
5. Next steps

Explore camera views

Lesson link	Explore camera views
Length	**15 minutes**

Summary
In this tutorial, you'll explore some of the most popular camera views and learn about when they're best used.

By the end of this tutorial, you'll be able to:

- Identify use cases for a perspective camera view in a 2D or 3D scene.
- Identify use cases for an orthographic camera view in a 2D or 3D scene.
- Explore the effects of camera setup on the user's experience.
- Distinguish between various camera viewpoints in order to give end users the appropriate orientation to the scene.

Skills
Beginner Unity Cameras

- Decide which camera setup to use, given a project's requirements

Steps

1. Overview
2. Third-person camera views
3. First-person camera views
4. Top-down camera views
5. Isometric camera views
6. Fixed camera views
7. Combining camera views
8. Next steps

Explore camera shot types

Lesson link	Explore camera shot types

Length	**10 minutes**

Summary
In this tutorial, you'll learn about some of the most popular camera shot types and how they can be used to contribute to the overall mood of a scene.

By the end of this tutorial, you'll be able to:

- Distinguish between various camera viewpoints in order to give end users the appropriate orientation to the scene.
- Identify use cases for a perspective camera view in a 2D or 3D scene.
- Identify use cases for an orthographic camera view in a 2D or 3D scene.
- Explore the effects of camera setup on the user's experience.

Skills
Beginner Unity Cameras

- Decide which camera setup to use, given a project's requirements

Steps

1. Overview
2. Wide angle
3. Close up
4. Bird's-eye view
5. Worm's-eye view
6. Extend: Shot considerations
7. Next steps

Challenge: Recreate the scene

Lesson link	Challenge: Recreate the scene
Length	**30 minutes**

Summary
In this final challenge, you'll be tasked with recreating one of your favorite scenes from media in Unity.

By the end of this tutorial, you'll be able to demonstrate your new skills in cameras.

Materials
Unity Asset Store
Create and Publish WebGL Builds

Skills
Beginner Unity Cameras

• Synthesize your new camera skills in response to project requirements	
Steps 1. Overview 2. Review what you've learned 3. Recreate a scene 4. Criteria 5. Next steps	

Apply cameras to your guided project

Lesson link	Apply cameras to your guided project
Length	**1 hour**
Summary Now it's time to apply what you have learned about cameras to your guided project!	
Steps 1. Overview 2. Review the design document requirements 3. Apply what you learned in your project 4. Alien video games shop requirements 5. Beachside town requirements 6. Architectural rendering requirements 7. Next steps	

Mission checkpoint

Lesson link	Creative Core: Camera Quiz
Length	**15 minutes**

Mission 7: Post-Processing

Part of the [Creative Core pathway]

Overview
Post-processing is just like applying filters to a photo you take with your phone. This can make your scene look more beautiful and interesting. In this mission, you will use post-processing to achieve a particular look and feel in a scene.

By the time you complete this learning experience, you will be able to:

- Evaluate whether post-processing is an appropriate tool for a given goal.
- Implement a particular visual style in a project by configuring a post-processing profile.

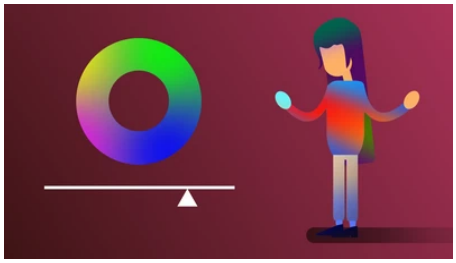
Skills
Beginner Post-Processing

- Evaluate whether post-processing is an appropriate tool for a given goal
- Implement a particular visual style in a project by configuring a post-processing profile
- Synthesize your new post-processing skills in response to project requirements

Tutorials in this mission

1. Get started with post-processing
2. Create your own post-processing profile
3. Challenge: Create a local volume
4. Apply post-processing to your guided project
5. Mission checkpoint

Get started with post-processing

Lesson link	Get started with post-processing
Length	**20 minutes**
Summary Post-processing is just like applying filters to your photos. It can make your scene look more beautiful, interesting, or stylized. In this tutorial, you'll learn when and why you might use post-processing, then open Unity and enable post-processing in your scene. By the end of this tutorial, you'll be able to: • Define post-processing and the purpose of a post-processing profile. • Explain the purpose of post-processing, including visual	

style and visual fidelity.
- Set up post-processing in a scene.

Materials
[CC_PostProcessing.zip]

Skills
Beginner Post-Processing
- Evaluate whether post-processing is an appropriate tool for a given goal
- Implement a particular visual style in a project by configuring a post-processing profile

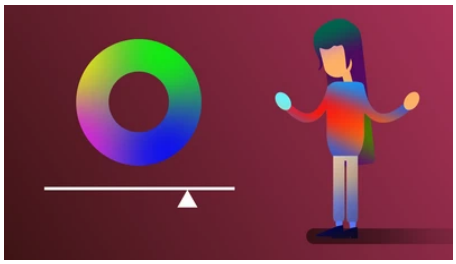
Steps
1. Overview
2. What is post-processing?
3. Assess visual style and visual fidelity
4. What professionals work with post-processing?
5. Open the post-processing project and run the scene
6. Enable post-processing on a global volume
7. Identify the post-processing profile
8. A note about post-processing
9. Explore: Tinker with the sample profile
10. Next steps

Create your own post-processing profile

Lesson link	[Create your own post-processing profile]
Length	**25 minutes**

Summary
A post-processing profile can radically alter the visuals in your scene. In this tutorial, you will create your own post-processing profile to achieve a particular visual style in the project.

By the end of this tutorial, you'll be able to:
- Use common post-processing effects, such as Bloom, Depth of Field, Tonemapping, and color adjustments.
- Modify a post-processing profile to achieve a particular style.
- Appreciate the tradeoff between improved visuals and the cost to performance that comes with post-processing effects.
- Describe the purpose of a post-processing profile.



Materials
[Post Processing Bloom Tutorial]

Related documentation

Bloom	Universal RP HDR documentation Emission Color Adjustments Documentation Effect List Documentation Depth of Field Documentation Film Grain Documentation Lens Distortion Documentation Motion Blur Documentation Chromatic Aberration Documentation **Skills** Beginner Post-Processing • Evaluate whether post-processing is an appropriate tool for a given goal • Implement a particular visual style in a project by configuring a post-processing profile	
Steps 1. Overview 2. Choose a visual style 3. Create a new post-processing profile 4. Add Bloom 5. Apply Tonemapping 6. Do some color grading 7. Try out some other post-processing effects 8. Explore: Create profiles for other visual styles 9. Next steps	

Challenge: Create a local volume

Lesson link	Challenge: Create a local volume
Length	**1 hour**

Summary
A local volume allows you to define a completely different visual style within a single scene. In this tutorial, you'll create a new post-processing profile and apply it to a particular area of the scene.

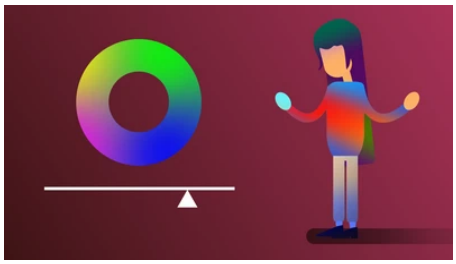
By the end of this tutorial, you'll be able to:

- Add a new local post-processing volume to the scene and edit its boundaries.
- Describe scenarios where a global volume or local volume would be more appropriate.
- Demonstrate your new skills in post-processing.

Related documentation
Volumes Documentation

Skills
Beginner Post-Processing

- Implement a particular visual style in a project by configuring a post-processing profile
- Synthesize your new post-processing skills in response to project requirements

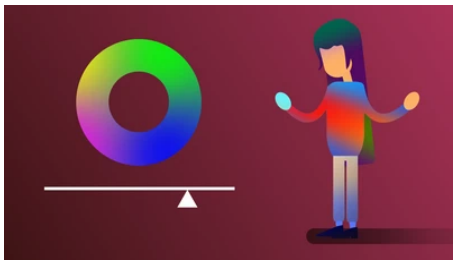


Steps

- Overview
- Why use a local volume?
- Review: How does a local volume work?
- Add a local volume to the gallery scene
- Challenge criteria
- Next steps

Apply post-processing to your guided project

Lesson link	Apply post-processing to your guided project
Length	**1 hour**

Summary Now it's time to apply what you have learned about post-processing to your guided project!	

Steps

1. Overview
2. Review the design document requirements
3. Apply what you learned in your project
4. Alien video games shop requirements
5. Beachside town requirements
6. Architectural rendering requirements
7. Next steps

Mission checkpoint

Lesson link	Creative Core: Post-processing Quiz
Length	**20 minutes**

Mission 8: Audio

Part of the [Creative Core pathway]

Overview
Audio is one of the most overlooked aspects of interactive development, but it's also one of the first things that can disrupt a user's immersion if it's done poorly, or worse, if it's completely forgotten about. In this mission, you will learn how to implement audio effects in Unity by creating a soundscape for an outdoor scene. You'll create ambient audio effects, trigger sounds with events, and modify sounds with special effects.

By the end of this mission, you'll be able to:

- Implement audio in Unity.
- Produce customized results by correctly configuring audio in a scene.
- Create interactive experiences by synthesizing audio experience design principles.
- Refine existing audio in a Unity project.
- Solve accessibility challenges in an audio design.

Skills
Beginner Audio Design Principles

- Implement audio in Unity
- Create interactive experiences by synthesizing audio experience design principles
- Solve accessibility challenges in an audio design

Beginner Audio Implementation

- Produce customized results by correctly configuring audio in a scene
- Refine existing audio in a Unity project
- Synthesize your new audio skills in response to project requirements

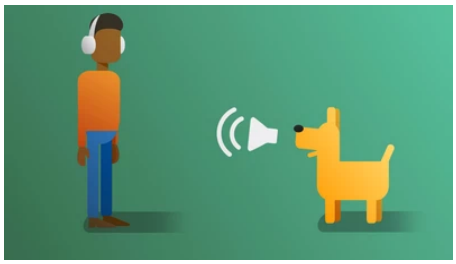
Tutorials in this mission

1. Get started with audio
2. Create dynamic sound effects
3. Create 3D sound effects
4. Add special effects to existing audio
5. Accessibility considerations for audio
6. Challenge: Your own soundscape
7. Apply audio to your guided project
8. Mission checkpoint

Get started with audio

Lesson link	Get started with audio
Length	**25 minutes**

Summary
In this project, you'll bring a scene to life using audio effects. You'll explore the different ways audio is perceived and implement ambient and event based sound. You'll also learn a bit about accessibility considerations for audio and how you can build a more inclusive experience by implementing closed captioning.



By the end of this tutorial, you'll be able to:

- Describe the science of audio in digital environments.
- Recommend audio source file formats that can be used in a given project.
- Explain the role of audio in supporting narrative and worldbuilding.
- Explain the difference between diegetic and nondiegetic sound.
- Describe the primary types of audio found in real-time projects.
- Explain the role of audio in developing atmosphere.

Materials
Monday at 5-35 PM.m4a.zip
Tuesday at 4-24 PM.m4a.zip
CC_Audio.zip

Skills
Beginner Audio Implementation

- Produce customized results by correctly configuring audio in a scene

Beginner Audio Design Principles

- Implement audio in Unity
- Create interactive experiences by synthesizing audio experience design principles

Steps

1. Overview
2. Before you begin
3. Welcome to Creative Core: Audio
4. What does an audio engineer do?
5. How does audio work in Unity?
6. The importance of audio in interactive experiences
7. Explore: What can you hear?

Create dynamic sound effects

Lesson link	Create dynamic sound effects
Length	**35 minutes**

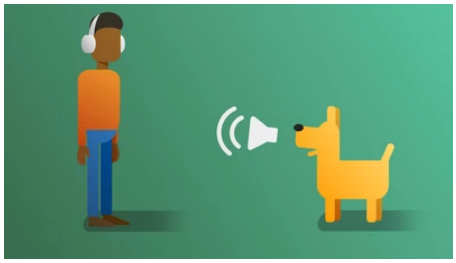
Summary
In this tutorial, you'll begin the process of creating a complex soundscape by adding footstep sound effects to the player character.

By the end of this tutorial, you'll be able to:
- Choose time-based or action-based methods, such as triggers or events, to play audio clips.
- Explain the role of audio in developing atmosphere.

Materials
Using Animation Events
Tags
Audio Clip

Skills
Beginner Audio Implementation
- Refine existing audio in a Unity project

Beginner Audio Design Principles
- Create interactive experiences by synthesizing audio experience design principles



Steps
1. Overview
2. Assess scene needs
3. Add Animation Events
4. Apply the audio script
5. Explore the audio script
6. Tag scene surfaces
7. Add a footstep clip
8. Explore: customize the footsteps

Create 3D sound effects

Lesson link	Create 3D sound effects
Length	**50 minutes**

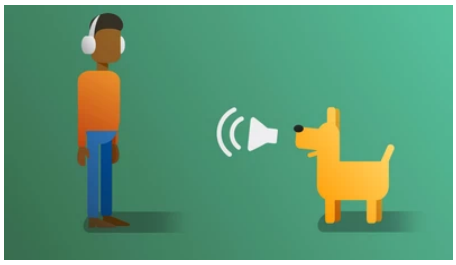
Summary
In this tutorial, you'll add sound to the waterfall and customize it to suit the scene's needs.

By the end of this tutorial, you'll be able to:
- Explain the role of audio in supporting narrative and worldbuilding.
- Explain the role of audio in developing atmosphere.
- Simulate different types of audio sources by applying custom rolloffs.
- Describe the science of audio in digital environments.

Related documentation
Audio Source

Skills
Beginner Audio Design Principles
- Implement audio in Unity
- Create interactive experiences by synthesizing audio experience design principles

Beginner Audio Implementation
- Produce customized results by correctly configuring audio in a scene



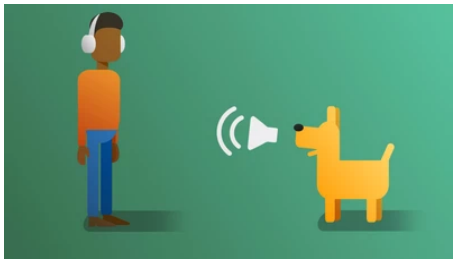
Steps
1. Overview
2. Add the waterfall sound
3. Adjust the audio spread
4. Explore logarithmic rolloff
5. Explore linear roloff
6. Create a custom rolloff
7. Adjust the audio listener
8. Explore: Add more ambient audio

Add special effects to existing audio

Lesson link	Add special effects to existing audio
Length	**20 minutes**

Summary
In this tutorial, you'll create an echo effect using an audio reverb zone.

By the end of this tutorial, you'll be able to:
- Add special audio effects to a scene.
- Describe the science of audio in digital environments.
- Explain the role of audio in developing atmosphere.
- Control the priority of different audio sources in a scene by setting Priority settings.



Related documentation
Reverb Zones

Skills
Beginner Audio Design Principles
- Implement audio in Unity
- Create interactive experiences by synthesizing audio experience design principles

Beginner Audio Implementation
- Refine existing audio in a Unity project

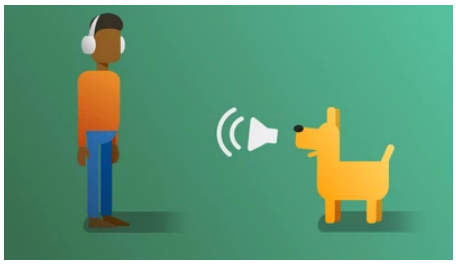
Steps
1. Overview
2. What is an audio reverb zone?
3. Create a reverb zone
4. Test different presets
5. Add a water drop sound effect
6. Set audio importance
7. Next steps

Accessibility considerations for audio

Lesson link	Accessibility considerations for audio
Length	**15 minutes**

Summary
In this tutorial, you'll add closed captioning to your scene to add an extra level of accessibility to your project.

By the end of this tutorial, you'll be able to:
- Add subtitles to a Unity project.
- Recommend optimization techniques for audio, given a target platform.
- Choose time-based or action-based methods, such as triggers or events, to play audio clips.
- Add special audio effects to a scene.



Skills
Beginner Audio Design Principles
- Solve accessibility challenges in an audio design

Beginner Audio Implementation
- Produce customized results by correctly configuring audio in a scene
- Refine existing audio in a Unity project

Steps
1. Overview
2. Audio accessibility best practices

3. Create the closed caption database
4. Add closed captions to the Audio Source
5. Add a directional indicator for the waterfall
6. Explore: Add closed captions to other audio sources

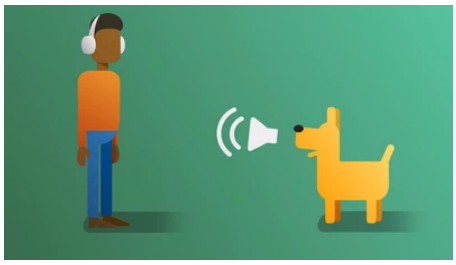
Challenge: Your own soundscape

Lesson link	Accessibility considerations for audio
Length	**15 minutes**

Summary
In this final challenge, you'll take everything that you learned and create a soundscape for a new environment.

By the end of this tutorial, you'll be able to demonstrate your new skills in audio.

Skills
Beginner Audio Implementation
- Synthesize your new audio skills in response to project requirements.

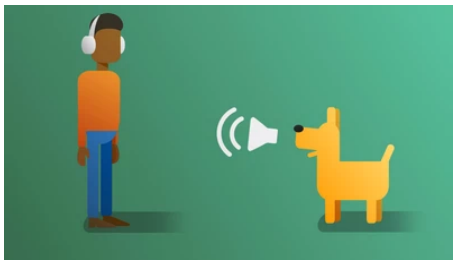


Steps
1. Overview
2. Create your soundscape
3. Criteria
4. Next steps

Apply audio to your guided project

Lesson link	Accessibility considerations for audio
Length	**1 hour**

Summary
Apply audio to your guided project.



Steps
1. Overview
2. Review the design document requirements

3. Apply what you learned in your project
4. Alien video games shop requirements
5. Beachside town requirements
6. Architectural rendering requirements
7. Next steps

Mission checkpoint

Lesson link	Creative Core Audio quiz
Length	**30 minutes**

Mission 9: UI

Part of the [Creative Core pathway]

Overview
A user interface is what allows a user to interact – or interface – with an application. A UI often includes images, text, buttons, toggles, sliders, or dropdowns.
In this mission, you will design your own title screen and functional settings menu.

By the time you complete this learning experience, you will be able to:

- Decide on a user interface approach for a project.
- Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions.
- Create and configure interactive UI components, such as buttons, toggles, and sliders, in order to implement simple UI functionality.

Skills
Beginner User Interface

- Decide on a user interface approach for a project
- Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions
- Create and configure interactive UI components, such as buttons, toggles, and sliders, in order to implement simple UI functionality

Tutorials in this mission

1. Get started with user interfaces
2. Add a title to your scene
3. Manage screen size and anchors
4. Create a menu background with images
5. Add basic button functionality
6. Add toggles and sliders
7. Challenge: Make a worldspace UI
8. Apply UI to your guided project

Get started with user interfaces

Lesson link	Get started with user interfaces
Length	**30 minutes**

Summary
A user interface (UI) is what allows a user to interact with a program, and a UI designer is responsible for making those interactions as clear and enjoyable as possible. In this tutorial, you'll learn a bit more about what UI design is and the tools available in Unity to help you create UIs. Then, you'll open your project and begin customizing your scene.

By the end of this tutorial, you'll be able to:

- Define "UI" and the role of user interfaces in real-time 3D experiences.
- Differentiate between UI design and other related disciplines, like User Experience Design and Information Architecture.
- Distinguish between Unity's three available UI systems: uGUI (or Unity UI), IMGUI (or "Immediate Mode" GUI), and UI Toolkit.

Materials
CC_UI.zip

Skills
Beginner User Interface

- Decide on a user interface approach for a project

Steps

1. Overview
2. Before you begin
3. What does a UI designer do?
4. What UI design is and what it is not
5. Test yourself: Who does what?
6. Open the UI project and scene
7. Personalize the backdrop
8. Which Unity UI system to use?
9. Next steps

Add a title to your scene

Lesson link	Add a title to your scene
Length	**30 minutes**

Summary
Text is arguably the most critical element of any UI. So, when you add text elements, you should also make sure it's easy for everyone to read. In this tutorial, you'll add title text to your project, then make sure it meets basic accessibility requirements.

By the end of this tutorial, you'll be able to:

- Add text elements (labels) to the screen.

- Customize text element styling in the Inspector.
- Recall essential accessibility considerations for UI, such as font choice, text size, color contrast, and content.

Skills
Beginner User Interface
- Decide on a user interface approach for a project
- Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions

Steps
1. Overview
2. Add and center your title text
3. Customize your title text
4. Make sure your text is accessible
5. Explore: Download and import new fonts
6. Next steps

Manage screen size and anchors

Lesson link	[Manage screen size and anchors]()
Length	**30 minutes**

Summary
You can spend a ton of time making your UI look perfect on your screen, but what happens if someone opens your application on a screen with a different size or a different shape? In this tutorial, you'll learn how to consider the screen's aspect ratio and use Canvas Anchors to make sure your UI elements stay where you want them to.

By the end of this tutorial, you'll be able to:
- Preview different aspect ratios for your project.
- Understand the role of the Canvas GameObject in designing a UI.
- Position 2D elements on screen by using the Rect Transform component and Rect tool.
- Control how UI elements scale, rotate, and reposition relative to other objects on screen by editing the anchor and pivot points.
- Anchor a UI element to different parts of a Canvas by using presets and by positioning it manually.
- Control how the entire UI responds to changes in screen resolution by understanding different Canvas Scaler modes.

Skills
Beginner User Interface

• Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions	
Steps 1. Overview 2. Arrange the Editor for working with UI 3. Select an aspect ratio 4. Add a settings button in the corner 5. What are anchors? 6. Set the anchor for the settings button 7. What are pivot points? 8. Explore: Experiment with canvas scaling 9. Next steps	

Create a menu background with images

Lesson link	Create a menu background with images
Length	**25 minutes**
Summary Images are critical in the design of UIs; from simple backgrounds and icons to more complex heads up displays and dashboards. In this tutorial, you will add custom images for your settings menu background and button, making sure they still look good if they're stretched in different directions. By the end of this tutorial, you'll be able to: • Add Image elements. • Apply and configure UI sprites. • Apply and configure materials to an Image component. **Skills** Beginner User Interface • Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions	
Steps 1. Overview 2. Add a basic settings background 3. Add a "Settings" title 4. Create a simple exit button 5. Choose a 9-sliced image 6. Explore: Continue customizing your UI 7. Next steps	

Add basic button functionality

Lesson link	Add basic button functionality
Length	**30 minutes**

Summary
A button is the simplest and most common interactive UI element. Without buttons, you couldn't get very far. In this tutorial, you will make your buttons functional using Unity's Event System.

By the end of this tutorial, you'll be able to:
- Understand the role of the EventSystem GameObject in developing interactive UIs.
- Identify use cases for buttons in various UIs.
- Implement simple button functionality by using the Event System.

Skills
Beginner User Interface
- Create and configure interactive UI components, such as buttons, toggles, and sliders, in order to implement simple UI functionality

Steps
1. Overview
2. Analyze some familiar UIs
3. Edit your button transition colors
4. Add an action to the OnClick event
5. Make the settings menu appear on button click
6. Make the title screen elements disappear
7. Navigate back to the title screen
8. Next steps

Add toggles and sliders

Lesson link	Add toggles and sliders
Length	**30 minutes**

Summary
As a UI becomes more complex, you will inevitably need to implement toggles and sliders, which each give the user a unique way to interact with an application. In this tutorial, you will add a toggle that allows the user to turn music on and off and a slider that allows them to control the volume.

By the end of this tutorial, you'll be able to:
- Identify use cases for Sliders and Toggles in UI design.

- Implement simple toggle functionality by using the Event System.
- Implement simple slider functionality by using the Event System.

Skills
Beginner User Interface
- Create and configure interactive UI components, such as buttons, toggles, and sliders, in order to implement simple UI functionality

Steps
1. Overview
2. Add a music toggle setting
3. Add music to the scene
4. Make the music toggle functional
5. Add a volume slider
6. Make the volume slider functional
7. Explore: Add new UI elements
8. Next steps

Challenge: Make a worldspace UI

Lesson link	Challenge: Make a worldspace UI
Length	**30 minutes**

Summary
A worldspace UI can exist in the three dimensional world, just like any other GameObject. This allows you as a UI designer to create completely different types of interactions, compared with a traditional Screen Space UI. In this tutorial, you will learn more about the use cases for worldspace UIs, then design a new version of your UI in world space.

By the end of this tutorial, you'll be able to:
- Identify the use cases for different Canvas render modes: Screen Space - Overlay, Screen Space - Camera; World Space.
- Demonstrate your new skills in user interfaces.

Skills
Beginner User Interface
- Create and configure visual UI components in a manner that will respond appropriately to different screen sizes and resolutions

Steps
1. Overview
2. Why use a worldspace UI?

3. Get set up with a worldspace Canvas
4. Design your worldspace UI
5. Challenge criteria
6. Next steps

Apply UI to your guided project

Lesson link	Apply UI to your guided project
Length	**1 hour**
Summary Now it's time to apply what you have learned about user interfaces to your guided project!	

Steps

1. Overview
2. Review the design document requirements
3. Apply what you learned in your project
4. Alien video games shop requirements
5. Beachside town requirements
6. Architectural rendering requirements
7. Next steps

Mission checkpoint

Lesson link	Creative Core: UI quiz
Length	**20 minutes**

Mission 10: Prototyping

Part of the [Creative Core pathway]

Overview
Before you get caught up in developing your dream project, it's important to start a little smaller and create a prototype. Prototyping gives you the opportunity to work out what should really be at the heart of the real-time experience you want to make and to test out different approaches to achieve that.

In this mission, you'll learn about some different approaches to prototyping and explore an example we've created as you work on your own prototype. This learning experience is about process rather than a set outcome; if you're new to prototyping, we hope you'll find something useful no matter what you want to create!

By the time you complete this learning experience, you'll be able to:

- Determine the appropriate prototyping approach for a specific project.
- Decide the critical project features required in order to create a functional prototype.
- Create a functional prototype in Unity.
- Integrate external assets and tools into your prototype.
- Refine a prototype environment using ProBuilder and Terrain.
- Test a basic experience prototype.

Skills
Beginner Prototyping

- Determine the appropriate prototyping approach for a specific project
- Decide the critical project features required in order to create a functional prototype
- Create a functional prototype in Unity
- Integrate external assets and tools into your prototype
- Refine a prototype environment using ProBuilder
- Refine a prototype environment using Terrain
- Test a basic experience prototype
- Synthesize your new prototyping skills in response to project requirements

Tutorials in this mission

1. Get started with prototyping
2. Choose a prototype idea
3. Plan and scope your prototype
4. Create your graybox prototype
5. Build on your basic prototype
6. Enhance your prototype with ProBuilder
7. Enhance your prototype with Terrain
8. Test your prototype
9. Challenge: Complete your independent project
10. Plan your next steps
11. Entry-level freelancing for creators
12. Mission checkpoint

Get started with prototyping

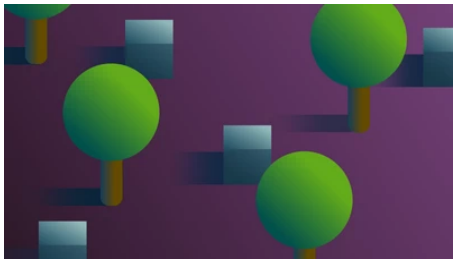
Lesson link	Get started with prototyping
Length	**25 minutes**

Summary
Before you get caught up in developing your dream project, it's important to start a little smaller and create a prototype. Prototyping gives you the opportunity to work out what should really be at the heart of the real-time experience you want to make and to test out different approaches to achieve that.

By the end of this tutorial, you'll be able to:
- Explain the purpose of prototyping.
- Explain the difference between rapid and evolutionary prototyping.

Materials
CC_Prototyping.zip

Skills
Beginner Prototyping
- Determine the appropriate prototyping approach for a specific project



Steps
1. Overview
2. Before you begin
3. Welcome to Creative Core: Prototyping
4. What is prototyping?
5. Why create a prototype?
6. Examine the example prototype
7. Rapid and evolutionary prototyping
8. Explore: What have other creators done?
9. Next steps

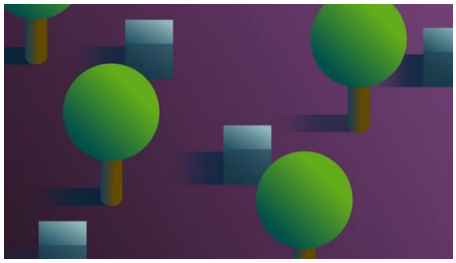
Choose a prototype idea

Lesson link	Choose a prototype idea
Length	**15 minutes**

Summary
You’ve explored the background of prototyping, now it’s time to get specific. You might have a specific idea for a prototype already in mind, a range of concepts to choose between, or be uncertain where to start. Wherever you’re starting from, we’ll guide you through the process.

By the end of this tutorial, you'll be able to:
1. Identify a prototype concept.
2. Identify target users for a prototype.
3. Write an elevator pitch for a prototype.

Skills
Beginner Prototyping
- Decide the critical project features required in order to create a functional prototype



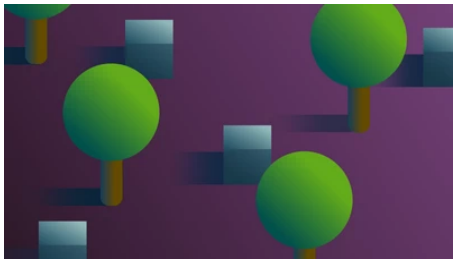
Steps
1. Overview
2. What’s your coding experience?
3. What’s your prototype idea?
4. Identify and center your target users
5. What’s an elevator pitch?
6. Draft your own elevator pitch
7. Next steps

Plan and scope your prototype

Lesson link	Plan and scope your prototype
Length	**40 minutes**

Summary
Now that you’ve identified an idea and your target audience, you can start planning your prototype in a lot more detail.

By the end of this tutorial, you'll be able to:
- Explain the importance of scoping and incremental iteration in the prototyping process.
- Identify key features and requirements for a prototype.
- Scope which features are required to deliver a minimum functional prototype.



Skills
Beginner Prototyping
- Determine the appropriate prototyping approach for a specific project
- Decide the critical project features required in order to create a functional prototype

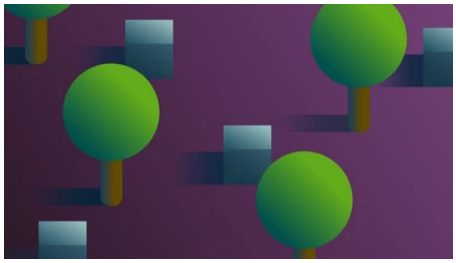
Steps
1. Overview
2. Guidance if you have limited coding experience
3. Scope your concept
4. What is a paper prototype?
5. Create your own paper prototype
6. Prioritize your interactions and features
7. Define a look for your prototype
8. Extend: Experiment with lo-fi prototyping
9. Next steps

Create your graybox prototype

Lesson link	[Create your graybox prototype]
Length	**30 minutes**

Summary
Planning complete, you can now get started working in Unity! You'll start by working on a graybox of your prototype, where primitive 3D shapes (which are often gray) are used to block out the scene so you can implement the basic functionality.

By the end of this tutorial, you'll be able to:
- Graybox a basic functional prototype.
- Import a third-party character controller.



Skills
Beginner Prototyping
- Create a functional prototype in Unity
- Integrate external assets and tools into your prototype

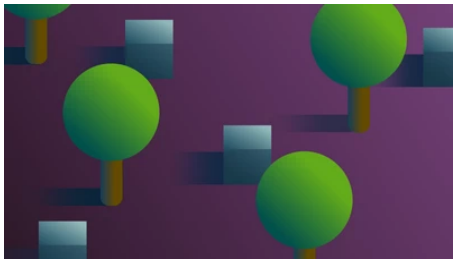
Steps
1. Overview
2. Read the example graybox plan
3. Examine the example graybox prototype in Unity
4. Set up your project
5. Import the assets from the example project
6. Add and configure a character controller
7. Review the custom script components
8. Create your own prototype graybox
9. Test as you go
10. Next steps

Build on your basic prototype

Lesson link	Build on your basic prototype
Length	**30 minutes**

Summary
Now that you've got a basic graybox prototype, it's time to develop it so it's closer to the final experience that you want to deliver.

By the end of this tutorial, you'll be able to:
- Explain the importance of scoping and incremental iteration in the prototyping process.
- Evaluate a prototype against key requirements.
- Refine a prototype experience.
- Identify third-party assets and resources for a prototype.
- Create an asset inventory.



Skills
Beginner Prototyping
- Determine the appropriate prototyping approach for a specific project
- Create a functional prototype in Unity
- Integrate external assets and tools into your prototype

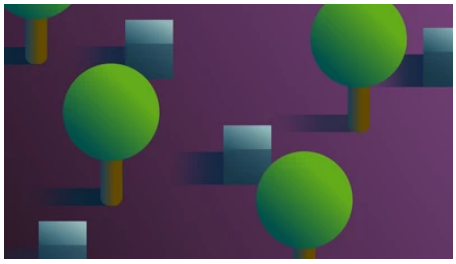
Steps
1. Overview
2. The challenges of prototyping
3. Examine the example's basic enhancements
4. What changes did we make first?
5. Examine the example's improved enhancements
6. What changes did we make?
7. Scope your prototype enhancements
8. Identify your key assets and placeholders
9. Next steps

Enhance your prototype with ProBuilder

Lesson link	Enhance your prototype with ProBuilder
Length	**45 minutes**

Summary
ProBuilder is a package that you can use to build, edit, and texture custom geometry (3D shapes) in Unity. You can use it to create all sorts of objects in your environment that go beyond combinations of primitives.

By the end of this tutorial, you'll be able to:



- Explain how ProBuilder can support prototype development.
- Create meshes using ProBuilder.
- Configure geometry to make basic scenery for a prototype.
- Set a Collider for a mesh.
- Set a mesh as a trigger.

Related documentation
About ProBuilder

Skills
Beginner Prototyping
- Refine a prototype environment using ProBuilder

Steps
1. Overview
2. Set up ProBuilder
3. Create a cube
4. Create a cube using the alternative method
5. Review the ProBuilder edit modes
6. Create a wall with your cube
7. Extrude edges and faces to make a door
8. Adjust the shape of the door
9. Clear a hole for the door
10. Bridge the gaps to solidify the frame
11. Create a door in a pre-existing wall
12. Set Collider and Set Trigger
13. Apply materials using ProBuilder tools
14. Next steps

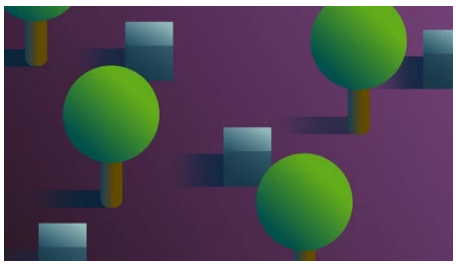
Enhance your prototype with Terrain

Lesson link	Enhance your prototype with Terrain
Length	**20 minutes**

Summary
Terrain is the landscape of an interactive experience. Unity 2020.3 LTS includes a series of Terrain features that you can use to create a custom landscape that's right for your prototype.

By the end of this tutorial, you'll be able to:
- Explain how Terrain can support prototype development.
- Create a new Terrain.
- Customize Terrain for your prototype.

Related documentation
Terrain tools



Steps

1. Overview
2. Create a Terrain tile
3. Expand your landscape
4. Create some hills
5. Smooth your hills
6. Refine and enhance your landscape
7. Next steps

Test your prototype

Lesson link	Test your prototype
Length	**30 minutes**

Summary

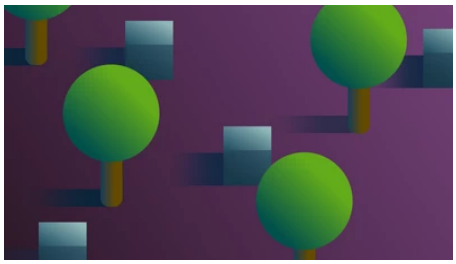
Testing is a critical aspect of refining and completing your prototype.

By the end of this tutorial, you'll be able to:

- Explain the importance of different types of testing in prototype development.
- Complete acceptance tests against prototype requirements.
- Identify unexpected behavior in a prototype.
- Conduct user testing for a prototype.

Skills

- Beginner Prototyping
- Create a functional prototype in Unity
- Test a basic experience prototype



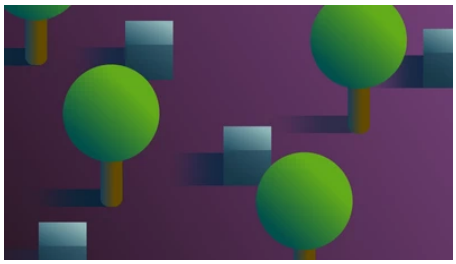
Steps

1. Overview
2. Why is testing so important?
3. What is the user experience like?
4. Avoid making assumptions
5. Test for expected behavior
6. Test for unexpected behavior
7. Guidance for exploratory testing
8. Exploratory testing example
9. Get feedback from target users
10. Next steps

Challenge: Complete your independent project

Lesson link	[Challenge: Complete your independent project]()
Length	**1 hour**

Summary
In this challenge, you'll apply what you've learned throughout the Creative Core pathway to your prototype.
By the end of this tutorial, you'll be able to demonstrate your new skills from each domain in the Creative Core pathway.



Skills
Beginner Audio Implementation
- Synthesize your new audio skills in response to project requirements

Beginner Lighting
- Synthesize your new lighting skills in response to project requirements

Beginner Materials
- Synthesize your new shaders and materials skills in response to project requirements

Beginner Animation Systems
- Synthesize your new animation skills in response to project requirements

Beginner Prototyping
- Synthesize your new prototyping skills in response to project requirements

Beginner Post-Processing
- Synthesize your new post-processing skills in response to project requirements

Beginner Particles and Visual Effects
- Synthesize your new VFX skills in response to project requirements

Beginner Unity Cameras
- Synthesize your new camera skills in response to project requirements

Steps
1. Overview
2. Return to the example polished prototype
3. Import your final assets
4. Bring together your Creative Core experience
5. Independent project criteria
6. Domain-specific guidance
7. Next steps

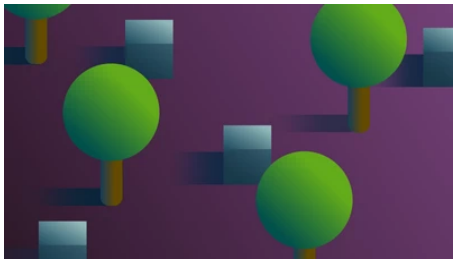
Plan your next steps

Lesson link	Challenge: Complete your independent project
Length	**20 minutes**

Summary
As you finalize and prepare to submit your independent or guided project, take some time to reflect on your accomplishments and explore possibilities as a real-time 3D creator.

In this tutorial you will:
- Plan to update your portfolio to support changing priorities and skills.
- Research sources of continuous learning in real-time 3D.

Skills
Beginner Job Preparation
- Practice continuous personal and professional growth

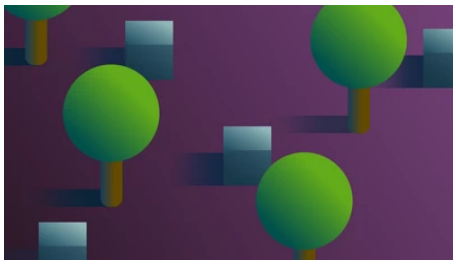


Steps
1. Overview
2. Review what you've accomplished
3. Reflect on what you've learned
4. Update your portfolio
5. Learn in your spare time
6. Evaluate your possible next steps
7. Embrace the unexpected
8. Share your journey with others
9. Next steps

Entry-level freelancing for creators

Lesson link	Entry-level freelancing for creators
Length	**15 minutes**

Summary
Freelancing is an excellent way to pursue a career as a real-time creator. Freelancing can expose you to a wider variety of projects and teams, and the pace of freelancing can accelerate your career. However, it can also be challenging. It demands a high degree of professionalism and flexibility. If you're up for the challenges of freelancing but don't know how to get started, this tutorial is for you.



<table>
<tr><td>By the time you complete this tutorial, you'll be able to:
• Identify the key challenges and opportunities of entry-level freelancing roles in real-time 3D industries.
• Research entry-level freelance roles that align with your personal experience and goals.
• Make a plan to build a portfolio to help launch a freelance career.

Materials
Explore Game Jams
Portfolios

Skills
Beginner Job Preparation
• Prepare yourself for a freelance job search</td><td></td></tr>
<tr><td colspan="2">Steps
1. Overview
2. What is freelancing?
3. What are the challenges of freelancing?
4. What are the opportunities of freelancing?
5. What do companies look for in an entry-level freelancer?
6. How do I get started?
7. Next steps</td></tr>
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Mission checkpoint

Lesson link	Creative Core: Prototyping quiz
Length	**15 minutes**