Game Development with Unity3D

Inside/Outside Unity3D

Unity3D

Engine

IDE

Assets

Tutorial

Examples

Installation

Download at
Unity3d.com/unity/download

Supporting multi-platforms.

Unity3D Editions (http://unity3d.com/get-unity)

- Personal
- Professional
- Differences
- Licenses

http://unity3d.com/legal/eula

Unity 3D: Create Project

- Create your first Unity3D project.

Getting started with a simple Unity3D project

Start Unity3D

Basic Components: Game Objects, Prefabs, Physics and Scripting

File->New Project (3D or 2D)

File->Save Scene

Getting started with a simple Unity3D project

Import packages

- Character Controller
- Particles
- Physic Materials
- Skyboxes
- Terrain Assets
- Tree Creator
- Water

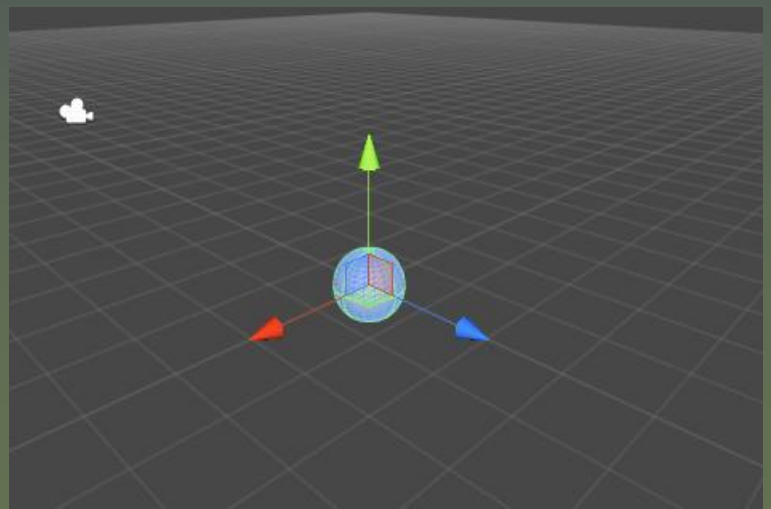
Object Creation

GameObject->3D object->sphere

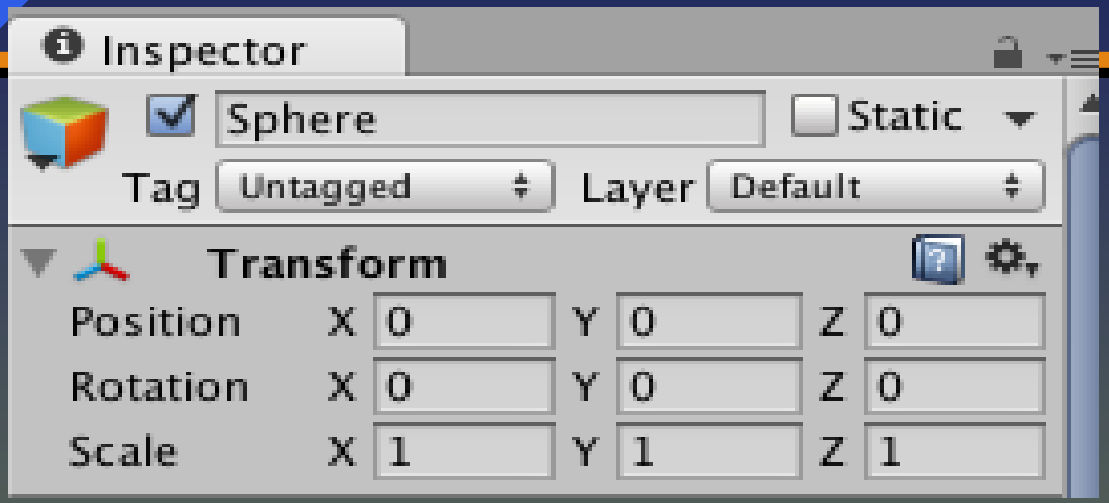
Edit->Frame Select (to show the created object)

Hold onto the arrows to move the sphere or change the position in the Inspector.

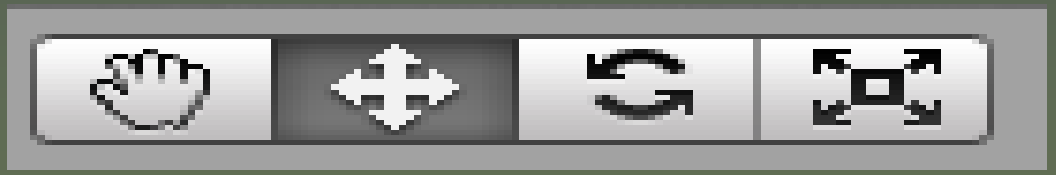
Note: Y is up.



Inspector and transform panel



Moving, translation, rotation and scaling tools



Unity 3D: Component

Select Created Game Object->Component->Physics->Rigidbody

- **Rigid Objects: non-deformable with physical properties (gravity, inertial).**

- **Non-rigid Objects:**
  - **Deformable: changeable geometry**
  - **Breakable: changeable topology.**

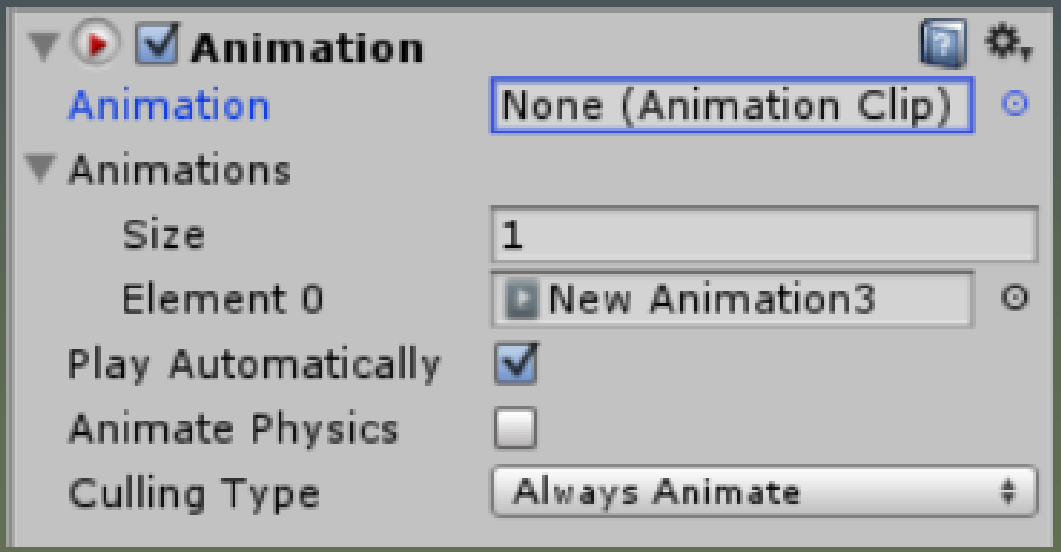
- **Intangible Objects: No predefined shape.**
  fire, clouds, …

Animation

Window-
>Animation

Click on the object to be animated.

Component-
>Miscellaneous-
>Animation



Animation

Create New Animation Clip

Click on the record button (red) at the top-left.

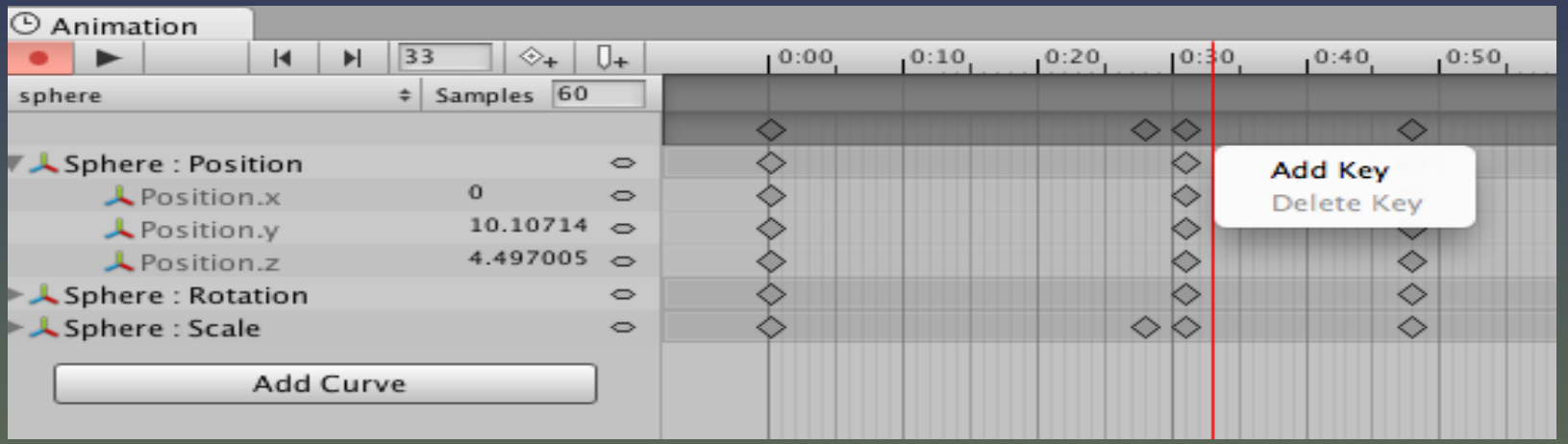
Save the new animation clip file.

Click on Curves.

Select Add Property->transform → position, rotation or scaling

Animation

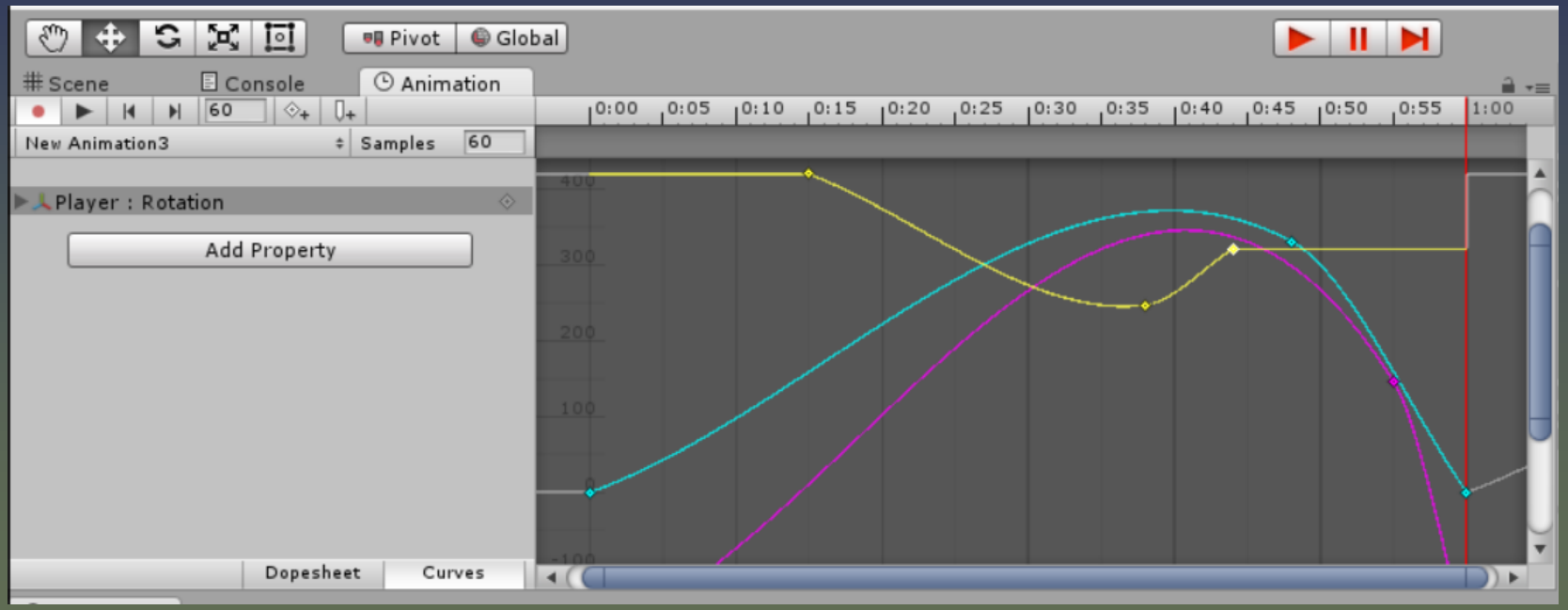
Add key frame on the timeline as many as you want.



Click on the red button again to finish making the animation clip.

Animation (Unity5)

Add key frame on the timeline as many as you want.

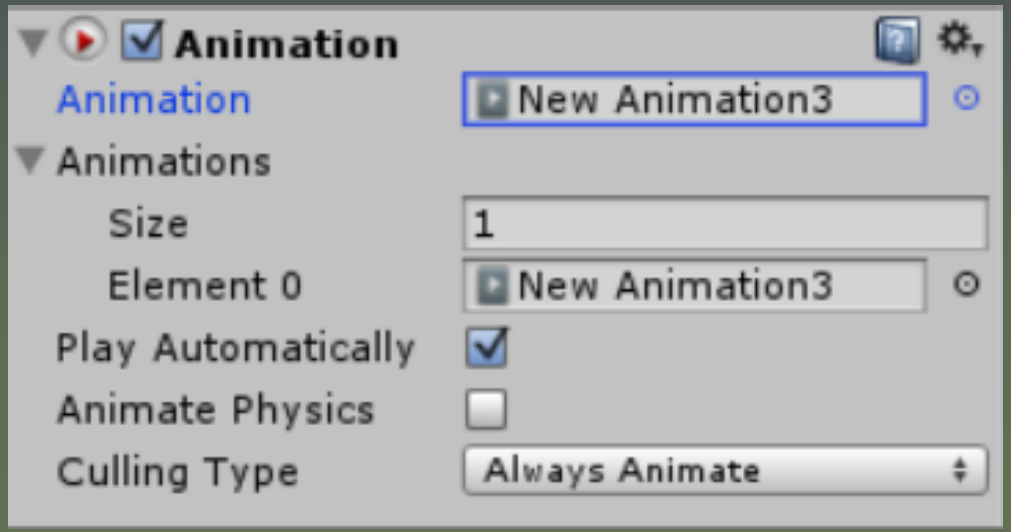


Click on the red button again to finish making the animation clip.

Animation

Go back to Unity window.

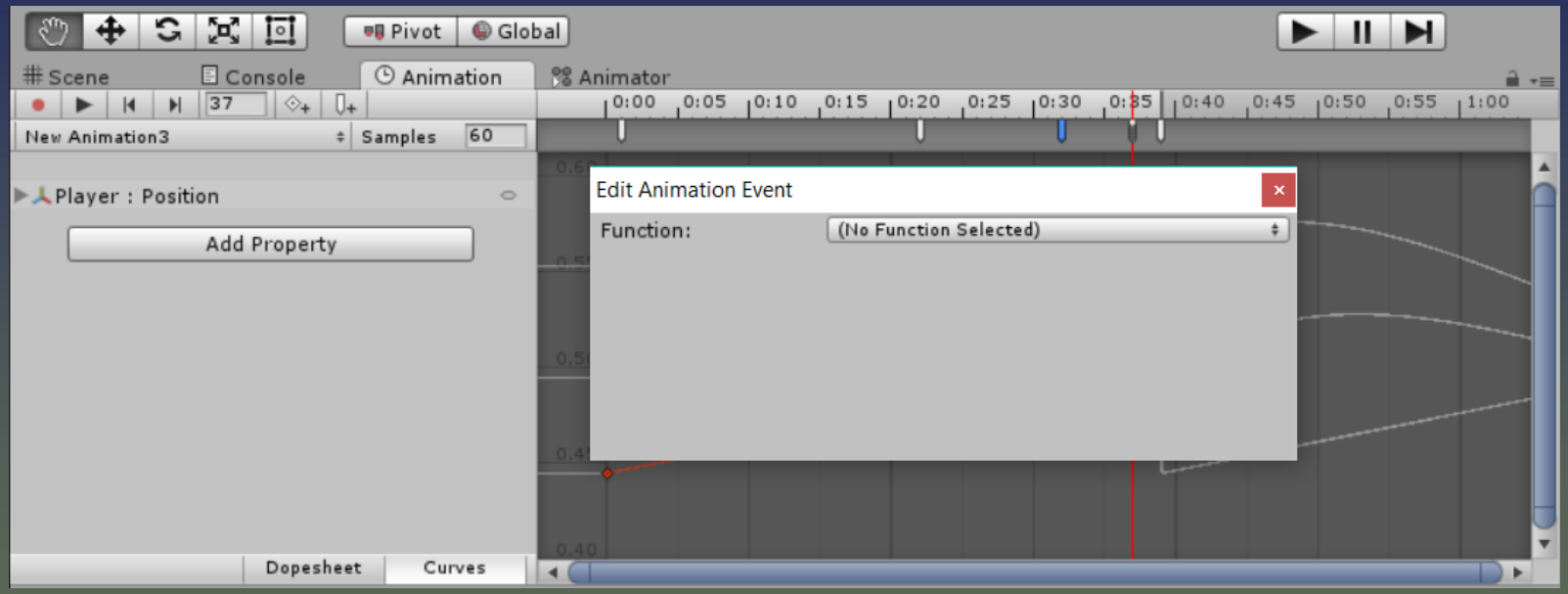
Under Inspector → Animation , change the name of animation clip from none to the one that you have made.



Animation Event

- Allows you to call functions in the object's script at specified points in the timeline.
- Add a new Animation Event by double-clicking the Event Line or by using the Event button.

Animation Event



When you add an event, a dialog box will appear to prompt you for the name of the function and the value of the parameter you want to pass to it.

Unity 3D: Light

- Game Object ->Light -> Directional Light (Default)
- Move and rotate just like any other object.

Terrain

- GameObject → 3D Object → Terrain
- In the hierarchy panel, select Terrain.
- In the Inspector: set x = -5, y = 0, z = -5.
- Click on one of the action icons in Terrain (Script) to raise/lower terrain, paint height, smooth height, paint texture, place trees, paint details, terrain setting. Adjust brush size to 1 before performing the operations.
- Paint Texture: Edit Texture -> Select

Terrain

To place trees, you have to build tree first (Game Object->3D object ->Tree), then choose“Edit Trees -> Add Trees” first to add different types of trees.

In the Add Trees popup window, you need click on the little circle at the right-most of the “Tree” row.

Select, say, Palm and then click on “Add” in the “Add Tree” window.

Go back to the Inspector, select “Mass Place Trees” from available “Trees” to add.

Physics

Unity3D provide Physics library.
- Rigidbody, collider, joint, force and etc.

Rigidbody component : gravity automatically added

Collision detection : box, sphere, capsule , mesh, whelle and terrain.

Collision call back function : OnCollisionEnter, OnCollision and OnCollisionExit.

Player (for a third-person game)

- Make sure to save the scene “File->Save Scene” (Ctrl S”) and save the project “File->Save Project”
- Next, we need add the player.
- In the Project window, drag“Standard Assets->Character Controllers->3rd Person Controller” to the Hierarchy window.
- In the Hierarchy window, double-click on the 3rd Person Controller.
- Click on the “Move selected object” icon. Then move the controller to the top of the terrain. You may have to adjust your view angle by clicking on the “xyz” icon to see the position. Click the middle of the icon to get the perspective view.

Unity 3D: Play

- Now click on the “Play” icon and use the arrow keys to controll the player.
- You should see the player running around and make sure he does not run off the edge.

Under the Hood

Unity 3D IDE

IDE: Integrated Development Environment

Project: directory and files for a specific game project.

C:\Users\ridene\Documents\New Unity Project 1

\Assets (anything you can reuse)
\Library (binary files)

Unity 3D: Assets

C:\Users\ridene\Documents\New Unity Project 1\Assets (anything you can reuse)

- \Standard Assets
- \OpenNI
- \Scripts
- _Scenes
- \Materials
- \Artwork

Unity 3D: Standard Assets

C:\Users\ridene\Documents\New Unity Project 1\Assets\Standard Assets

Objects: (Look)
- \Tree
- \Terrain
- \Charater

Lights: (Look)
- \Light Flares
- \Light Cookies

Code: (Feel: control, interaction, animation, …)
- \Scripts

Unity 3D: Objects

C:\Users\ridene\Documents\New Unity Project 1\Assets\Standard Assets\Charater:
Prefab: (Predefined Objects)
First Person, 3rd Person
\Source:
\Prototype (Look)
Constructor.FBX
\Materials (properties)
\Textures (images)
\Scripts (Feel: actions)
Java Scripts: ThirdPersonController.js
C#: MouseLook.cs

Unity 3D: Scripts

Languages:

Interpreted : Java Script

Compiled: C#

Usages:

General: under Project\Scripts

ExitOnEscape.cs

Objects: attached to objects

ThirdPersonController.js

Unity 3D: Library

cashe:

for speeding up processing

metadata:

data that describes data

previews:

for previewing scenes

ScriptAssemblies:

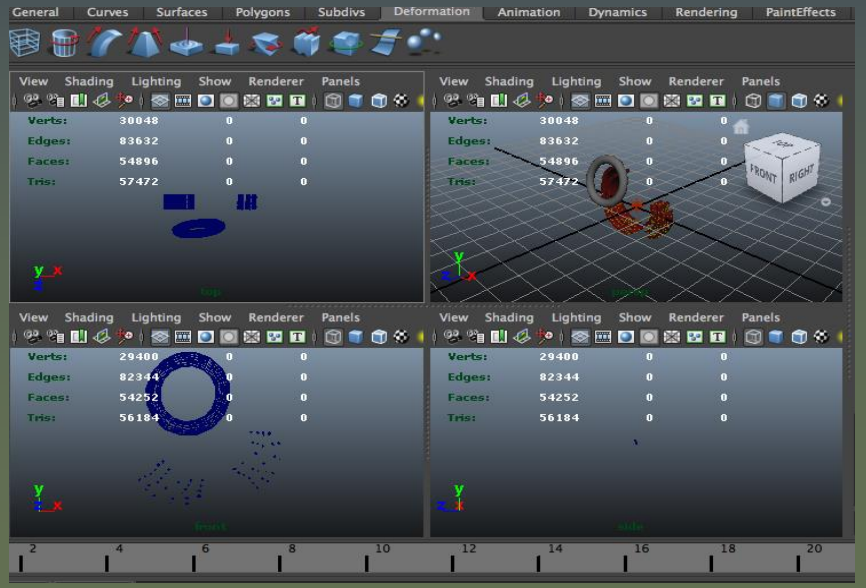
compiled object assemblies for scripts

Resources for 3D model

http://www.turbosquid.com

Autodesk Maya
http://www.autodesk.com/products/autodesk-maya/overview

Blender
http://www.blender.org



Trank you for your attention