MEMBATIK 2021
MEMBUAT BAHAN AJAR BERBASIS TIK

BELAJAR SERU DENGAN

GIM EDUKASI

BERBASIS UNITY

Annisa Nurrahmania – Magister Desain BU ITB 2020

Annisa Nurrahmania

Digital Designer

2019-Now: Graphic Designer + Game private server's admin

President University – DKV 2016

ITB – Magister Desain BU 2020

annisa98n.carrd.co

Kenapa Edugame?

Edugame

adalah game digital yang dirancang untuk pengayaan pendidikan mendukung pengajaran dan pembelajaran, menggunakan teknologi multimedia interaktif (Widiastuti, 2012)

Keypoint

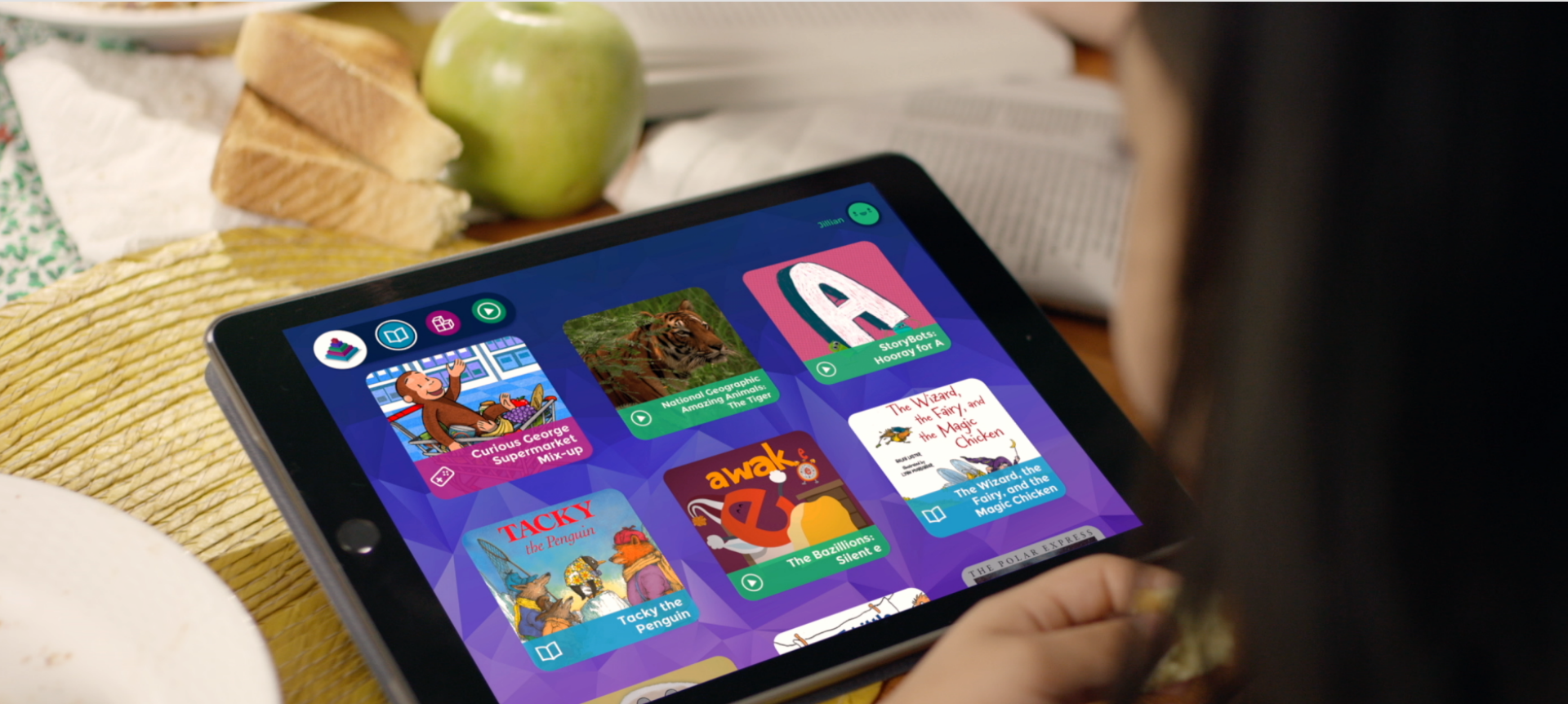
1

Era Digital

2

Informasi pembelajaran yang disajikan dalam bentuk buku atau pembelajaran konvesional dirasa kurang menarik

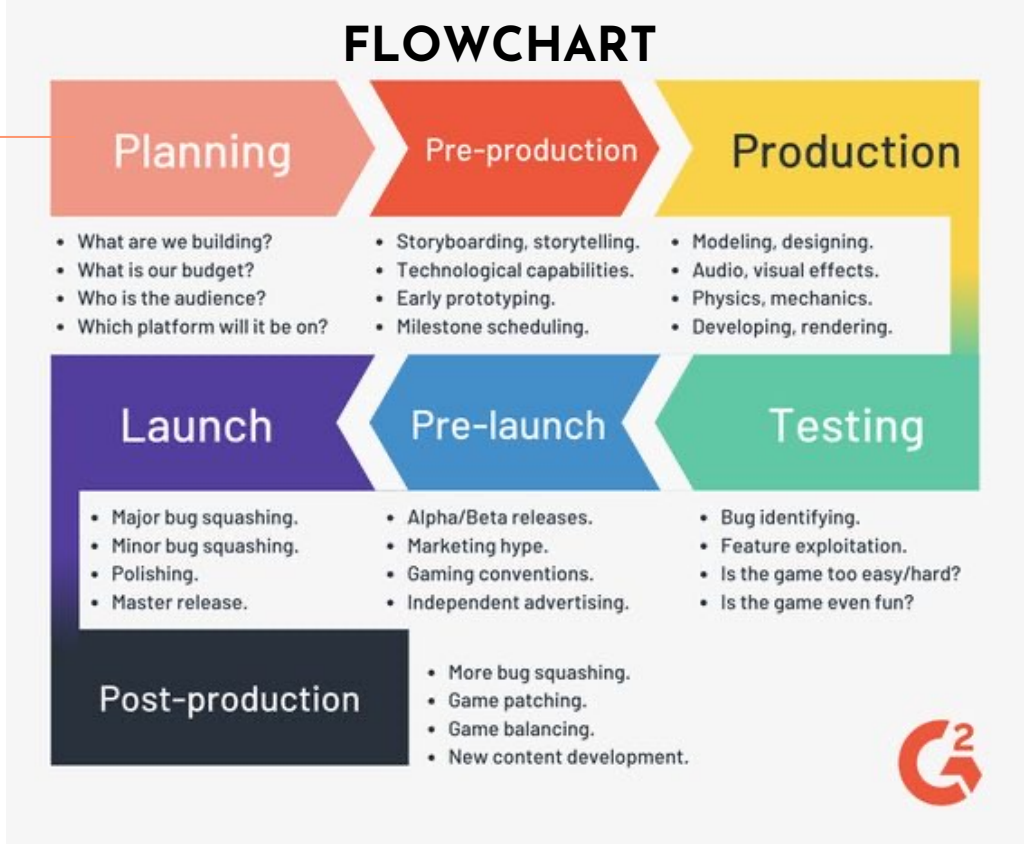
SOLUSI?


Jillian
Curious George Supermarket Mix-up
National Geographic Amazing Animals: The Tiger
StoryBots: Hooray for A
The Wizard, the Fairy, and the Magic Chicken
The Wizard, the Fairy, and the Magic Chicken
TACKY the Penguin
Tacky the Penguin
awak e
The Bazillions: Silent e
THE POLAR EXPRESS

Perancangan Game

5W+1H (What, Who, Where, When, Why, How)

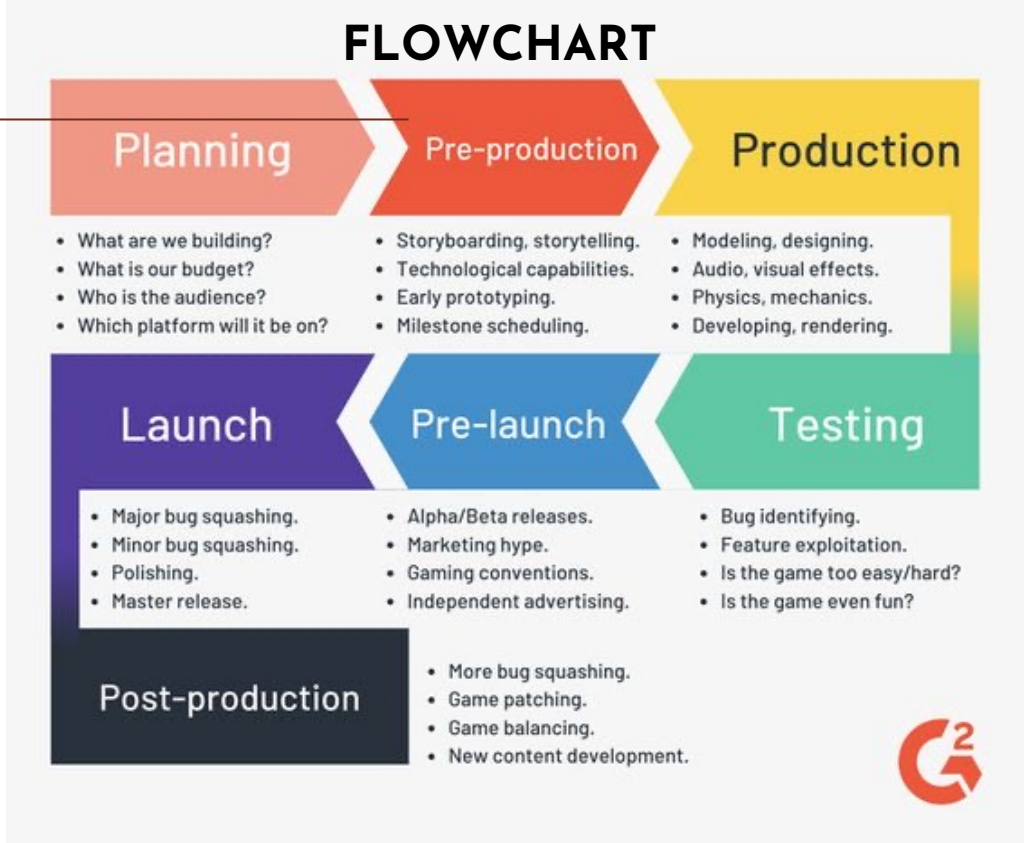
Apa kebutuhannya?
Siapa sasarannya?
Platform yang digunakan?
Kapan akan digunakan?
Mengapa game?
Bagaimana proses pembuatannya?



Konsep perancangan

Visual,
UI,
Gamifikasi

Brainstorming,
Sketch,
Paper/wireframe
prototype

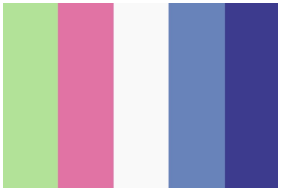


Hasil brainstorming

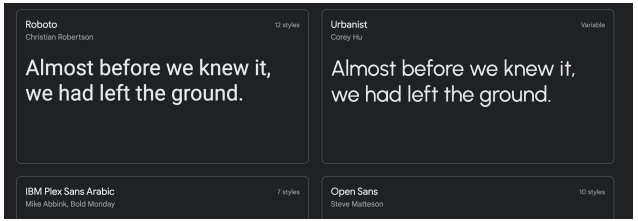
Visual

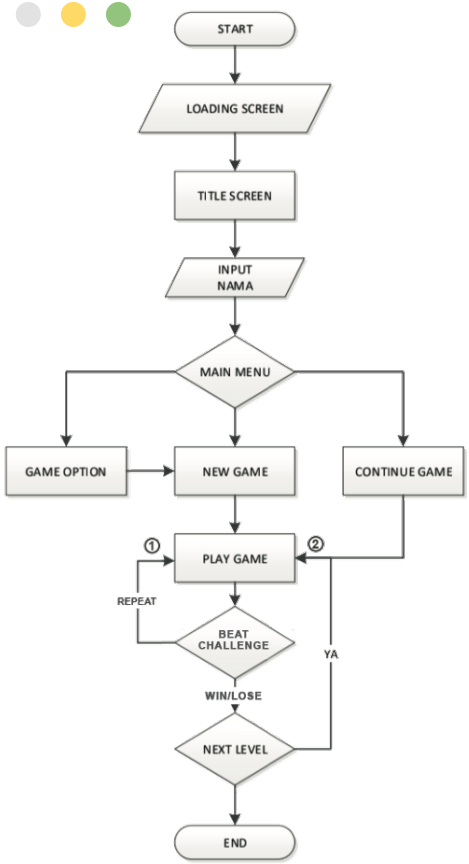
- Warna
- Typography
- Karakter
- UI
- Audio

https://coolors.co/



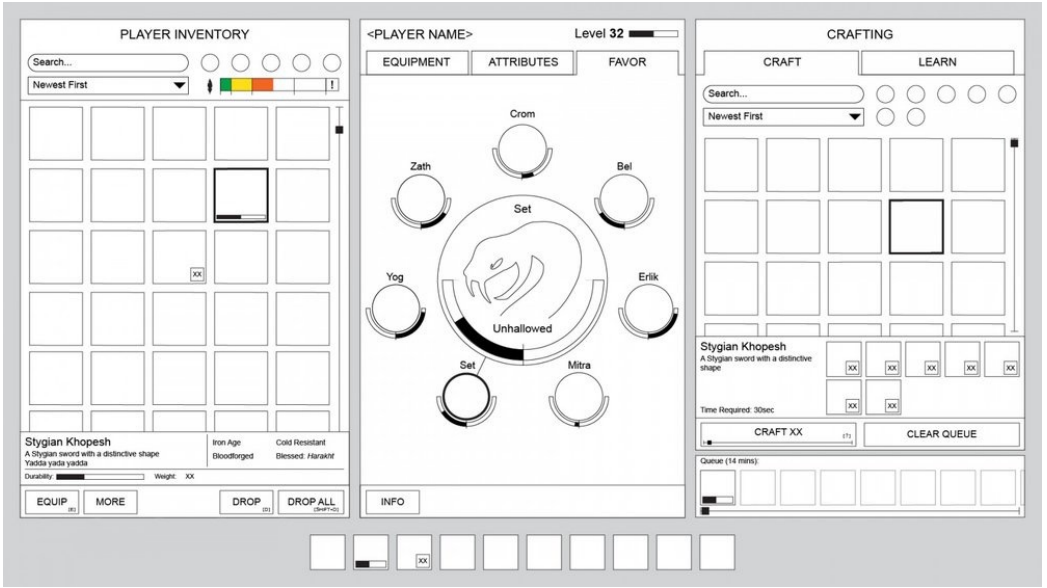
https://www.dafont.com/
https://fonts.google.com/





Gamifikasi

Hasil brainstorming

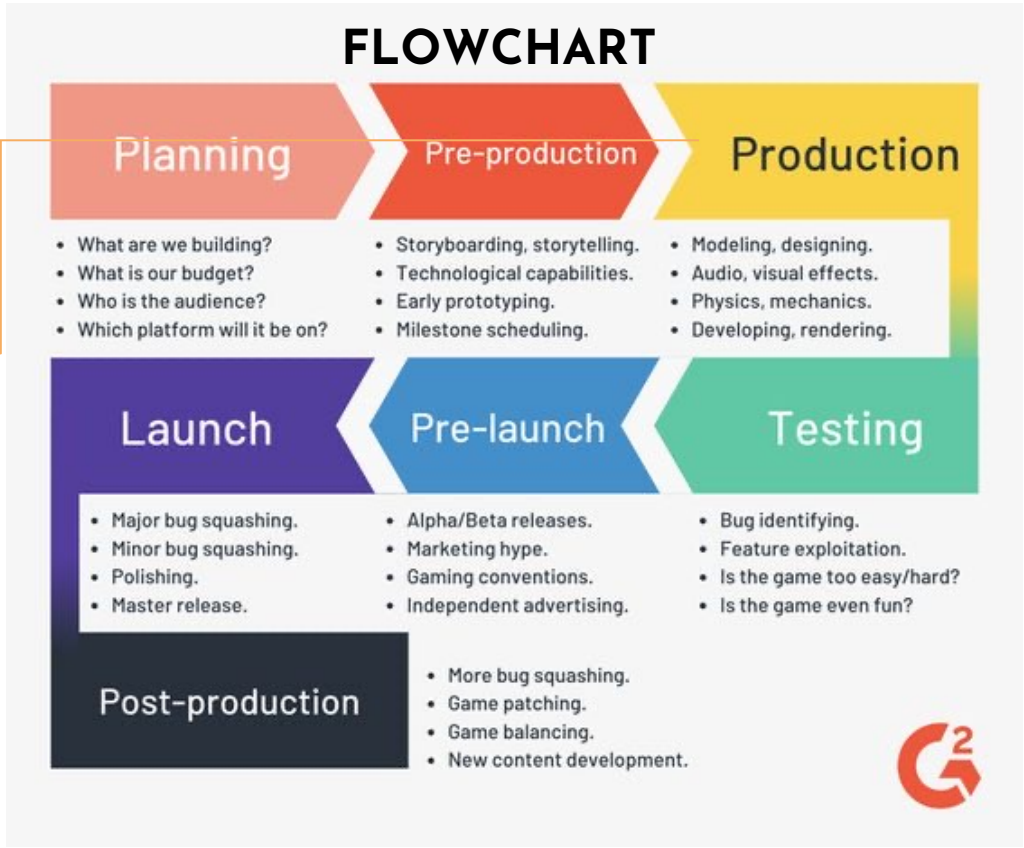


Pemrograman (C#, Java Script)

Aset game (Objek 2D/3D)

Game Engine

3D/2D Software

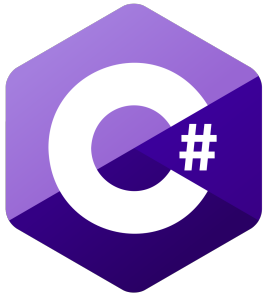


Unity Sebagai Game Engine

Game Engine:

Perangkat lunak yang digunakan untuk pembuatan dan pengembangan sebuah *game*

Bahasa pemrograman



Minimum requirements	Windows	macOS	Linux (Support in Preview)
Operating system version	Windows 7 (SP1+) and Windows 10, 64-bit versions only.	High Sierra 10.13+	Ubuntu 20.04, Ubuntu 18.04, and CentOS 7
CPU	X64 architecture with SSE2 instruction set support	X64 architecture with SSE2 instruction set support	X64 architecture with SSE2 instruction set support
Graphics API	DX10, DX11, and DX12-capable GPUs	Metal-capable Intel and AMD GPUs	OpenGL 3.2+ or Vulkan-capable, Nvidia and AMD GPUs.
Additional requirements	Hardware vendor officially supported drivers	Apple officially supported drivers	Gnome desktop environment running on top of X11 windowing system, Nvidia official proprietary graphics driver or AMD Mesa graphics driver. Other configuration and user environment as provided stock with the supported distribution (Kernel, Compositor, etc.)
	For all operating systems, the Unity Editor is supported on workstations or laptop form factors, running without emulation, container or compatibility layer.		

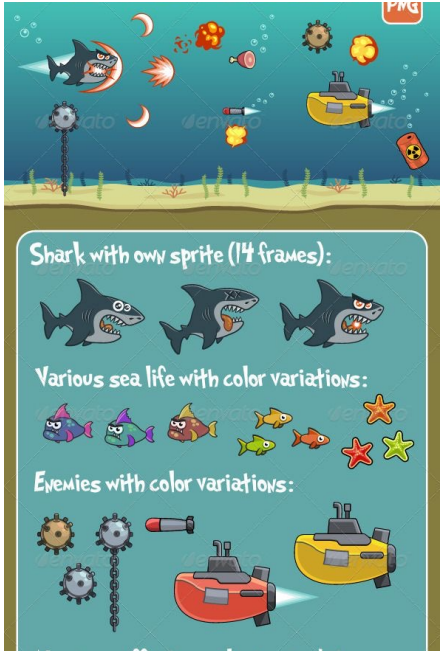
Output

WebGL

Operating system running browsers	Windows, macOS, and Linux
Hardware	Workstation and laptop form factors.
Additional requirements	Versions of Chrome, Firefox or Safari that are: - WebGL 1.0 or 2.0 capable - HTML 5 standards compliant - 64-bit - WASM capable

Contoh Game Edukasi

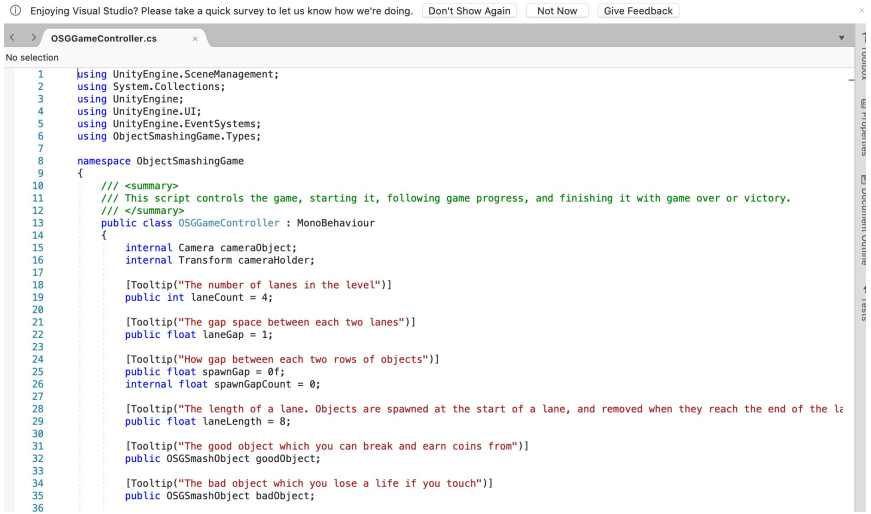
Modal produksi



Freepik (License required)
Vecteezy (License required)
Unity Assets (Free & Paid)

Modal produksi

Visual Studio

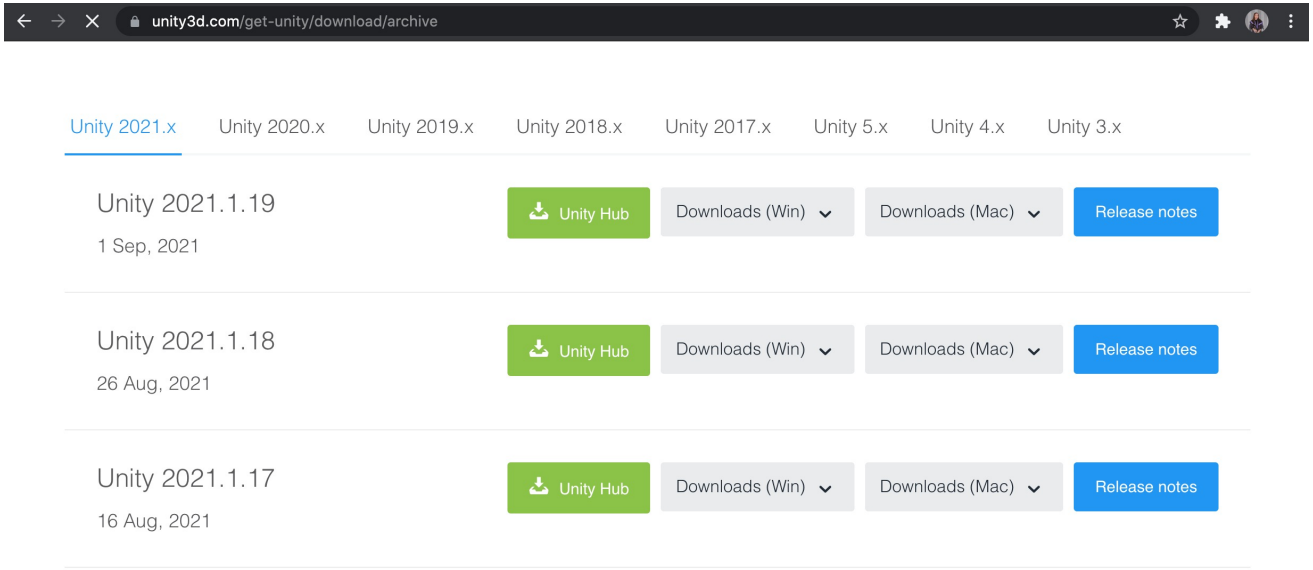



```
using UnityEngine.SceneManagement;
using System.Collections;
using UnityEngine;
using UnityEngine.UI;
using UnityEngine.EventSystems;
using ObjectSmashingGame.Types;

namespace ObjectSmashingGame
{
    /// <summary>
    /// This script controls the game, starting it, following game progress, and finishing it with game over or victory.
    /// </summary>
    public class OSGGameController : MonoBehaviour
    {
        internal Camera cameraObject;
        internal Transform cameraHolder;

        [Tooltip("The number of lanes in the level")]
        public int laneCount = 4;

        [Tooltip("The gap space between each two lanes")]
        public float laneGap = 1;

        [Tooltip("How gap between each two rows of objects")]
        public float spawnGap = 0f;
        internal float spawnGapCount = 0;

        [Tooltip("The length of a lane. Objects are spawned at the start of a lane, and removed when they reach the end of the la
        public float laneLength = 8;

        [Tooltip("The good object which you can break and earn coins from")]
        public OSGSmashObject goodObject;

        [Tooltip("The bad object which you lose a life if you touch")]
        public OSGSmashObject badObject;

```

Overview

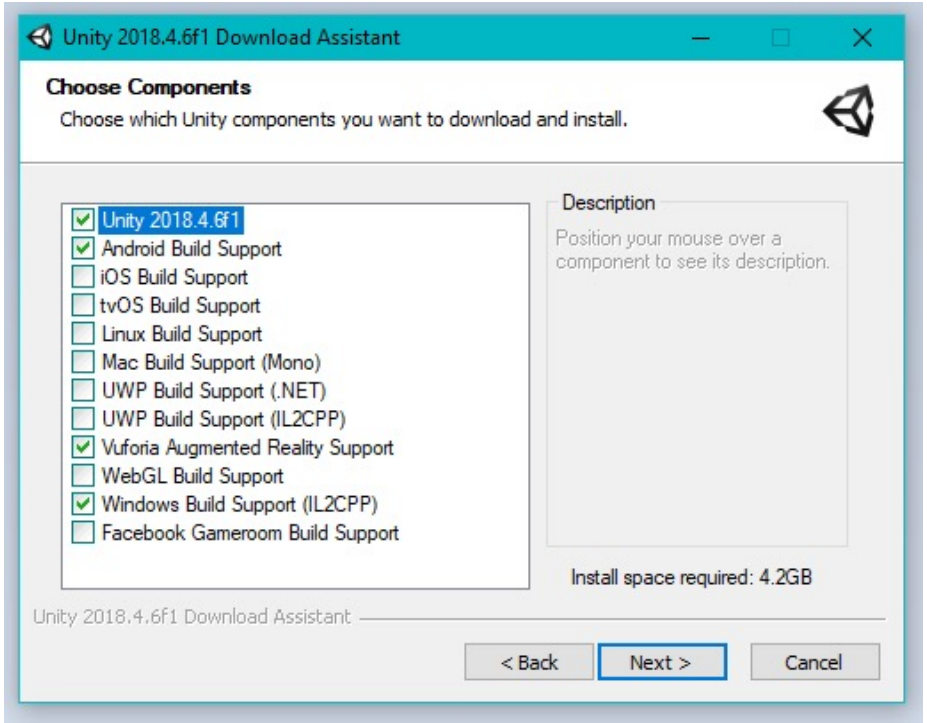
- ▶Unity
  - ▶Unity Download
  - ▶Creating a Project
  - ▶Interface
  - ▶Inspector
  - ▶Project Window
  - ▶Hierarchy
  - ▶C# Script

Download



https://unity3d.com/get-unity/download/archive

Download



Android Build Support – agar bisa melakukan build/export untuk android (apk)

Vuforia Augmented Reality Support – Tambahan komponen untuk membuat augmented reality di unity3d

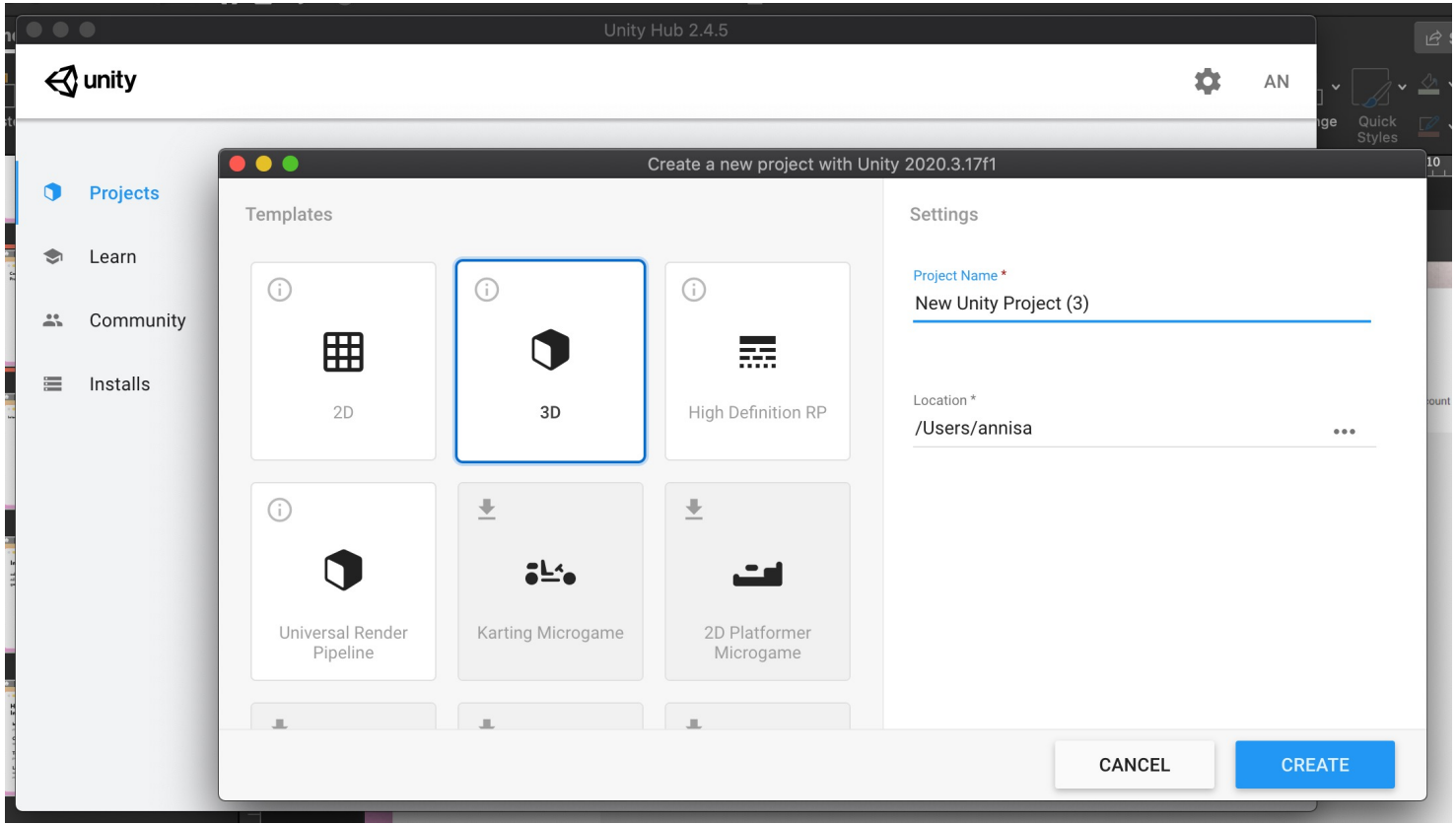
WebGL Build Support – agar bisa melakukan build/export untuk website base

Windows Build Support (IL2CPP) – agar bisa melakukan build/export untuk windows standalone (exe)

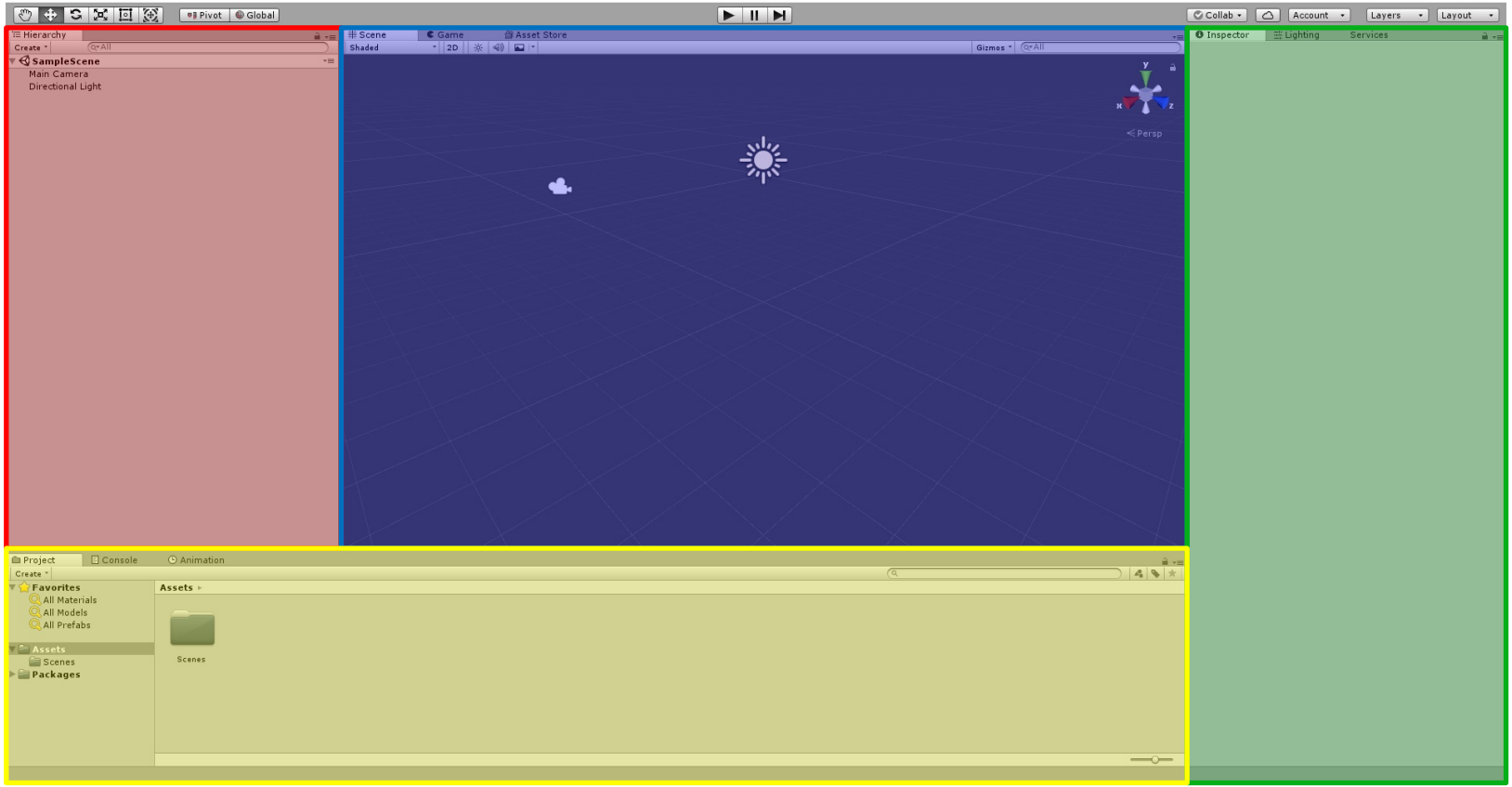
Visual Studio – Untuk membuka script

Unity Tutorial

Create Project

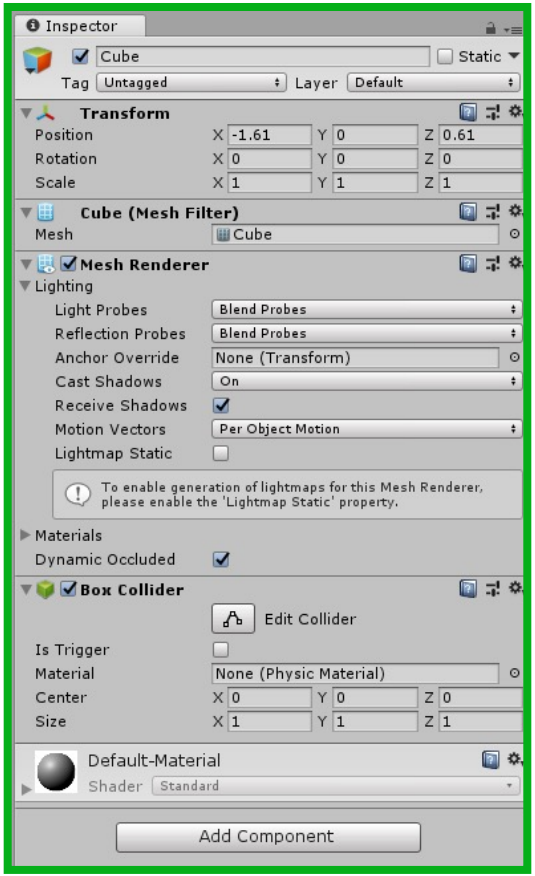


Interface

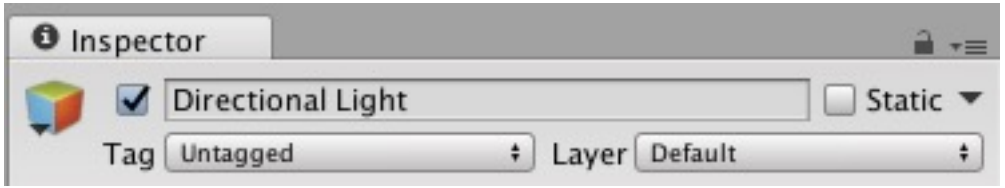

Pivot
Global
Collab
Account
Layers
Layout
Hierarchy
Create
SampleScene
Main Camera
Directional Light
Scene
Game
Asset Store
Shaded
2D
Gizmos
Persp
Inspector
Lighting
Services
Project
Console
Animation
Create
Favorites
All Materials
All Models
All Prefabs
Assets
Scenes
Packages
Assets
Scenes

Inspector

adalah tempat untuk mengubah nilai dari properti dan setting dari game object.



Header Inspector



Icon Button: Dengan gambar berupa ikon bewarna merah, kuning, dan biru, icon button berfungsi untuk mengubah tampilan game object di dalam scene view.

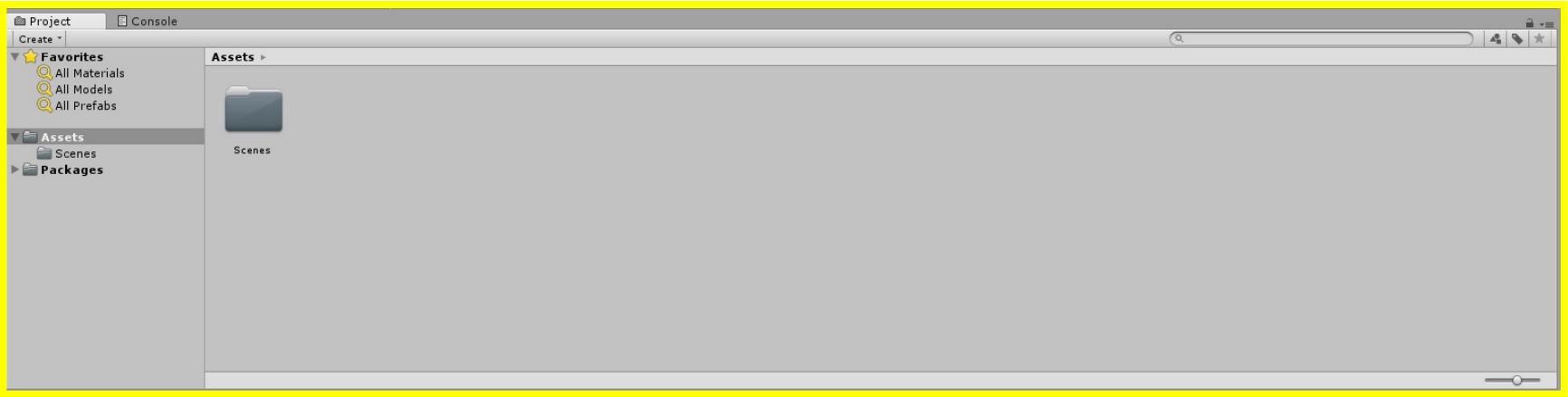
Check box: Digunakan untuk mengaktifkan atau non-aktifkan sebuah game object. Jika diceklis, maka semua komponen di dalamnya akan bersifat aktif.

Tag: Digunakan untuk menyematkan tag ke dalam suatu game object untuk membantu proses pencarian game object

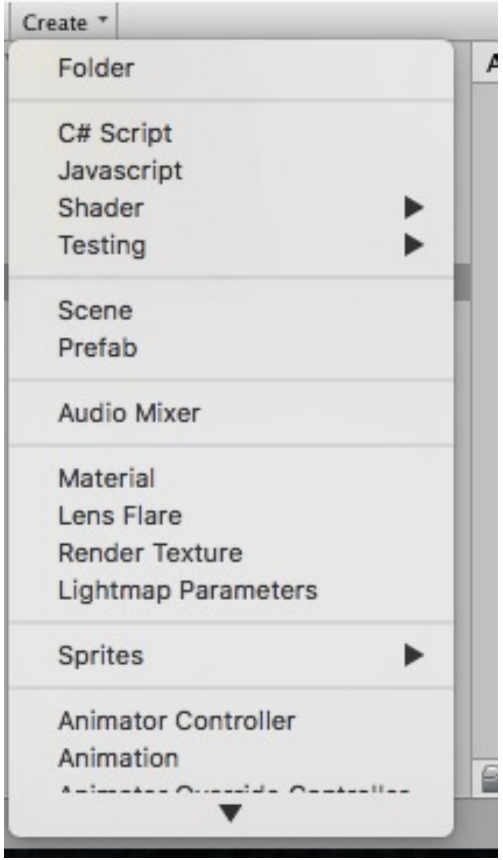
Layer: Digunakan untuk memisahkan layer yang biasanya berpengaruh terhadap aturan yang spesifik semisal layer ground dimana isinya adalah game object yang bisa dipijak dan digunakan untuk melompat.

Project Window

Mengorganisir aset yang digunakan. Struktur file yang dibuat di dalam project window akan disimpan dengan struktur yang sama di dalam harddisk PC/Laptop.

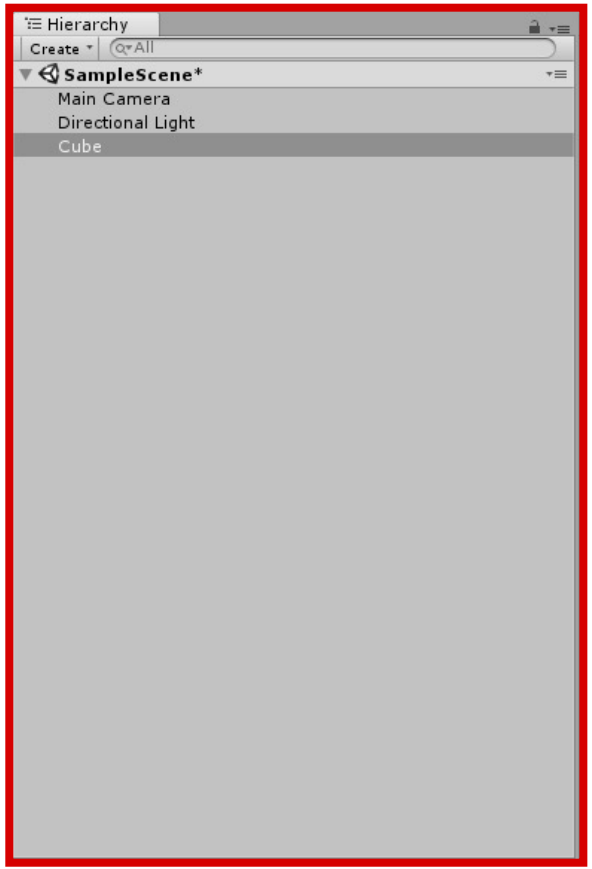


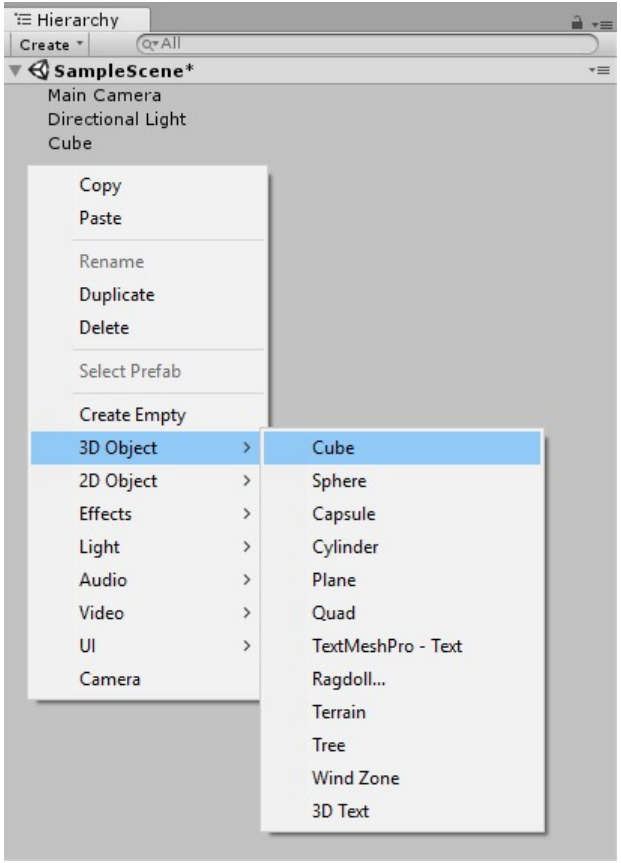
Create Assets



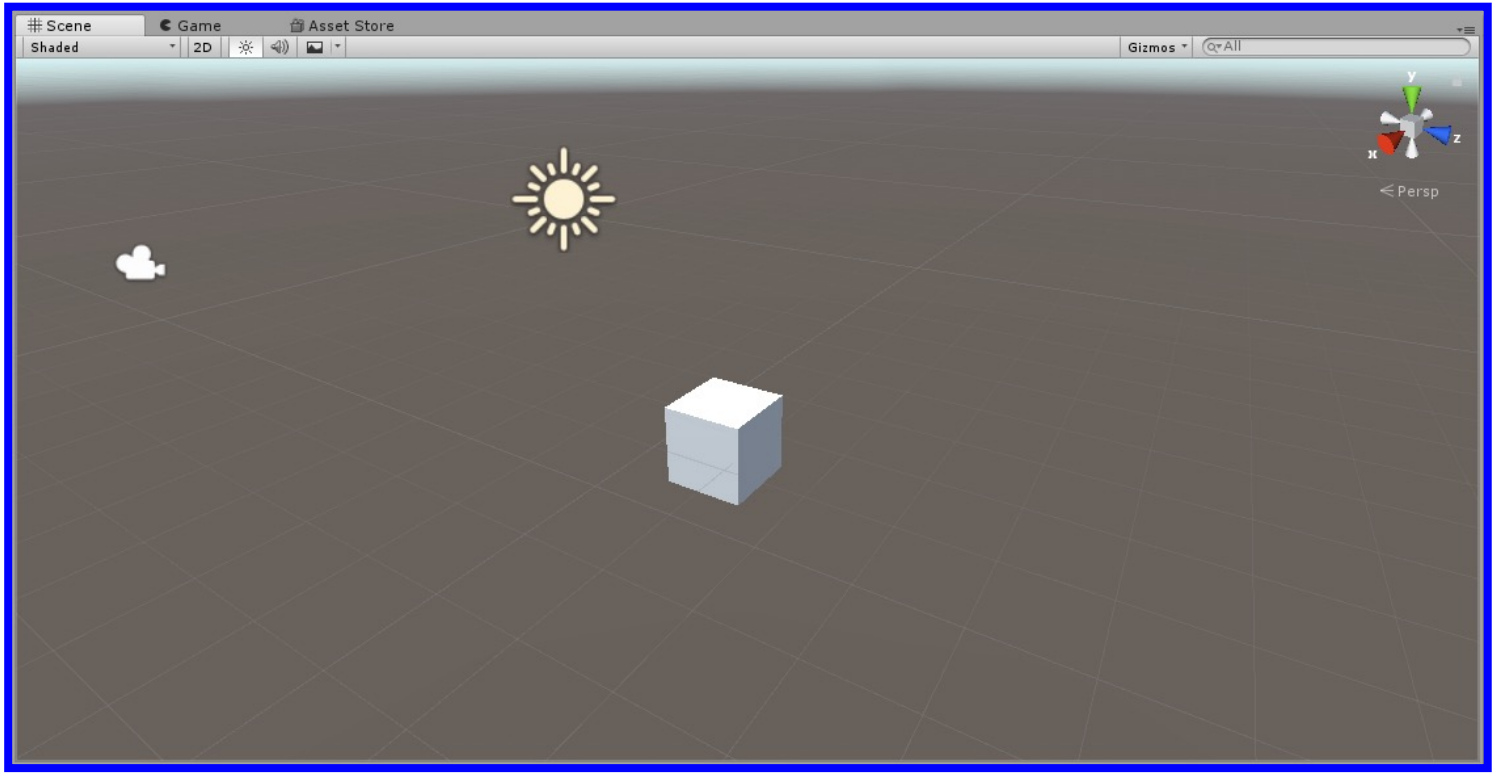
Hierarchy

Window yang berisi game object atau kumpulan game object yang digunakan di dalam scene. Urutan game object bisa dipindah posisinya dan bisa digrupkan menjadi parent and child.





Scene



Navigating

1. Hand Tool: Klik dan seret untuk memindahkan pemandangan dan menavigasi dunia
2. Move Tool: Memindahkan objek di dalam dunia (X, Y, Z)
3. Rotate Tool: Memutar objek di sepanjang sumbu X, Y, atau Z
4. Scale: Skala ukuran objek baik di sepanjang sumbu, atau secara keseluruhan
5. Rect Tool: Terutama digunakan untuk game 2D dan elemen UI
6. Universal Tool: Memiliki fungsi untuk memindahkan, memutar, dan menskala

Shaded

Shaded: Digunakan untuk mengganti mode tampilan objek-objek di dalam game scene

2D: Digunakan untuk mengubah perspektif dari 3D menjadi 2D dan sebaliknya.

Scene Lighting: Mengatur tampilan pencahayaan pada scene.

Audio: Mematikan atau menyalakan audio di dalam scene.

Efek: Menampilkan atau menghilangkan efek dari Skybox, Flares, Fog, dan lain-lain di dalam scene.

Gizmos: Digunakan untuk memilih objek-objek yang ditampilkan di dalam scene.

Search Bar: Digunakan untuk mencari sebuah game object di dalam scene.

Unity Tutorial

Create C# Script

NewBehaviourScript1.cs

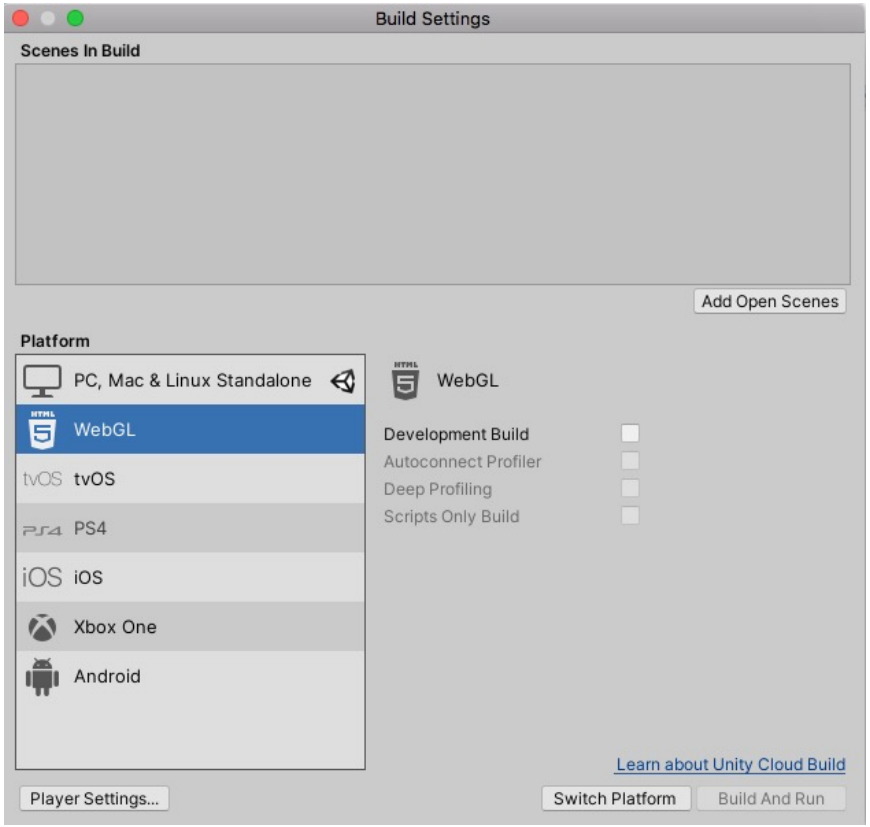
```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class NewBehaviourScript1 : MonoBehaviour
{
    // Start is called before the first frame update
    void Start()
    {

    }

    // Update is called once per frame
    void Update()
    {

    }
}
```

C# Basic Tutorial

YT Recommendation: Brackeys - https://www.youtube.com/channel/UCYbK_tjZ2OrIZFBvU6CCMiA

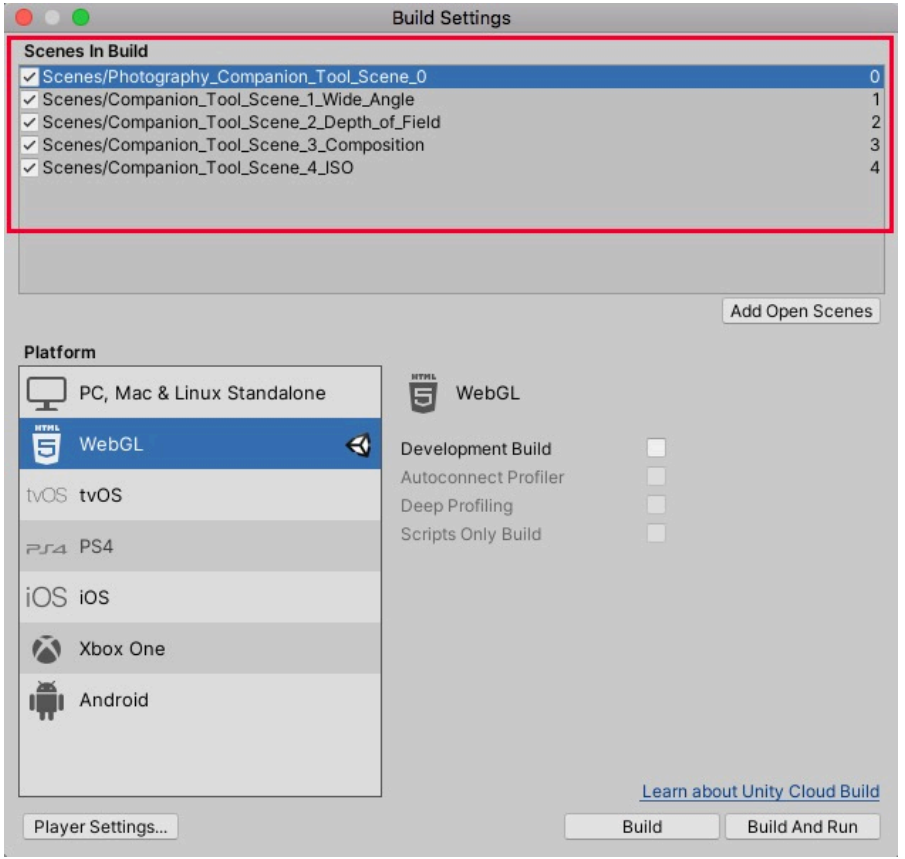
WebGL Tutorial

Buka Build Settings



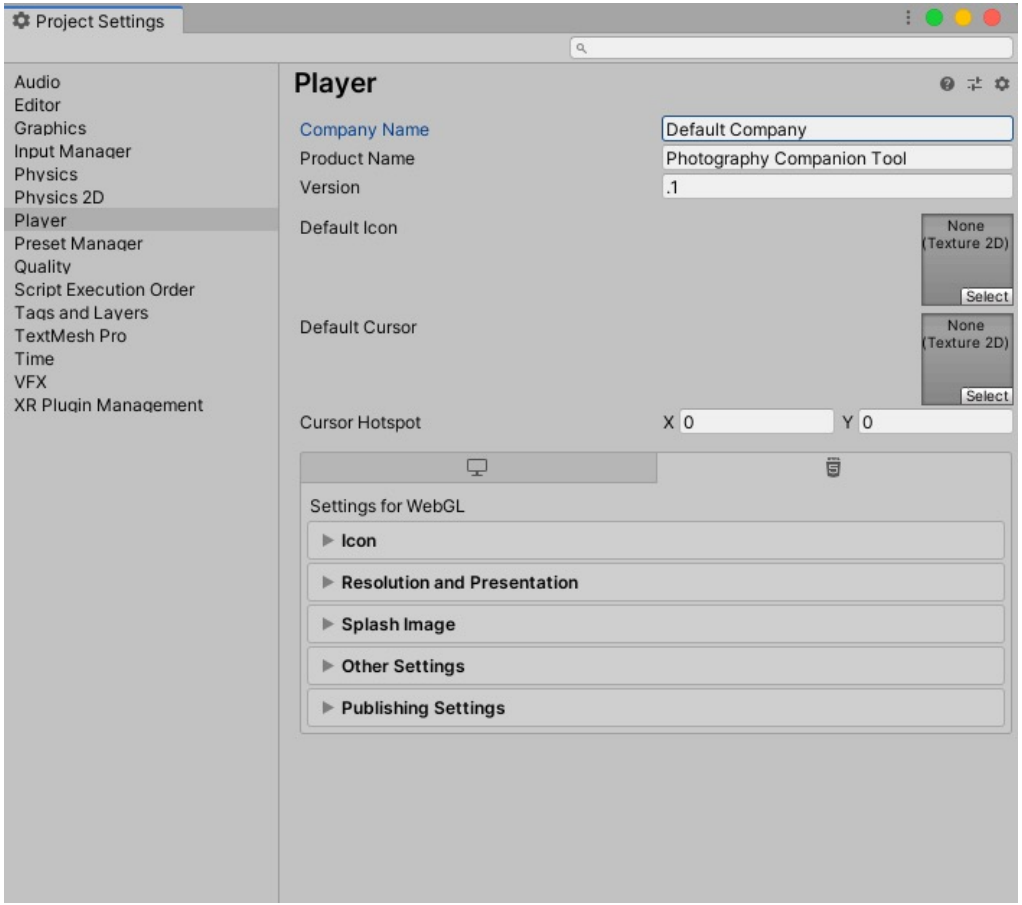
Add Open Scene

Jika scene belum muncul, klik
add open scene untuk menambahkan
scene yang berisikan game



Player Settings

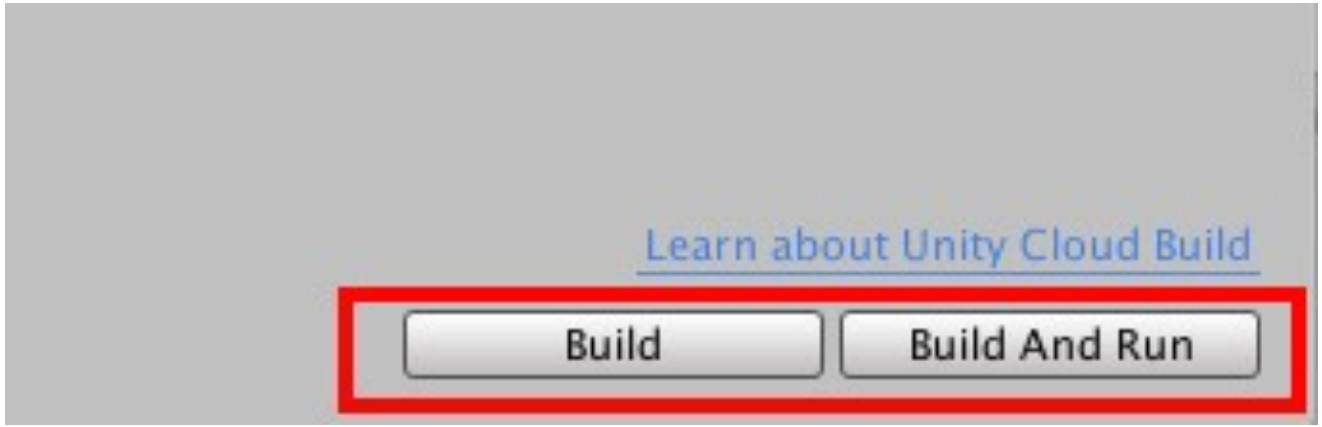
Tab untuk kostumisasi nama company/ publisher, nama game, icon, dll



Build / Build and Run?

Build: Hanya membuild package assets yang berisikan game. Untuk run game, double click icon index.html

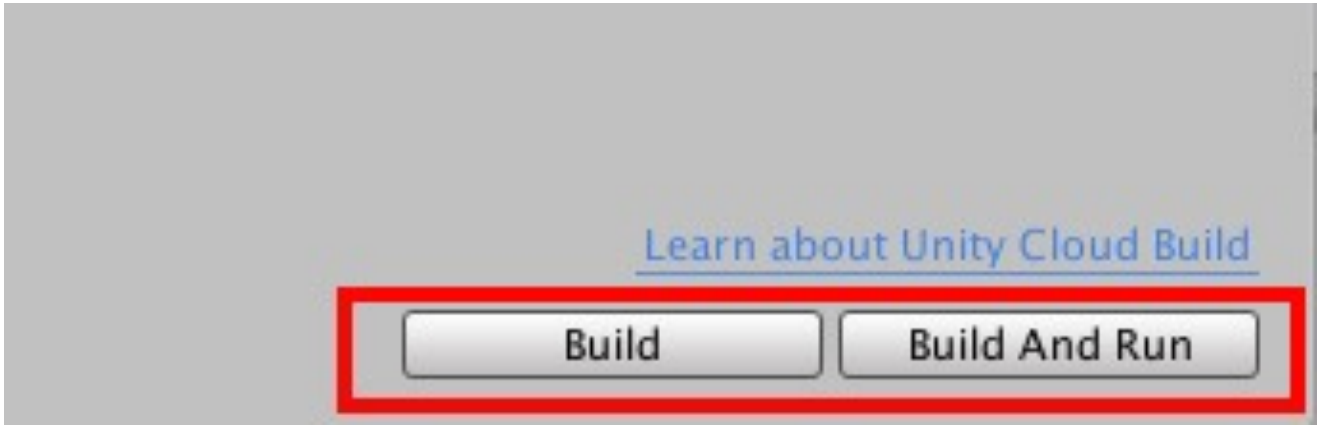
Build and Run: membuild package assets yang berisikan game dan secara otomatis run game melalui localhosts.



Servez

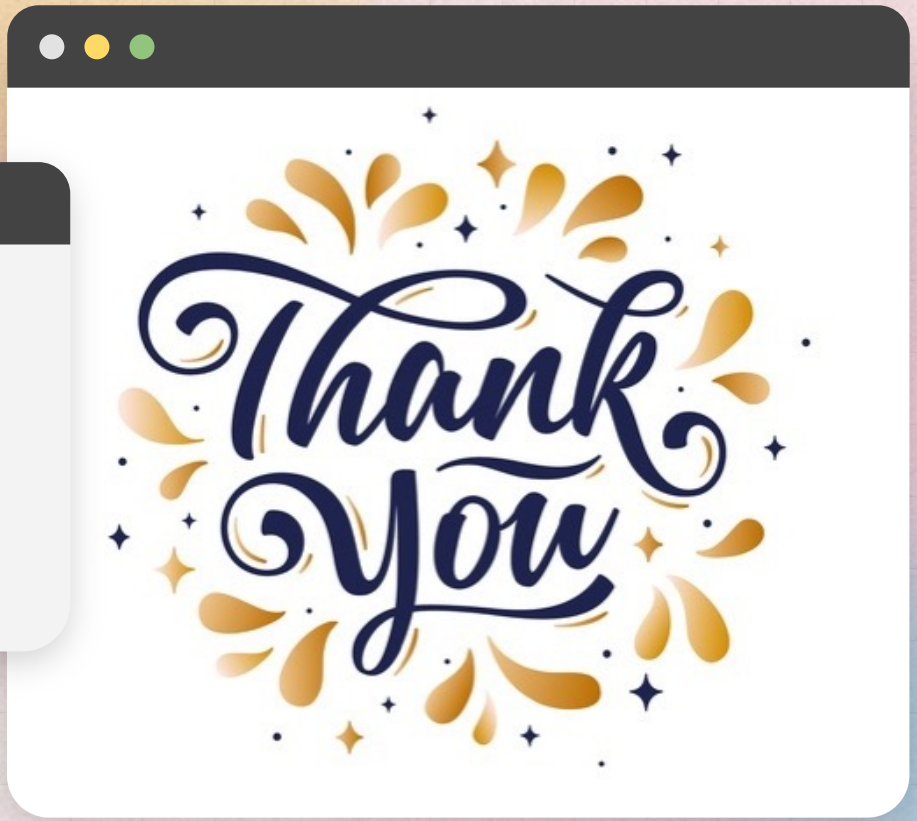
https://greggman.github.io/servez/

Build / Build and Run?



Untuk running game secara online membutuhkan third-app.
Rekomendasi jika tidak memiliki webspace pribadi:

itch.io, simmer.io atau github.com



Feel free to contact me through:

annisa98n@gmail.com

@annisa98n