HCI Term Project

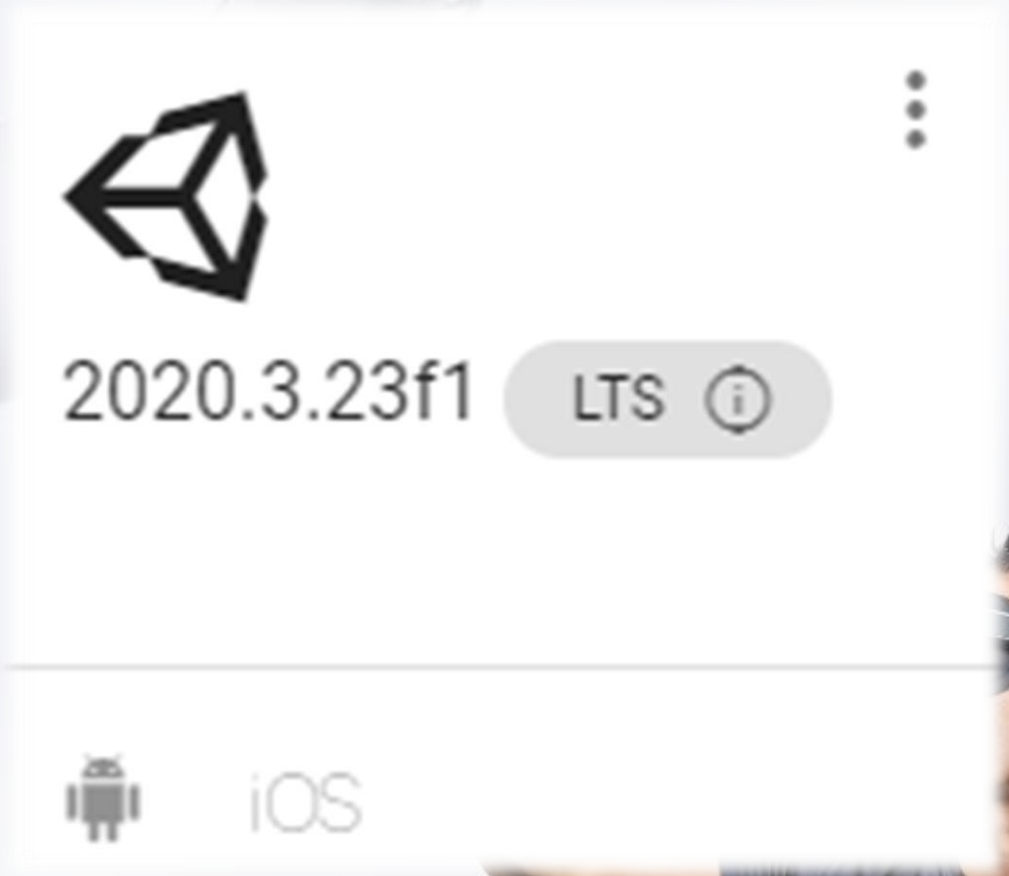
201635810 노준영 201635813 박정훈
201635819 신동재 201635840 이정명

Unity Version

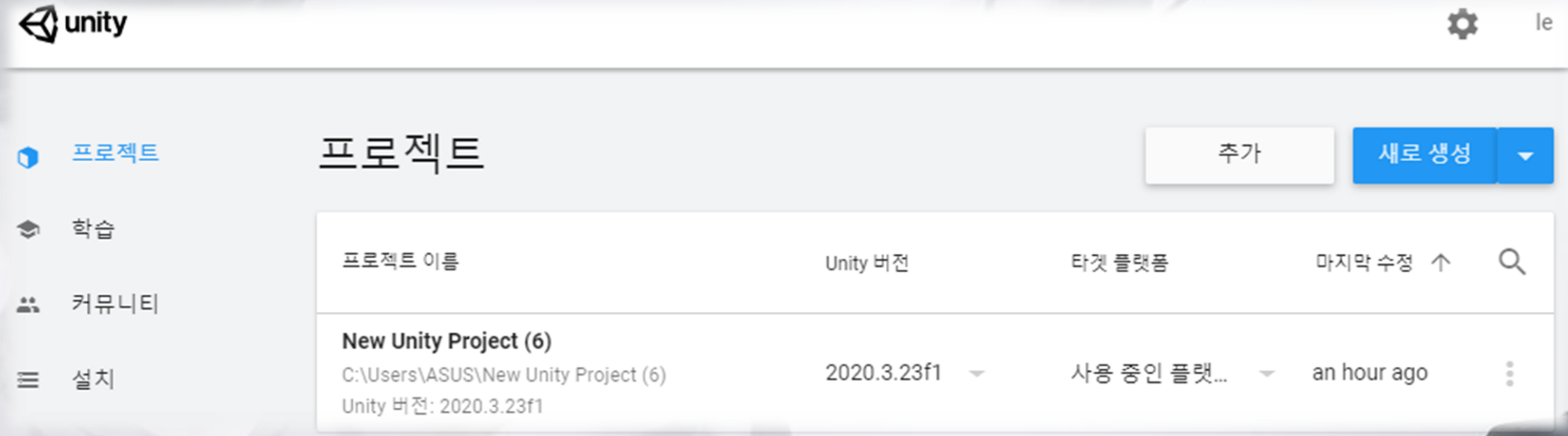
We decide to make AR application with **Unity**

use 2020.3.23f1(LTS) version

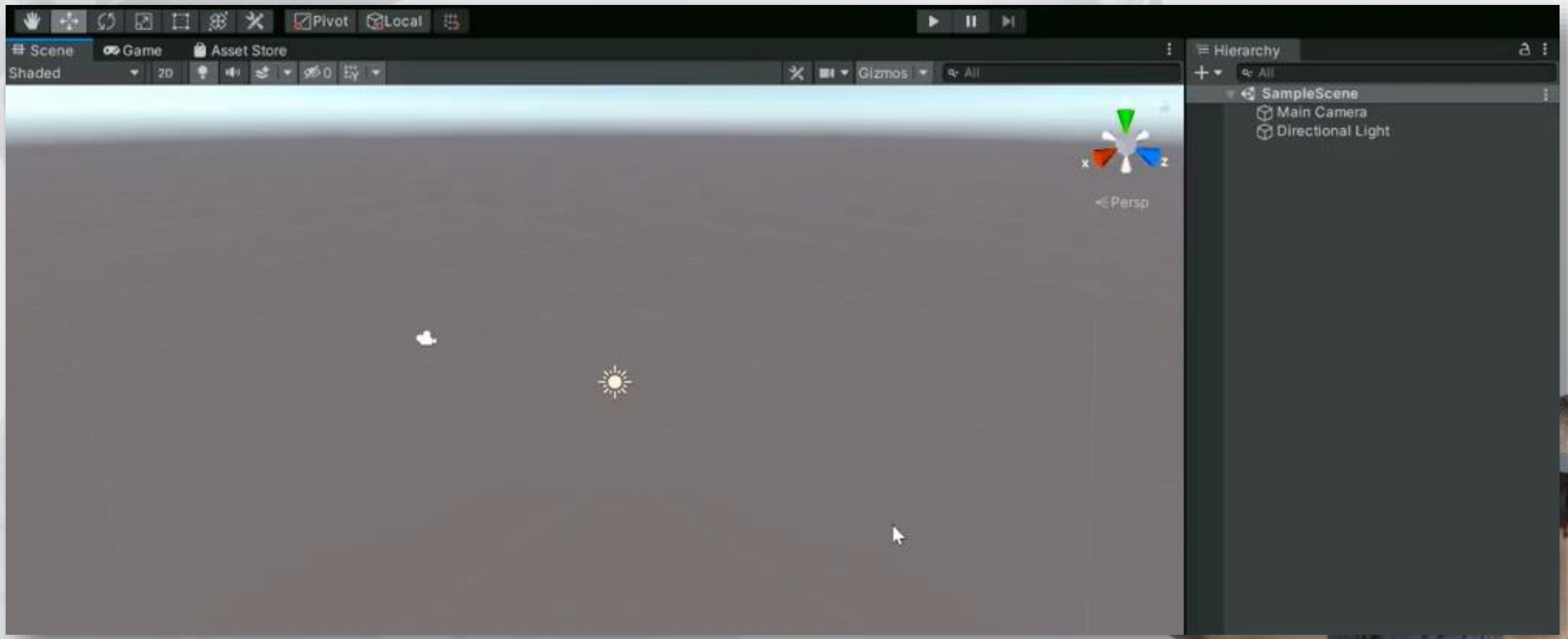
-> most recent version



Make project



Initial screen



STEP

1

[AR Foundation 설치]

Window - Package Manager
Unity Registry 선택
AR Foundation 인스톨
ARCore XR Plugin 인스톨

2

[Android 빌드 세팅]

File - Build Settings
Android 선택
Switch Platform 클릭
Player Settings 클릭

3

[Player 세팅]

Graphics APIs - Vulkan 제거
Minimum API Level - 240이상 선택

[XR Plug-in 세팅]

ARCore 체크

4

[AR Scene 세팅]

XR - AR Session 추가
XR - AR Session Origin 추가
Main Camera 삭제
AR Camera에 Tag를 Main Camera로 설정

STEP

5

[AR Plane 세팅]

XR - AR Default Point Cloud 추가
XR - AR Default Plane 추가

Add Component - AR Point Cloud Manager 추가
AR Default Point Cloud를 Prefeb에 연결

Add Component - AR Plane Manager 추가
AR Default Plane을 Prefeb에 연결

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[AR Plane 테스트 빌드]

File - Build Settings
Add Open Scenes 클릭
Run Device에서 연결된 모바일 선택
Build And Run 클릭

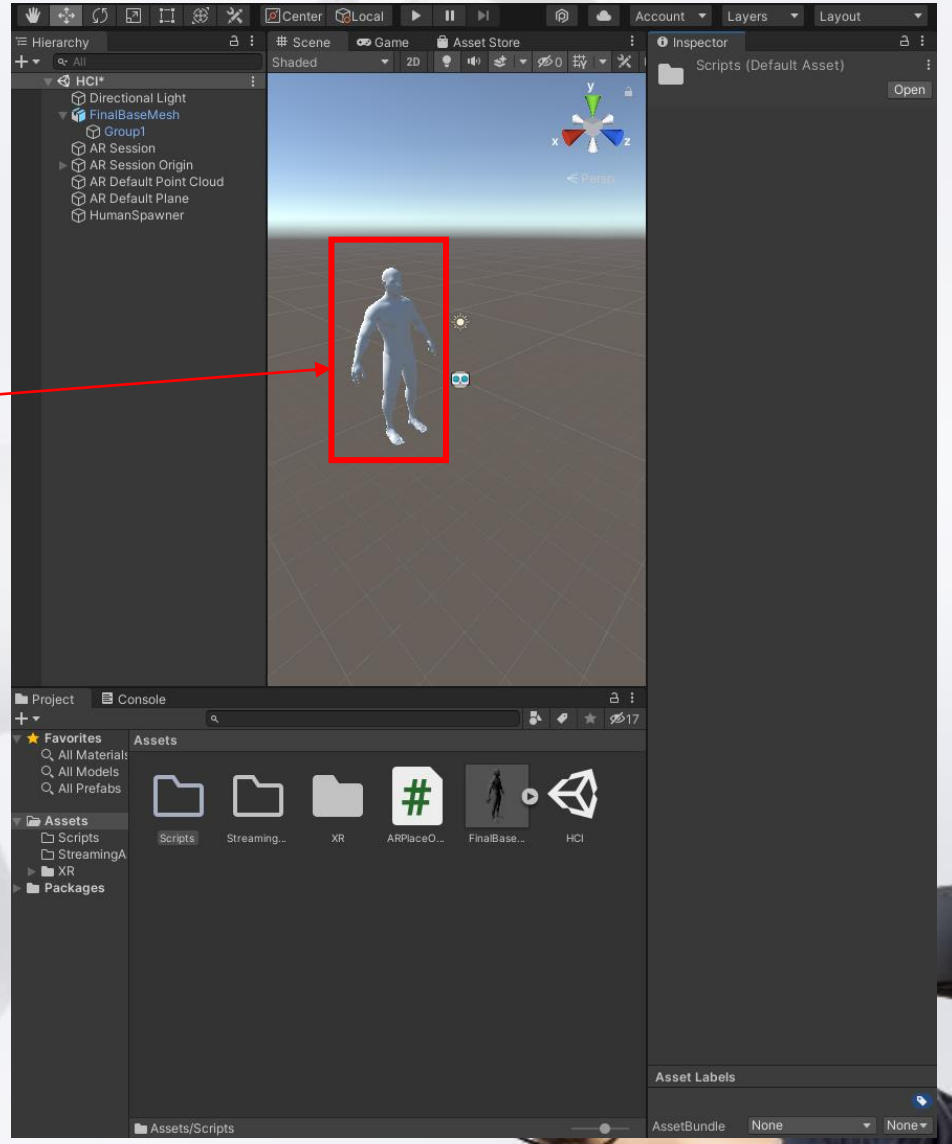
AR test screen

These pictures are screens taken through the AR test of ' Lee Jung Myung' student’s house.

-> This shows the result of **recognizing the plane**.

Add 3D model

A 3D model for changing
3D objects has been added.



Coding AR Place On Plane

ARPlaceOnPlane.cs* | ARRaycastManager.cs

Assembly-CSharp | ARPlaceOnPlane

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
using UnityEngine.XR.ARFoundation;
using UnityEngine.XR.ARSubsystems;

Unity 스크립트|참조 0개
public class ARPlaceOnPlane : MonoBehaviour
{
    public ARRaycastManager arRaycaster;
    public GameObject placeObject;

    // Start is called before the first frame update
    Unity 메시지|참조 0개
    void Start()
    {

    }

    // Update is called once per frame
    Unity 메시지|참조 0개
    void Update()
    {

    }

    참조 0개
    private void UpdateCenterObject()
    {
        Vector3 screenCenter = Camera.current.ViewportToScreenPoint(new Vector3(0.5f, 0.5f));

        List<ARRaycastHit> hits = new List<ARRaycastHit>();
        arRaycaster.Raycast(screenCenter, hits, UnityEngine.XR.ARSubsystems.TrackableType.Planes);

        if (hits.Count > 0)
        {
            Pose placementPose = hits[0].pose;
            placeObject.SetActive(true);
            placeObject.transform.SetPositionAndRotation(placementPose.position, placementPose.rotation);
        }
        else
        {
            placeObject.SetActive(false);
        }
    }
}
```

The Plane on the Place was coded through C#.

IF hit -> 3D object show

IF not hit -> 3D object hide

Demo

Reference

https://www.youtube.com/watch?v=gi9iHTY9z1o

https://www.youtube.com/watch?v=ARgf9Q8PLgI

Thank you