VENTER Nicolas Friday, December 16, 2016

MOOC's book

Game Design and Development

There is a difference between watching a movie and making one, as well as play a game and create one. The specialization makes learn how to develop a (video) game. It is composed of 5 courses.

The first one is Introduction to Game Development in which it makes an introduction to one of the most famous video games engine, Unity 3D. This course is presented by Brian Winn.

The second course is Principles of Game Design which presents the process of a game development. This course is presented by Casey O'Donnell.

Introduction to Game Development

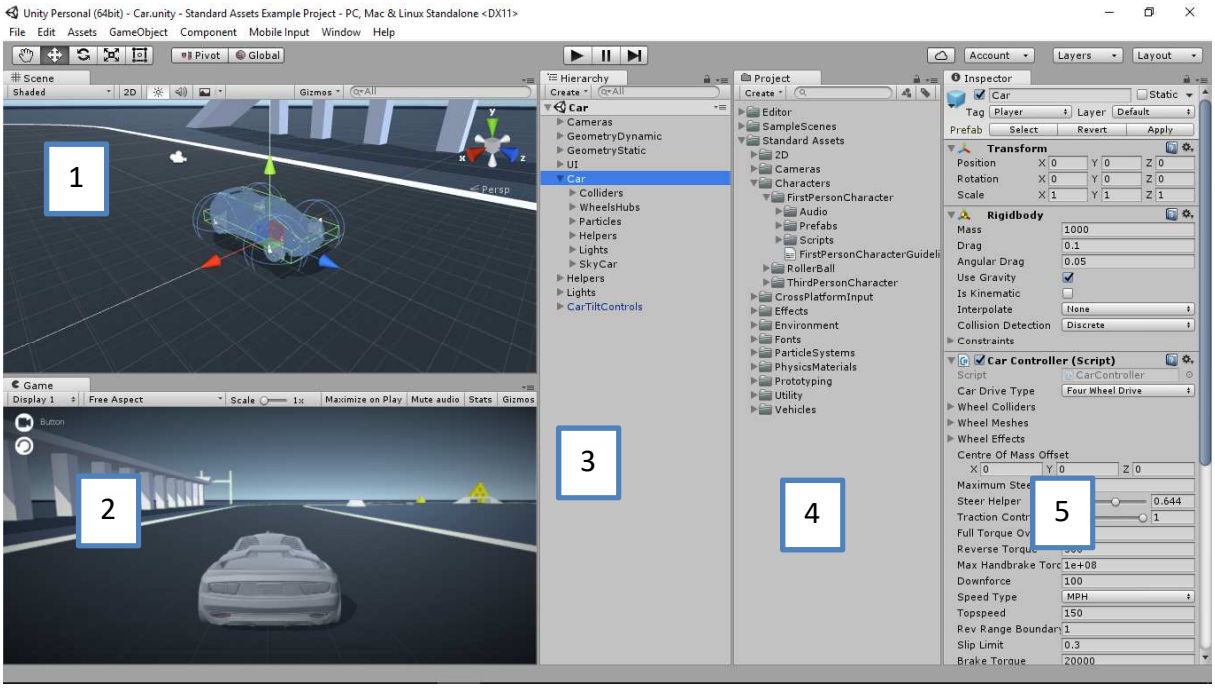
Intro to Unity 3D

Video Game engine

Unity 3D is a video game engine, it is a tool which helps game developers for everything: the rendering of models or lights, the 3D physics like gravity or friction, the sound and its propagation, particle physics … All these features are long and difficult to implement. An engine is used for making easy the development of a game.

Development software

Unity 3D is a free development software with a huge community. Projects can be shared and some models can be bought, like 3D models, Artificial Intelligence, sounds …
Standard Unity view (Window -> Layouts -> 2 by 3):



1) Scene View = the editor view that allows you to navigate the 3D world, as well as select and manipulate 3D assets in the world.
2) Game View = Upon hitting “play” in the top middle of the screen, you’ll compile and preview the gameplay in this view. By default the view shows the active camera.
3) Hierarchy Panel = This is a hierarchical list of objects in the game. You can select objects, rename them, and delete them (Shift-Delete)
4) Project Panel = This shows all the usable “assets” located in the project’s Assets folder.
5) Inspector = Allows you to view and edit the component settings for the selected gameobject in the Scene View, Hierarchy, or Project Panel.

Development tool

In Unity, there are objects. Each one has a location and position on over its parent. It has scripts and components related to itself. It can be the reflection of a prefab, a model object.
Unity contains a lot of prefabs, scripts and other features which can be add to an object.
The scripts are written in C# or javascript (only C# in this course). Some functions are automatically called like Start, Update, OnCollisionEnter, … MonoDevelop is an IDE proposed by Unity for developing script.

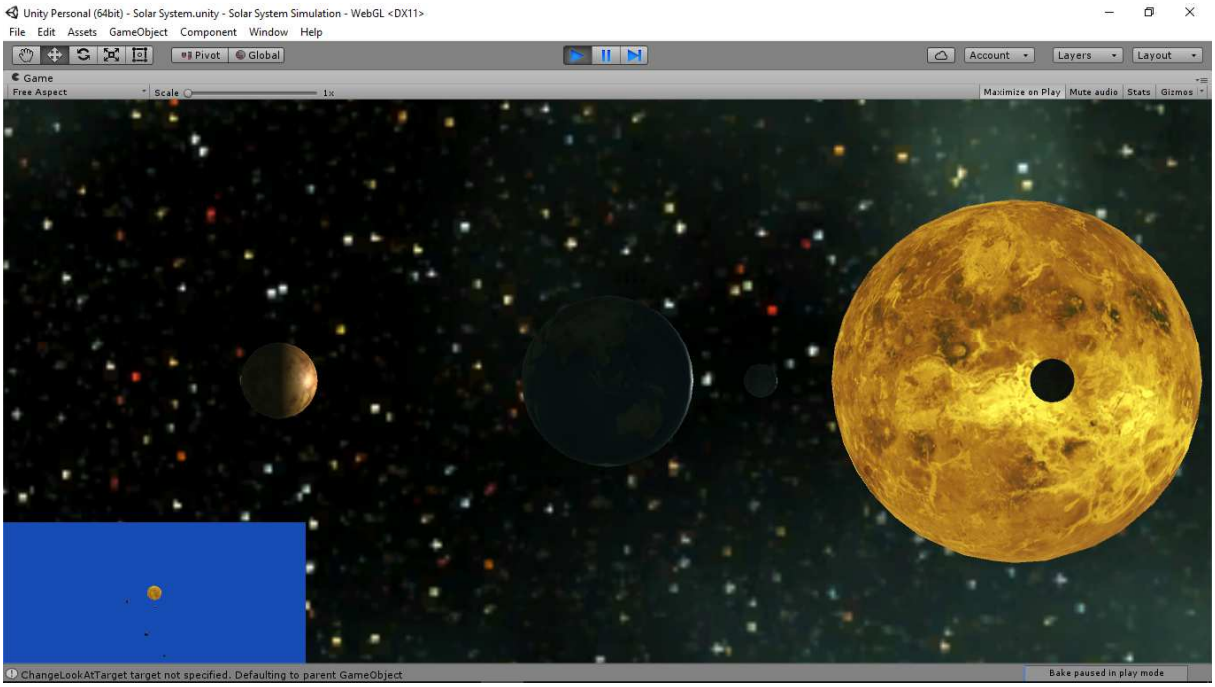
Projects in Unity 3D

Solar System

For this project, I learn how to:

- Import a package of assets,
- Create a 3D sphere and add a texture on,
- Put scripts and audio source on object,
- Set the light and background,
- Use cameras for minimap.

In Unity, package of assets can be imported (and exported). Assets can then be used in the project.
The Solar System is composed of the Sun and 8 planets rotate around the Sun and rotate on themselves. The Sun is luminous and noisy. The Earth has a Moon which is rotating around the Earth.
In the project, each planet and the Sun are 3D spheres on which an imported texture is set on. The background is a imported. There is a minimap for seeing all the Solar System. You can change the view in pressing on the target you want follow: for example if you click on the Moon, the Moon will be the center of the view while the rotation.

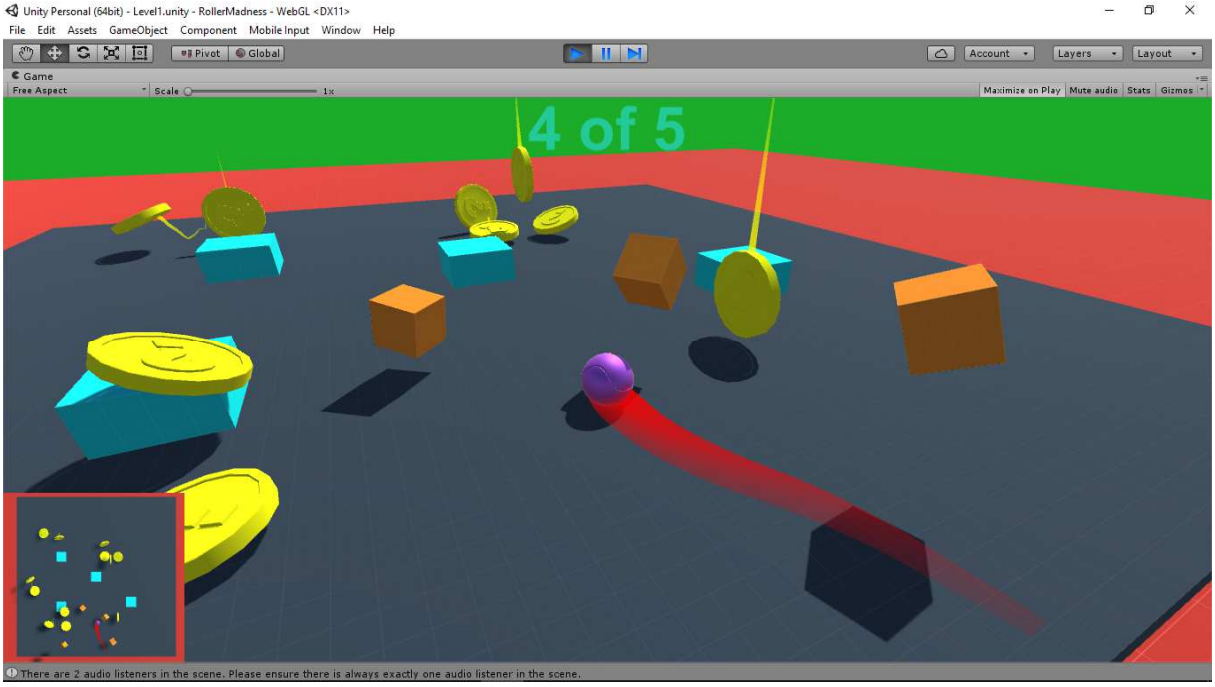


Roller Madness

For this project, I learn how to:

- Use standard package,
- Create and set a prefab
- Use physic, set the materials and the colliders,
- Make a trail and other aesthetic effects,
- Spawn objects,
- Create an animation and a particle explosion.
- Change the state of the game (playing, gameOver, …) and load a scene in game.

When you create an object which will be several times in the world, you create the prefab associated. With it, you can modify all the instances of this prefab easily.
In the project, you control a ball (with arrows) which moves in rotating on itself. The friction is set by setting the material of the ball and the material of the ground. You can jump (with spacebar) to pick up coins and avoid enemies, which randomly spawn. There is an animation for the death zone, a trail for the ball, the coins and the enemies, and a particle explosion when picking a coin or exploding the ball or an enemy.

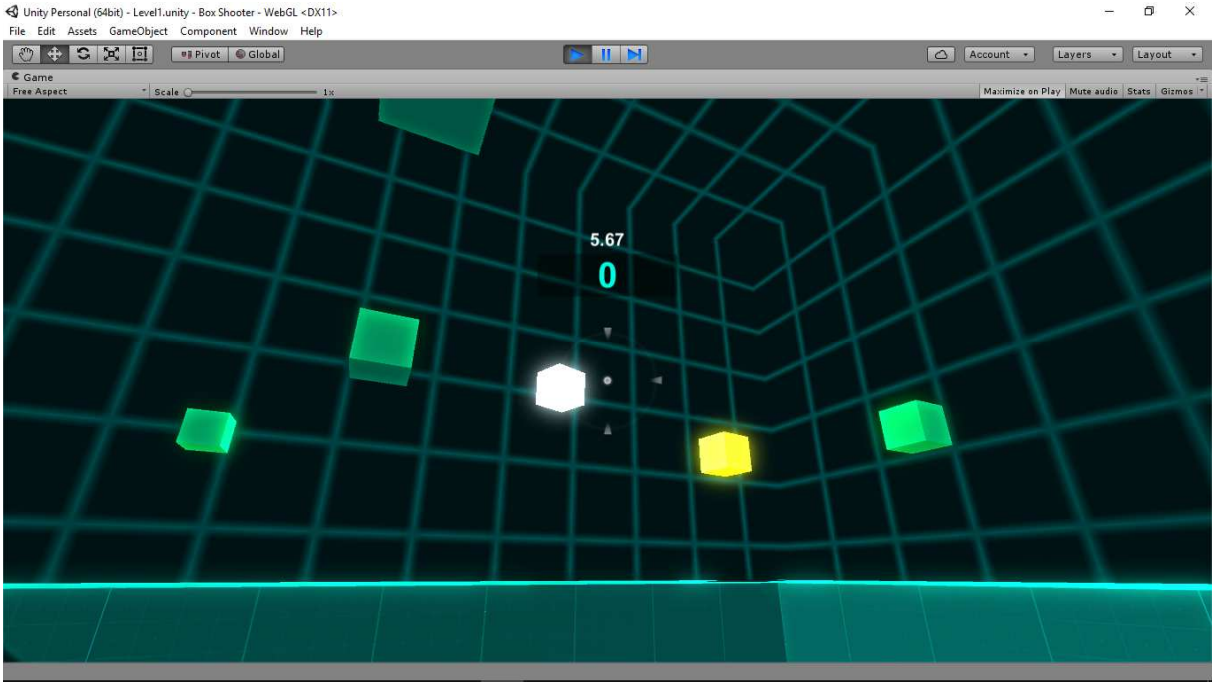


ShooterBox

For this project, I learn how to:

- Create projectiles,
- Use others features of animation tool,
- Create and configure a script,
- Use the time,
- Use random and instantiate object with a script,
- Create a 3D menu.

In the project, you have to shoot on box which are spawning randomly and randomly moving vertically, horizontally or rotating. There are 3 types of box: time bonus, time malus, and score bonus.



Principles of Game Design

Communicate an idea

Game designer

The job of a game designer is at first to imagine a new world full of game mechanics or systems that players are going to interact with. At second, a game designer has to communicate what he has imagined by documentation and sometimes by programming.

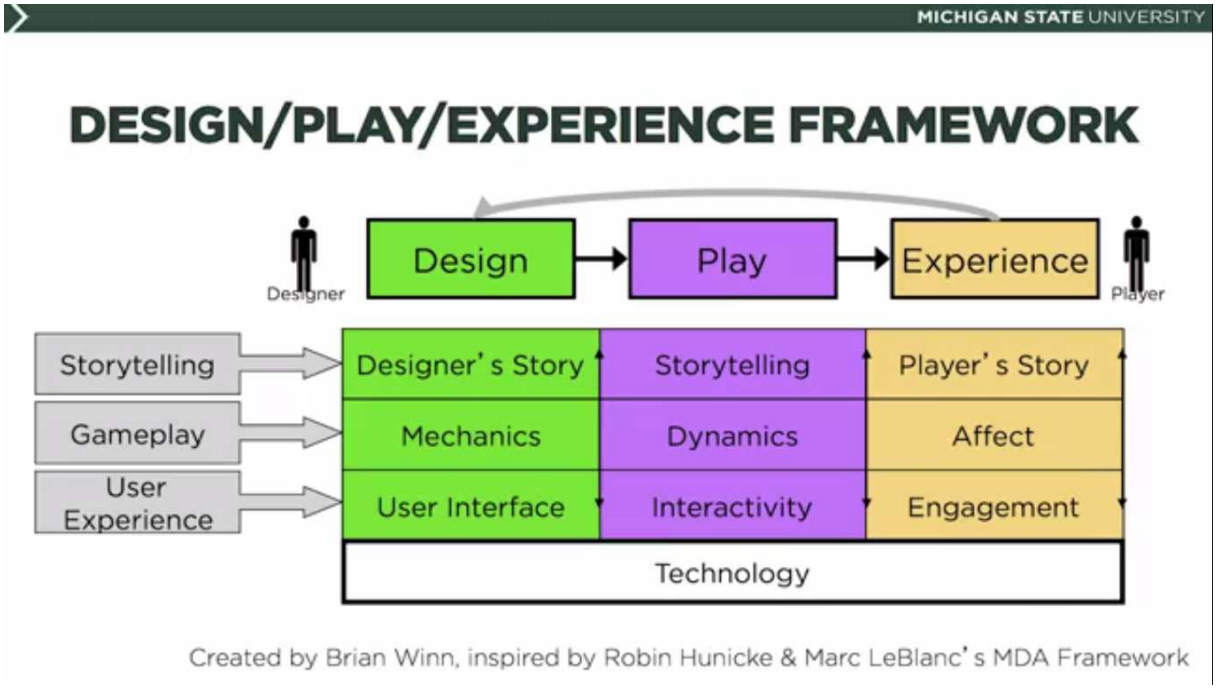
Imagine a game

To create a new game, you need a new idea. The fact is that the inspiration comes from current and old games. Then you have to develop your idea to make it enough different from the others. But there is a difference between an original idea and a good idea. And for knowing what makes an idea good, you have to know what makes an idea bad. For that you have to play games and take notes about each good and bad point you noticed. You also have to share your idea to know what is good and what is bad. Don’t be scared about stealing idea. It’s rare and if I’m a game designer I won’t use your idea but mine.

Design Play Experience Framework (DPE)

The Game designer uses the DPE Framework to stay focus on the goal of a game.
3 Important points:

- All games tell a story, more or less developed. The story is told by playing the game and the player lives this story.
- All games have mechanics of gameplay, like running, jumping, shooting … The dynamics are the way the player use them, like killing an enemy. The affects are the sensations felt by the player.
- All games have a user interface. The interactivity is the utility of the interface when you are playing. The engagement is the way that the player uses it.



Examples of affects:

- Sensation: Game as sense-pleasure
- Fantasy: Game as make-believe
- Narrative: Game as drama
- Challenge: Game as obstacle course
- Fellowship: Game as social framework
- Discovery: Game as uncharted territory
- Expression: Game as self-discovery
- Submission: Game as pastime

Examples of games:

- Charades: Fellowship, Expression, Challenge.
- Quake: Challenge, Sensation, Competition, Fantasy.
- The Sims: Discovery, Fantasy, Expression, Narrative.
- Final Fantasy: Fantasy, Narrative, Expression, Discovery, Challenge, Submission.

High Concept Document

The High Concept Document is the document with which you will sell your idea to an editor. It is a relatively short document (between 2 and 4 pages). It contains the premise of a game, its intended audience, the genre, the unique selling points and the target platforms.

The project is to create a High Concept Document.

Describe an idea

Game world

The game world is like a “magic” circle in which the player has to enter for playing the game. This circle is limited by his rules and contains all the elements needed for playing, all that the player must accept. For example, in Dodgeball, the player touched by the ball goes in prison; he must accept that a prison exists in the game. More generally, the game world is the diegetic: the world in which the story takes place.

Storytelling

Each element of a game is a part of the story, the date, the location, the characters, but also the mechanics of gameplay. The game designer must make enter the player to the world he created and makes him live the story he wanted to share. The world has to be easy to enter and the story interesting, or the player will feel lost.

Story Bible

The Story Bible is the document which describes the game world. It doesn’t contain any technical implementation. It describes how the game world is.

The project is to create a Story Bible.

Share an idea

Level Design

For making a game funny to play, he has to be balanced. If it’s too hard, the player will be frustrated. If it’s too easy, the player will be bored. A game has to be in the middle.

Game Design Document

The Game Design Document is the document which describes entirely the game you want to create. It contains the game world, the mechanics of gameplay, the elements which make it unique, all that is needed to develop the game.

The project is to create a Game Design Document.

Test an idea

Prototyping

The prototype has to contain the mechanics you want to present and to know if they are good or not, and how to make them better.

The project is to create a Prototype of a game.