Computer Graphics

Section one

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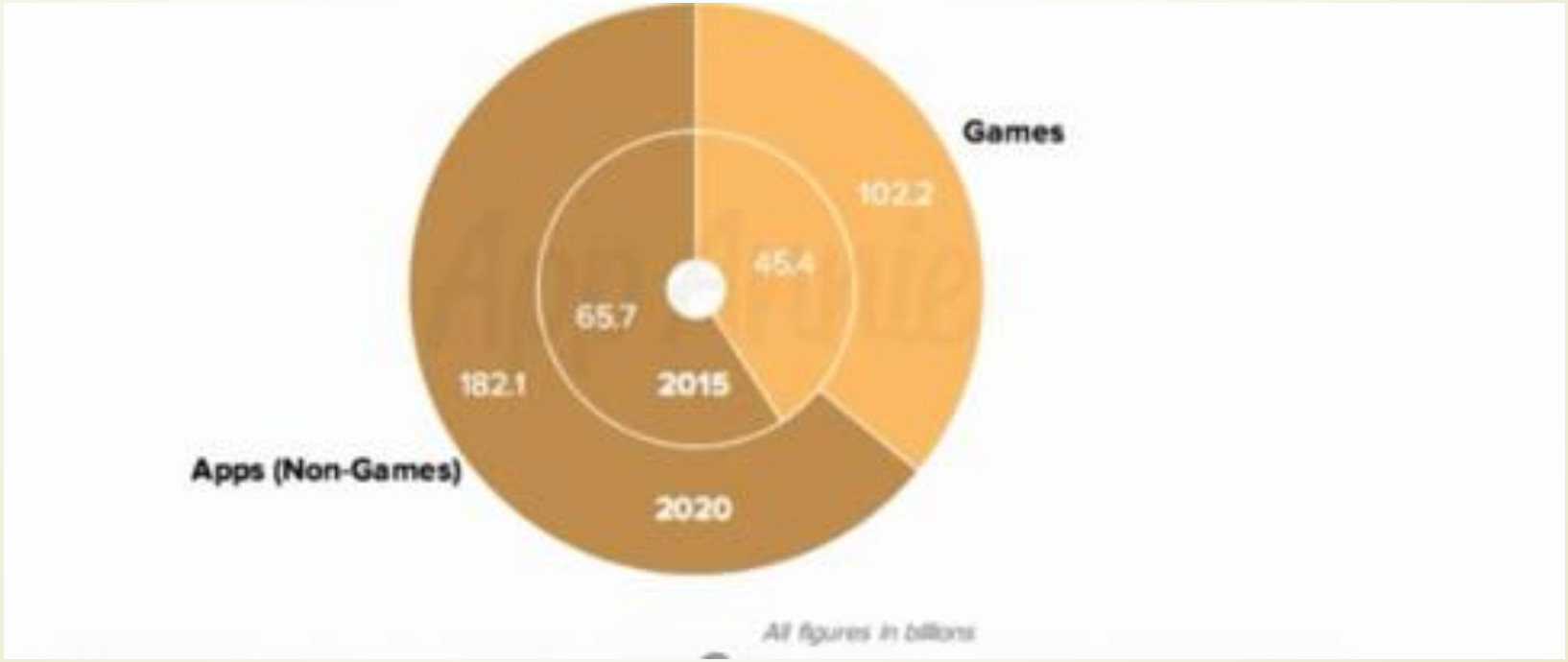
Why to learn Game Development?

- 2016: Game hit $ 41.5 billion.
- By 2020: Game will hit $ 74.6 billion.

Download Comparison

- Mobile App Forecast – Annual Downloads (2015 vs. 2020)



What is unity?

- Unity is a cross-platform game engine with a built- in Integrated Development Environment (IDE) by unity technologies, released in 2005 at Apple INC.
- A game engine which allows you to run the games you create in different environments.

Why unity?

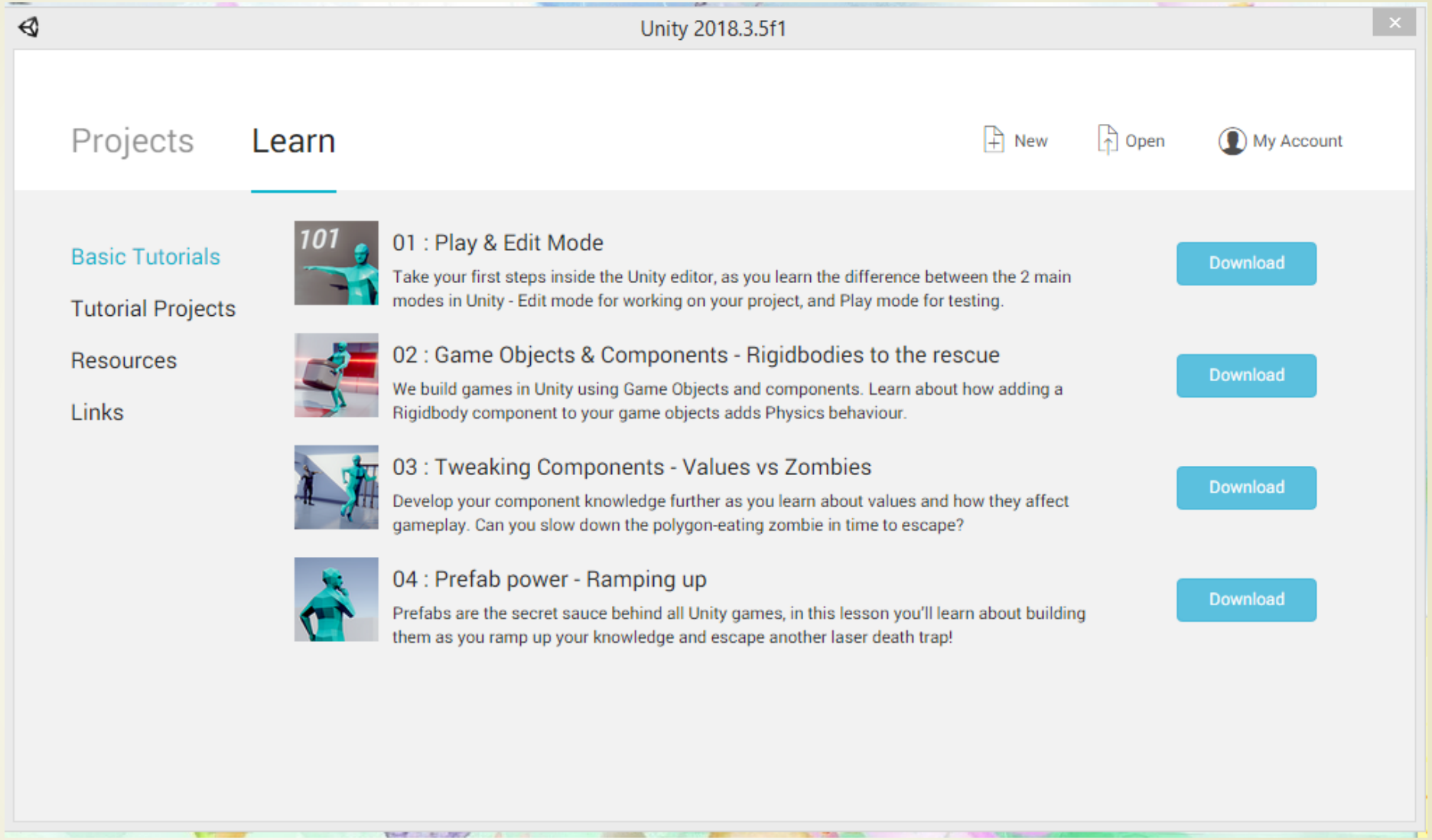
- Game development platform easy to use.
- Can launch your game free (some conditions apply)
- Very powerful tool
- Provides high-quality resources to help you while you develop your interactive content.
- Used to create both 2D and 3D games.
- Supports 27 Platforms.

Example: Pokémon go

Visit this link to see all games: https:// unity3d.com/showcase/gallery

Unity Interface:

1. On the upper left, you will notice two tabs Projects and learn.
   - **Learn tab:** has a lot of information. You can spend a few weeks going on through all the tutorials, sample projects, resources and links.
   - **Projects tab:** contains projects you've created.


Unity 2018.3.5f1
Projects
Learn
New
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My Account
Basic Tutorials
Tutorial Projects
Resources
Links
101
01 : Play & Edit Mode
Take your first steps inside the Unity editor, as you learn the difference between the 2 main modes in Unity - Edit mode for working on your project, and Play mode for testing.
Download
02 : Game Objects & Components - Rigidbodies to the rescue
We build games in Unity using Game Objects and components. Learn about how adding a Rigidbody component to your game objects adds Physics behaviour.
Download
03 : Tweaking Components - Values vs Zombies
Develop your component knowledge further as you learn about values and how they affect gameplay. Can you slow down the polygon-eating zombie in time to escape?
Download
04 : Prefab power - Ramping up
Prefabs are the secret sauce behind all Unity games, in this lesson you'll learn about building them as you ramp up your knowledge and escape another laser death trap!
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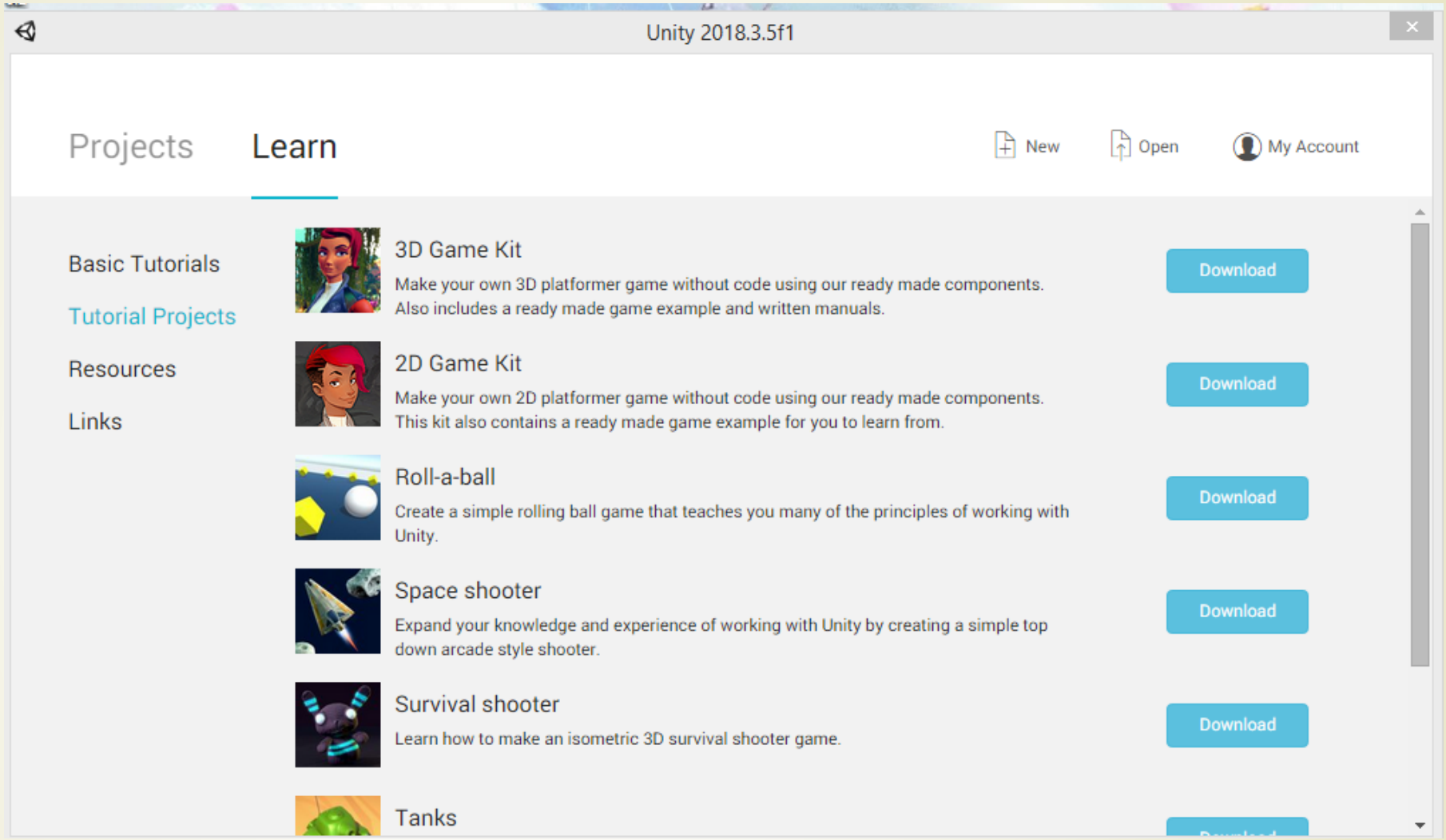
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Make your own 3D platformer game without code using our ready made components. Also includes a ready made game example and written manuals.
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2D Game Kit
Make your own 2D platformer game without code using our ready made components. This kit also contains a ready made game example for you to learn from.
Download
Roll-a-ball
Create a simple rolling ball game that teaches you many of the principles of working with Unity.
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Space shooter
Expand your knowledge and experience of working with Unity by creating a simple top down arcade style shooter.
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Survival shooter
Learn how to make an isometric 3D survival shooter game.
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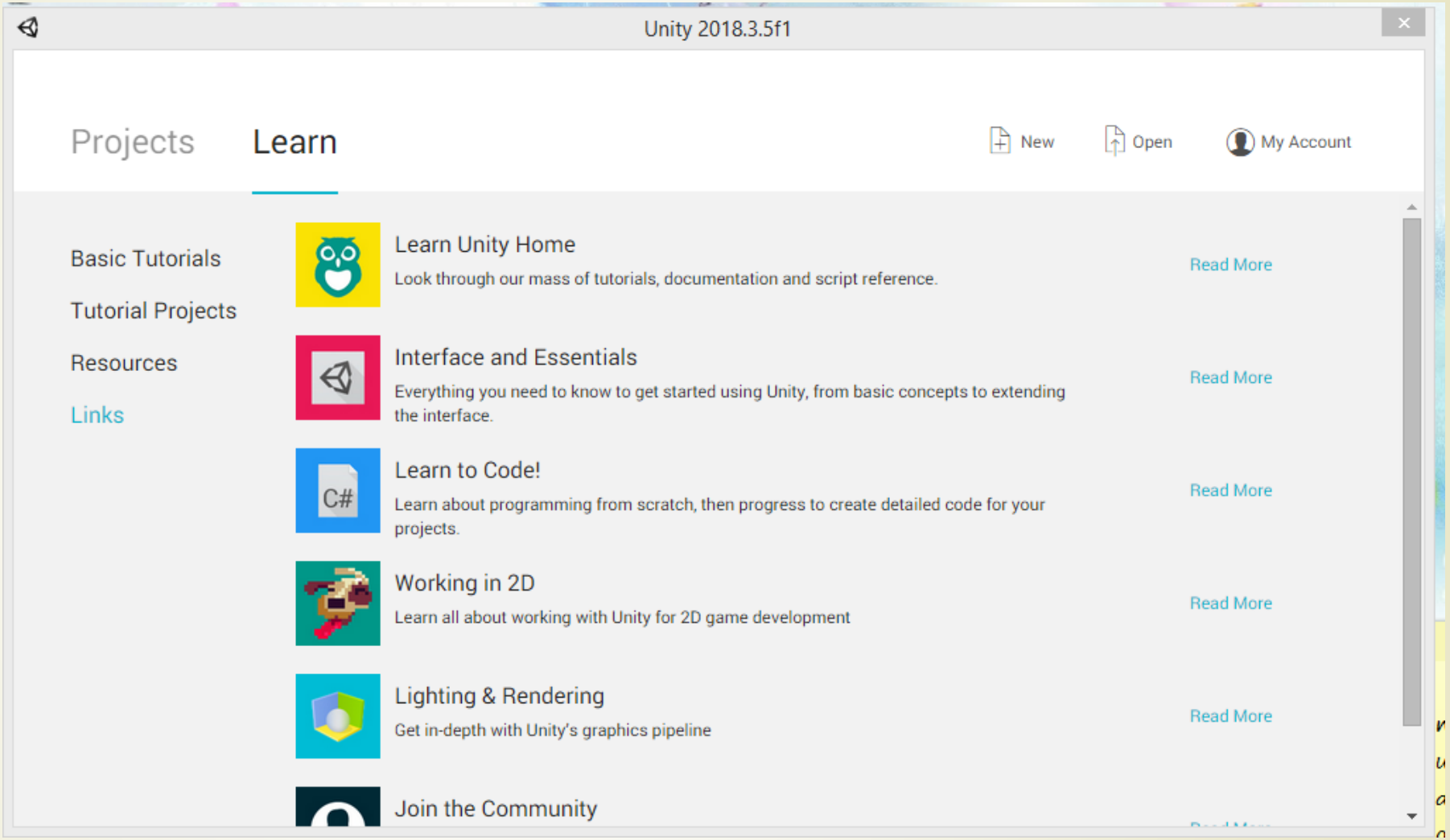
Tanks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Learn all about working with Unity for 2D game development
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Get in-depth with Unity's graphics pipeline
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Join the Community

2. On Disk:

- A history of the last projects you have worked on, and can be opened be selecting them.

3. In the Cloud:

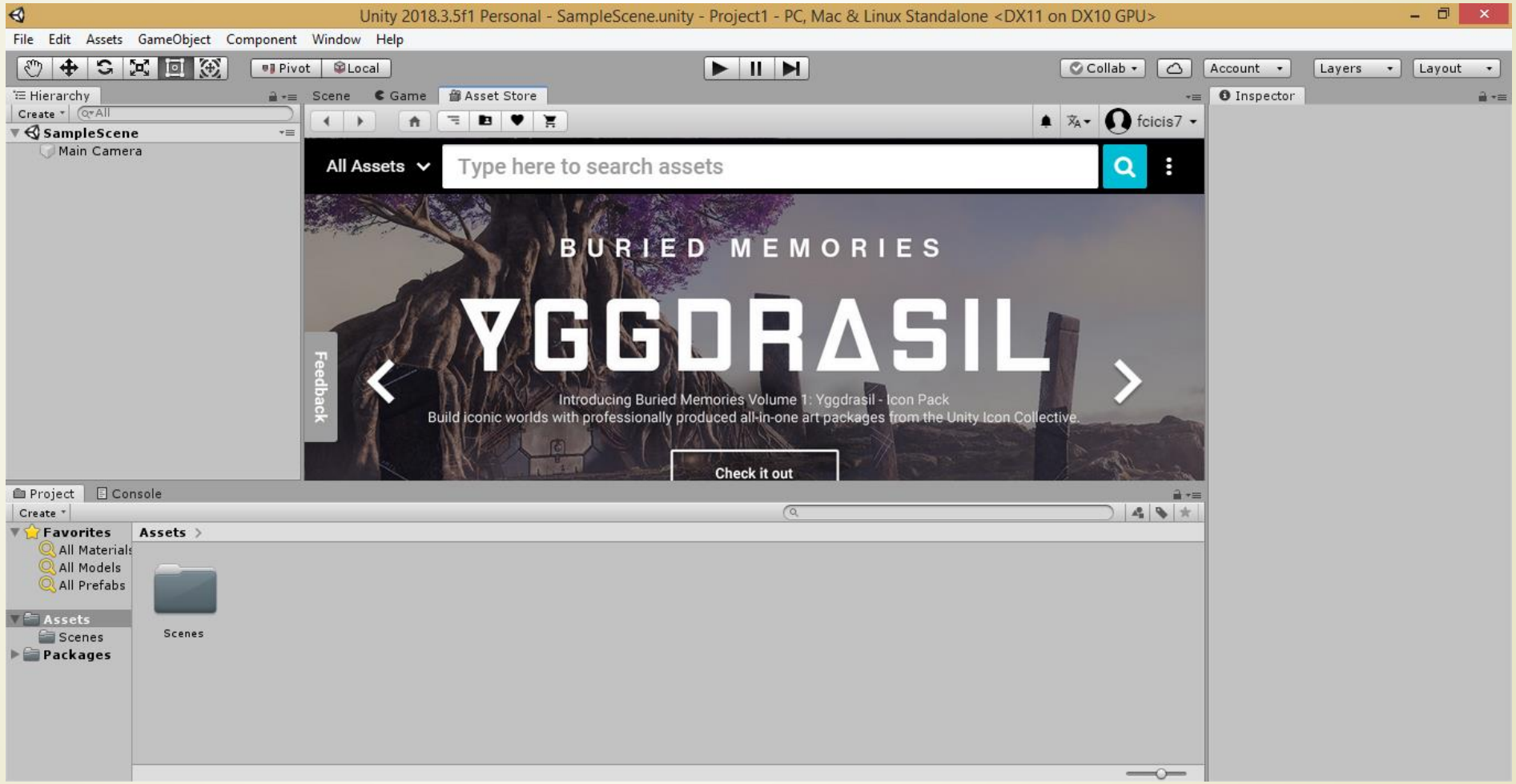
- This refers to using cloud-based collaborative projects.
- Unity teams has a feature called unity collaborate that allows team members to update files in a project and publish those changes to the cloud. Other team members can then view those changes and decide whether to sync their local projects with the changes or ignore them

- When creating new project, you will the unity interface which is made up of a number of window views:

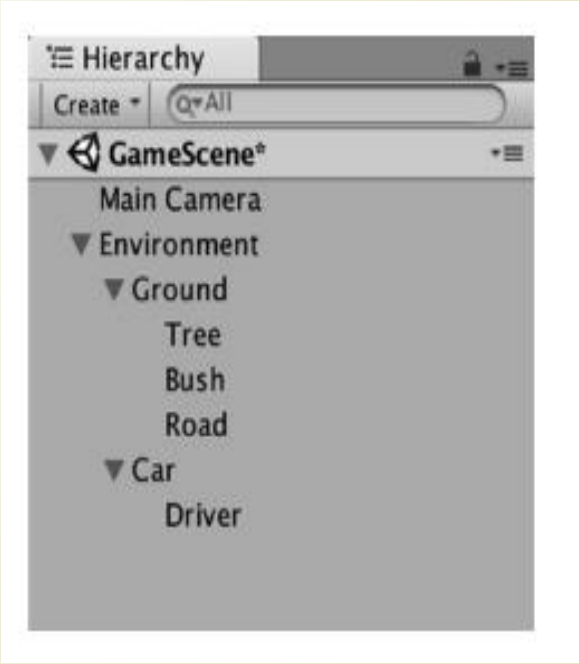
1. **Scene view:**
   - Everything that happens in your game takes place in a scene.
   - Contains the gameobjects and they hold all the functionality relevant to that scene.
   - The scene view is where we we'll construct our game and do most of our work with sprites and colliders.
   - The scene view is where we work with the gameobjects.
2. **Game View:**
   - Where you'll view and play your actual game while you are working on unity editor.
   - There are ways of building and running your game outside of unity editors such as stand-alone applications, in a web browser, or on mobile phone

3. Asset Store

- Unity asset store is online store where artists, developers, and content creators can upload content to be bought and sold.



4. **Hierarchy Window:**
   - Displays a list of all objects in the current scene in hierarchal format.
   - Allows for the creation of new gameobjects via “create ” drop-down menu in the top left corner.
   - The search field allows a developer to search for specific gameobjects by name.
   - In unity, gameobjects can contain other gameobjects in what’s called a “Parent-child” relationship



5. **Project Window:**
   - The project window gives an overview of all the contents in the Asset Folder.
   - It's helpful to create folders in the Project window to organize items.
6. **Console view:**
   - The console view will display errors, warnings and other output from your unity applications.
   - C# Scripting Functions that are used to output information to the console view at runtime to aid in debugging.
7. **Inspector Window:**
   - Is one of the most useful and important windows.
   - Scenes in unity are made up of components such as colliders, sprites and rigidbody.

- **Configure and customize the layout**
  - Unity allows a user to create a custom editor layout

    Windows → Layout → then Select your favorite layout
- **Tool Bars:**
  1. Transform toolset.
  2. Paly- Pause- and step control.(Play Mode and Edit Mode)
  3. Handle position control

What is a GameObject?

- Every object in your game is a gameobject.
- A gameobject can't do anything on its own, you need to give it properties before it can become a character, an environment or special effect.
- A gameobject is a container, you add pieces to the gameobject container to make it into a character, alight, a tree, a sound or whatever else you would like it to be. Each piece you add is called component.
- Depending on what kind of object you want to create, you add different combinations of components to a gameobject.
- You can think of gameobject as a empty cooking pot, and components as different ingredients that make up your recipe of gameplay.
- Unity has lots of different built-in components, and you can also make your own components using the unity scripting API.

- **Practice in unity:**
  - How to create folders in Asset.
  - How to create scenes.
  - How to create C# Script.
  - How to create new Gameobjects.
  - Components.
    1. Rigidbody 2D
    2. Box Collider
    3. Circle Collider
    4. Sprite Render