M.KUMARASAMY
COLLEGE OF ENGINEERING
NAAC Accredited Autonomous Institution
Approved by AICTE & Affiliated to Anna University
ISO 9001:2015 & ISO 14001:2015 Certified Institution
Thalavapalayam, Karur – 639 113.

A Minor Project Report

On

TRAVEL WITH AR

Submitted in partial fulfilment of requirements for the award of the

Degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

Under the guidance of

Ms. G. PAVITHRA Assistant Professor/CSE

Submitted By

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

M.KUMARASAMY COLLEGE OF ENGINEERING

(Autonomous)

KARUR – 639 113

May,2022.

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(Autonomous Institution affiliated to Anna University, Chennai)

KARUR – 639113

BONAFIDE CERTIFICATE

Certified that this minor project report **"TRAVEL WITH AR"** is the bonafide work of **"NAVEENA. M (20BCS4068), SHARMI. K (20BCS4085), SRINITHI. B (20BCS4089), YOGI. N (20BCS4107)"** who carried out the project work during the academic year 2021-2022 under my supervision.

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DEPARTMENT OF COMPUTER SCIENCEAND ENGINEERING

VISION OF THE INSTITUTION

To emerge as a leader among the top institutions in the field of technical education

MISSION OF THE INSTITUTION

- Produce smart technocrats with empirical knowledge who can surmount the global challenges
- Create a diverse, fully-engaged, learner-centric campus environment to provide quality education to the students
- Maintain mutually beneficial partnerships with our alumni, industry, and Professional associations

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To achieve education and research excellence in Computer Science and Engineering

MISSION OF THE DEPARTMENT

- To excel in academic through effective teaching learning techniques
- To promote research in the area of computer science and engineering with the focus on innovation
- To transform students into technically competent professionals with societal and ethical responsibilities

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Graduates will have successful career in software industries and R&D divisions through continuous learning.

PEO 2: Graduates will provide effective solutions for real world problems in the key domain of computer science and engineering and engage in lifelong learning.

PEO 3: Graduates will excel in their profession by being ethically and socially responsible.

PROGRAM OUTCOMES (POs)

Engineering students will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- **PSO1: Professional Skills:** Ability to apply the knowledge of computing techniques to design and develop computerized solutions for the problems.
- **PSO2: Successful career:** Ability to utilize the computing skills and ethical values in creating a successful career.

ABSTRACT WITH POAND PSO MAPPING

ABSTRACT	POs MAPPED	PSOs MAPPED
In our project Travel with AR, Augmented Reality(AR) adds digital elements to the camera of your smartphone, creating the illusion that holographic content is a part of a physical world around you. The main objective of this project is to provide the users with the enhanced version of their favourite places. This will be liked by the persons who like to explore many places. In this project by using AR in a poster, it can engage the viewer with the topic and further their understanding through visuals and audio on a digital interface. Here the poster are created by Unity Hub tool. People visiting a poster can download an app onto their smartphone to further engage with the poster. With this, Vuforia Engine is a Software Development kit is also used for creating AR.	**PO1(3)** **PO 2(3)** **PO 3(2)** **PO 4(2)** **PO 5(2)** **PO6(1)** **PO 7(3)** **PO 8(2)** **PO 9(3)** **PO 10(3)** **PO 11(2)** **PO 12(2)**	**PSO 1(3)** **PSO 2(2)**

Note: 1- Low, 2-Medium, 3- High

SUPERVISOR **HEAD OF THE DEPARTMENT**

ABSTRACT

In our project Travel with AR, Augmented Reality(AR) adds digital elements to the camera of your smartphone, creating the illusion that holographic content is a part of a physical world around you. The main objective of this project is to provide the users with the enhanced version of their favourite places. This will be liked by the persons who like to explore many places. In this project by using AR in a poster, it can engage the viewer with the topic and further their understanding through visuals and audio on a digital interface. Here the poster are created by Unity Hub tool. People visiting a poster can download an app onto their smartphone to further engage with the poster. With this, Vuforia Engine is a Software Development kit is also used for creating AR.

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LIST OF ACRONYMS / ABBREVIATIONS

AR	Augmented Reality
VR	Virtual Reality
SDK	Software Developer Kit

CHAPTER 1

INTRODUCTION

"Augmented reality" or "AR" means extended or enriched reality. The user still perceives their real environment, but virtual objects or contextual information are digitally superimposed or visually integrated. AR is only as good as the internal data processing and the visualization of virtual content. That happens simultaneously, so users don't sense delays. This ensures real-time interaction with the AR software.

Figure: 1.1 AGUMENTED REALITY

1.1 OVERVIEW

Travel with AR (Augmented Reality) is a new technology that involves the overlay of computer graphics on the real world. This has the ability to greatly enhance the entire travel experience and helps the users to experience the real time. Provide a user friendly environment for user. To offer on-screen information about places of interest, museums, galleries, landmarks, parks, and other sights as a tourist strolls through a city or town there is a huge range of potential use cases for AR in the traveling. In these strange times, immersive virtual travel provides a welcome escape from the loneliness and boredom of the pandemic – so put on a headset and get ready to “travel” anywhere in the world, right from your living room. Travel lovers who have been stuck at home will also get to experience the wonders of augmented reality travel tools, so they can get on-the-spot information for the next adventures.

1.2 DOMAIN INTRODUCTION

Augmented reality is the technology that expands our physical world by adding layers of digital information onto it. This application is implemented using marker based AR. It uses hidden images as markers. Once camera spots this marker, the app triggers the augmented reality elements. It superimposes information on to the real world. Through this system tourist can gain better information about the historical place with the help of mobile interactive application.

Modern Generation is going to dependable on computer. Augmented Reality(AR) adds digital elements to the camera of your smartphone , creating the illusion that holographic content is a part of a physical world around you . The main objective of this project is to provide the users with the enhanced version of their favourite places . This will be liked by the persons who like to explore many places . In this project by using AR in a poster , it can engage the viewer with the topic and further their understanding through visuals and audio on a digital interface . Here the poster are created by Unity Hub tool . People visiting a poster can download an app onto their smartphone to further engage with the poster . With this , Vuforia Engine is a Software Development kit is also used for creatingAR.

Vuforia Engine is the most widely used platform for AR development, with support for leading phones, tablets, and eyewear. Developers can easily add advanced computer vision functionality to Android, iOS, and UWP apps, to create AR experiences that realistically interact with objects and the environment.

In this project we use Vuforia Engine because Vuforia is an augmented reality software development kit (SDK) for mobile devices that enables the creation of augmented reality applications. It uses computer vision technology to recognize and track planar images and 3D objects in real time.

Here to create posters we use Unity hub tool. Because Unity Hub has custom resources to bring your immersive vision to life.

How do we make AR with Unity Vuforia?

Steps

1.Enable Vuforia Augmented Reality in XR settings in Player Settings.

2.Create a Developer Key in Vuforia Developer Portal.

3.Copy and paste this license key to Vuforia Config file in Unity Editor.

4.Delete Main Camera, Delete Directional Light.

5.Add Vuforia>AR Camera to the hierarchy.

1.3 PROBLEM STATEMENT

Using of AR Foundations as a Software Development Kit in travelling field is not effective for the whole implementation as it does not has any features like Importing images, Inserting vedios ect

- When it comes to Vuforia vs AR Foundation for creating posters in AR the answer is clear that Vuforia is the solution we use.
- AR Foundation is a great platform but it's best for games and other lightweight solutions and won't have the tools required for travelling field.

1.4 OBJECTIVE

The When presenting a poster at conferences or conventions, the ability to understand your project can get lost in a wall of text and static data. Augmented Reality [AR] can enhance and highlight your project with movement and sound.

- AR is defined as the use of technology that overlays digitally generated information over what the user sees in the real world (Webster Online Dictionary).
- People visiting a poster can download an app onto their smartphone to further engage with the presenter's poster.
- The main objective of this project is to quickly engage the users with its interactivity and render an immersive user experience.

CHAPTER 2

LITERATURE SURVEY

Haugstvedt (2012, article 4) examined and revealed the relationships between perceived ease of use, perceived usefulness and perceived enjoyment in the context of using AR during a historical tour in Trondheim. Chang el at(2015 article 11) used TRAM, which is a combination of TAM and TR, to explore tourist's intention to visit a heritage site in South Korea while using AR. They found that TR is a predictor of perceived usefulness and visual appeal, and that facilitating conditions affected perceived ease of use. In addition, perceived usefulness and ease of use affect intention to use AR and to visit a destination. Lee et al. (2015, article 1) compared the cultural differences of using AR in South Korea and Ireland. They found that perceived ease of use of AR has the strongest influence on perceived usefulness. Kalantari (2017,article 6) also applied TAM to explore users' acceptance behavior using AR smart glasses with Microsoft HoloLens, in which they found perceived ease of use significantly affected perceived usefulness and users' intentions to reuse AR technology, while Obeidy et (2017, article 7) proposed relationships between perceived ease of use, perceived usefulness, attitude and behavioral intention with external dimensions such as TR, information quality, etc.

CHAPTER 3

FEASIBILITY STUDY

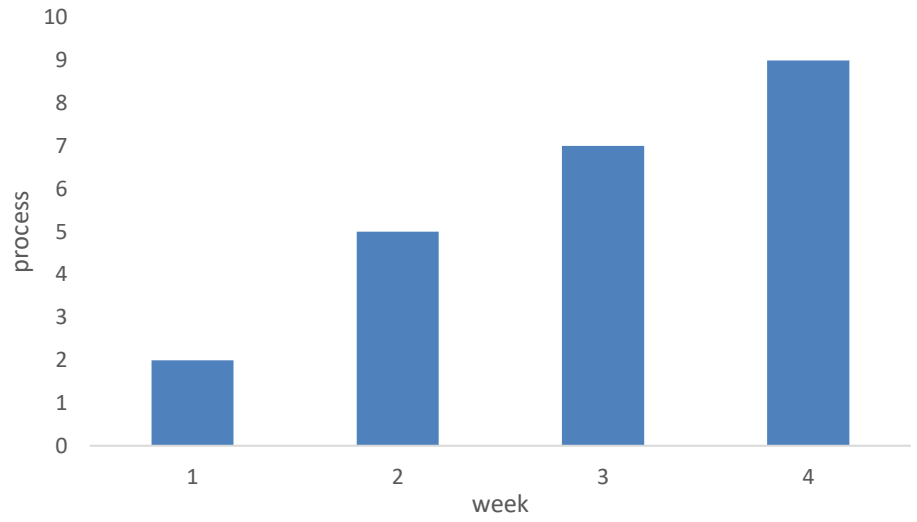

Figure 3.1 Feasibility Study for Library Management System

1. Idea: We have planned to design Agumented Reality by using Vuforia Engine
2. Economic Feasibility: There is very important aspect to be consider while developing of project. we decided to the technology based on minimum possible cost factor.
    - All software used in this are free cost
    - Overall we have estimated that by using this project the user can experience a real time experience with no cost.

3. Technical Feasibility: This Agumented Reality has been used for both visualization and simulation use-cases, improving the communication of information and, as a result, facilitating good experience for the user.
4. Documentation: The documentation is completed after getting approval of supervisor.

CHAPTER 4

PROJECT METHODOLOGY

4.1 BLOCK DIAGRAM OF AR

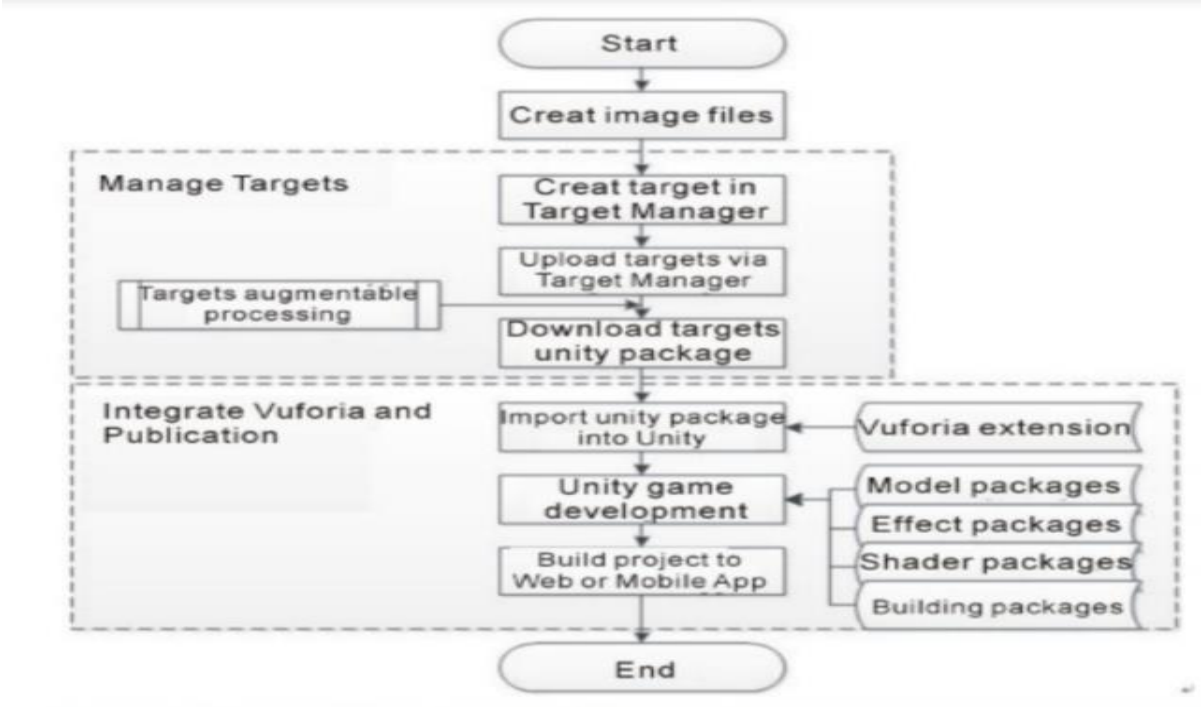

Figure: 4.1 Block diagram of AR

This block diagram contains the details about Agumented Reality It also contain the details about installation , working process , how helpful for the user to experience the real world in an virtual Reality.

4.2 Module Description

Software and Hardware	Best for	Cost
Vuforia	Marker-based tool	Vuforia Engine-version 10.0.0-cost free
Unity Hub	Creating Posters	Free
USB Cable	To generate APK	-
Smartphone	To display the output	-

Teaching Materials

To develop posters in AR we need Vuforia engine(SDK), Unity Hub , USB Cable , Smartphone .

Developing the System

In this we need to perform to operation simultaneously .

- Operation 1- install Unity Hub proper installation is required for performing the actions.
- Operation 2-login in Vuforia portal and get license to import the images in unity hub.

Vuforia process

The Vuforia SDK (as shown in Figure 8) provides many resources for unity, such as camera, image converter, tracker, application code, video background renderer, device databases and user-defined targets

CHAPTER 5

RESULTS AND DISCUSSION

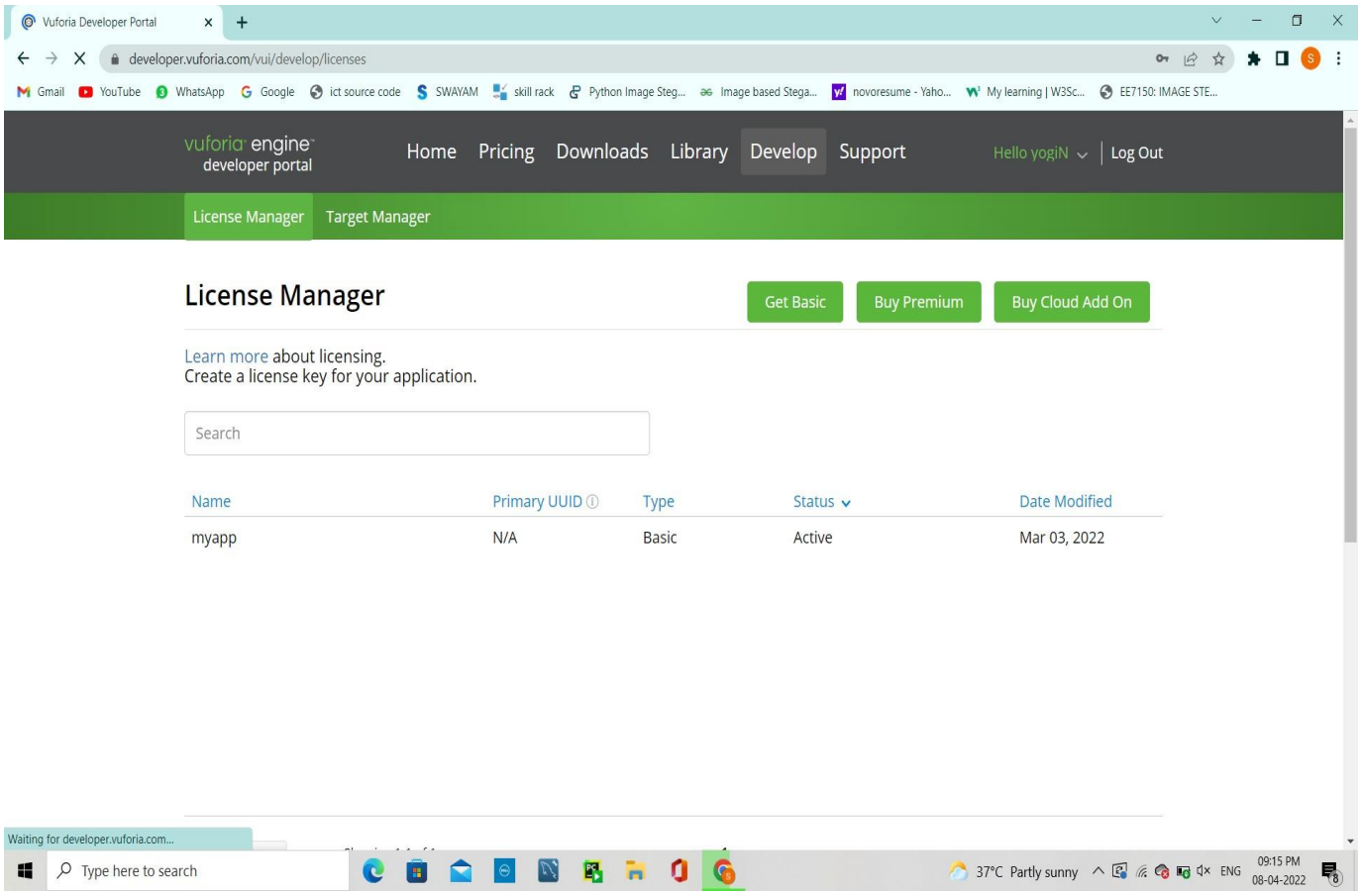

Figure 5.1 Vuforia Portal

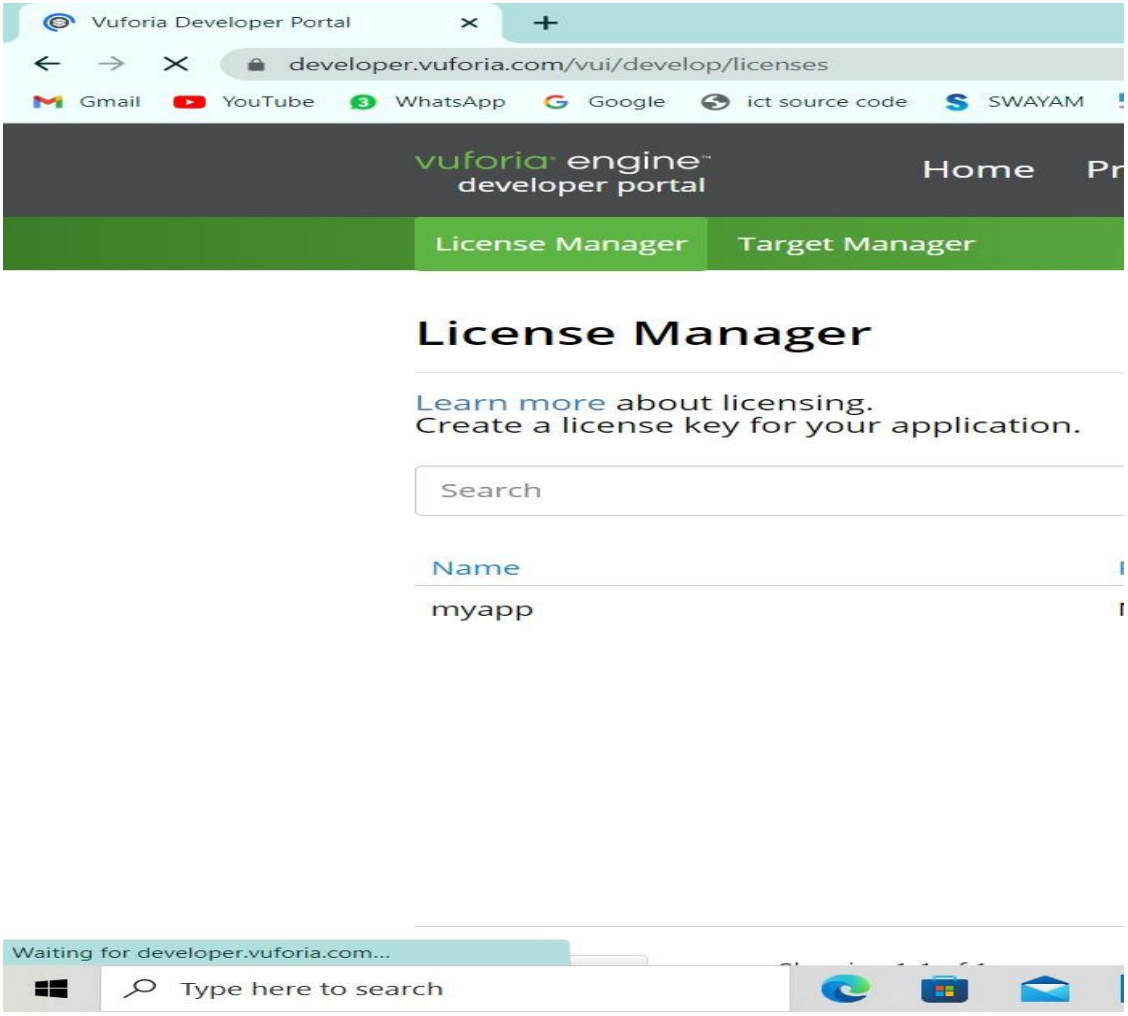

Figure 5.2 License Manager

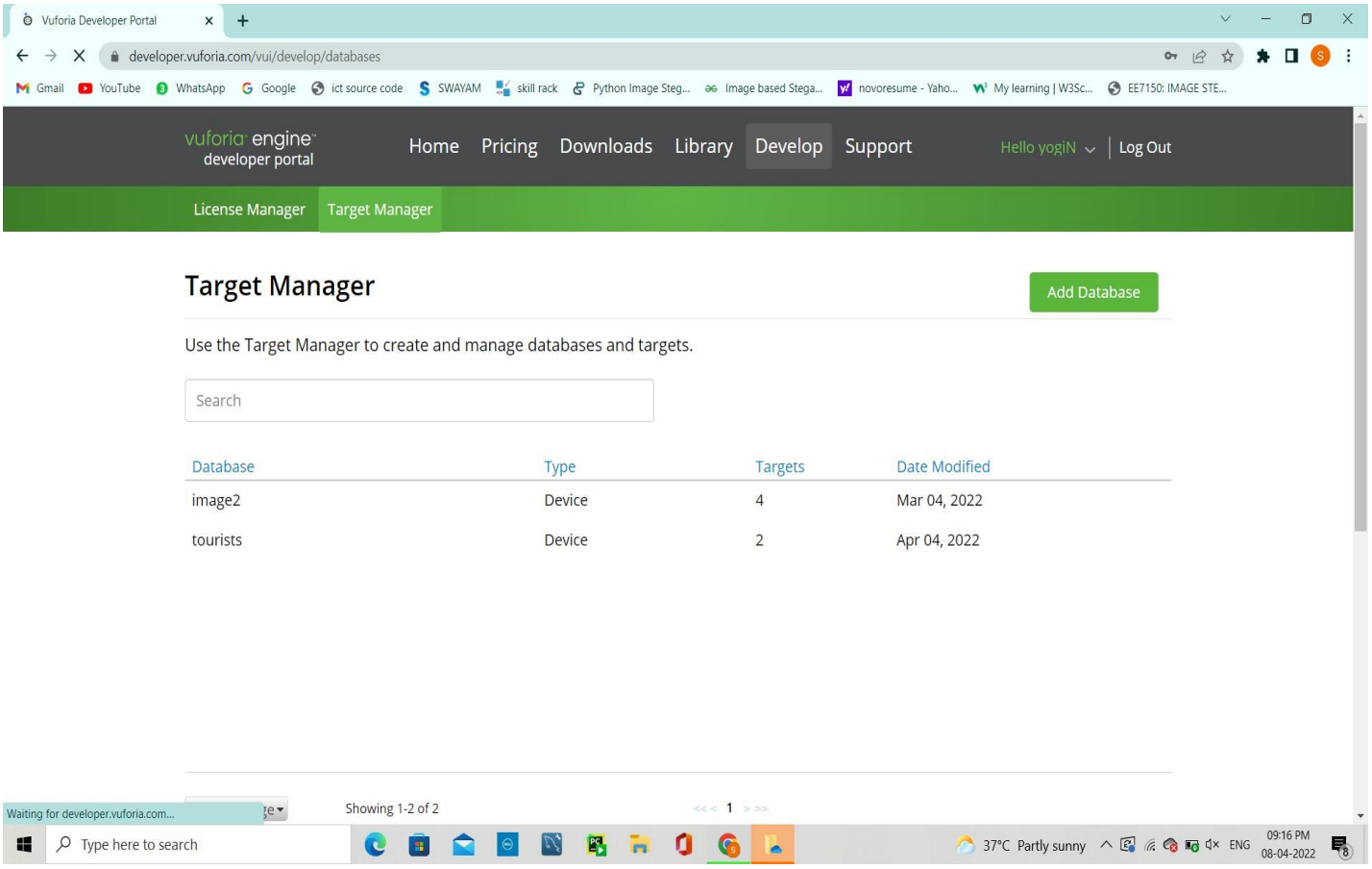

Figure 5.3 Screenshot of Target Manager

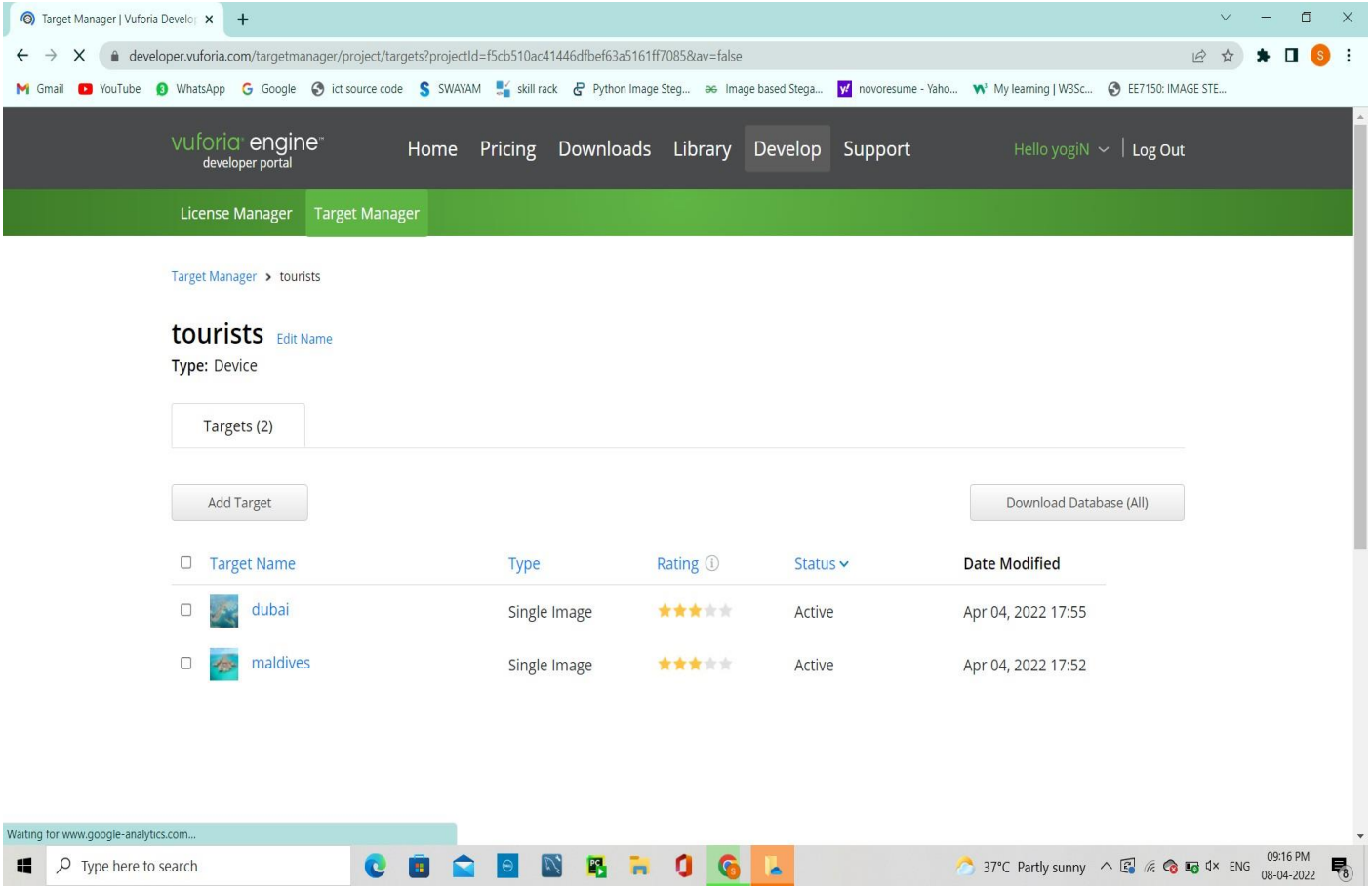

Figure 5.4 Adding Images in TM

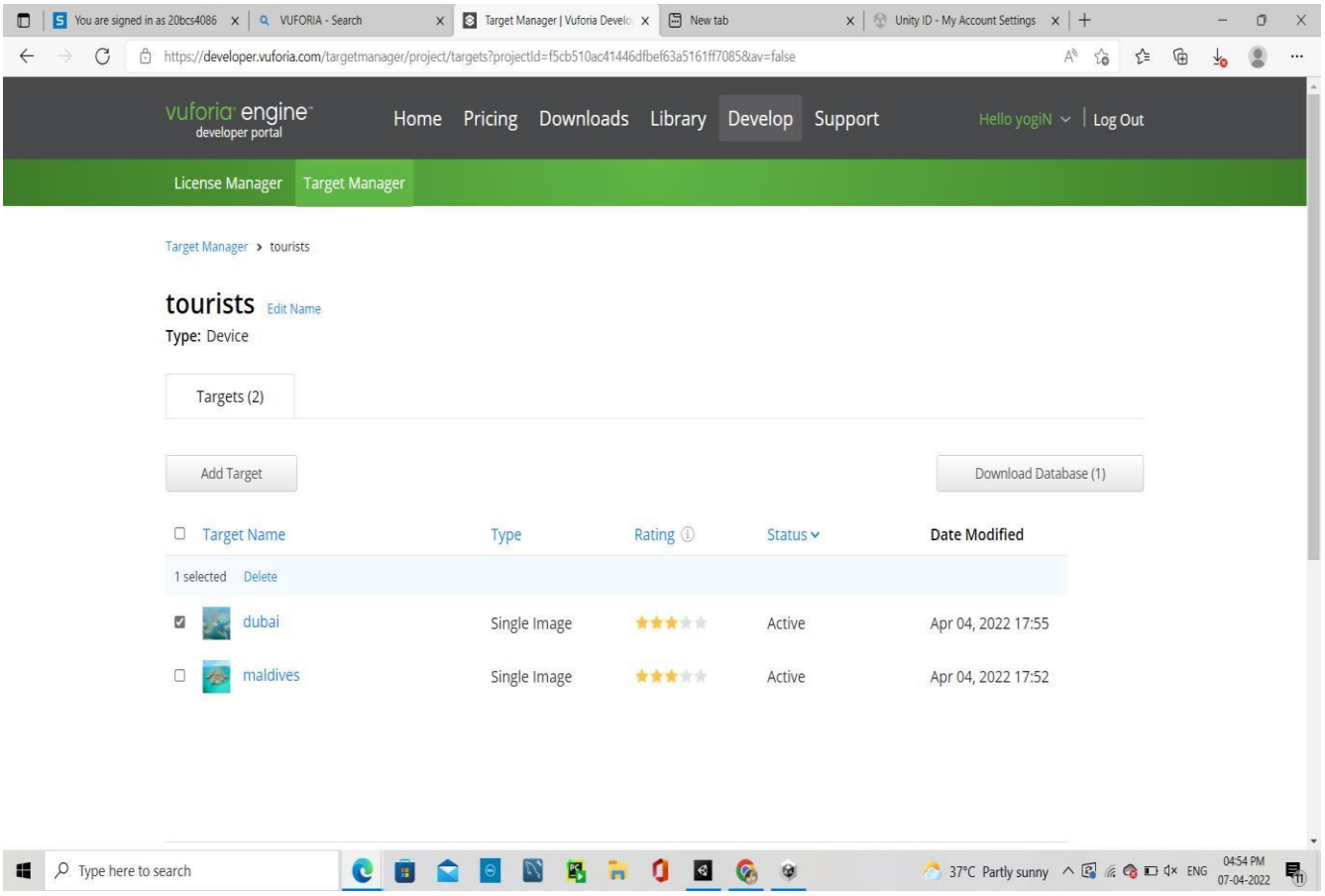

Figure 5.5 Rating the Imported Image

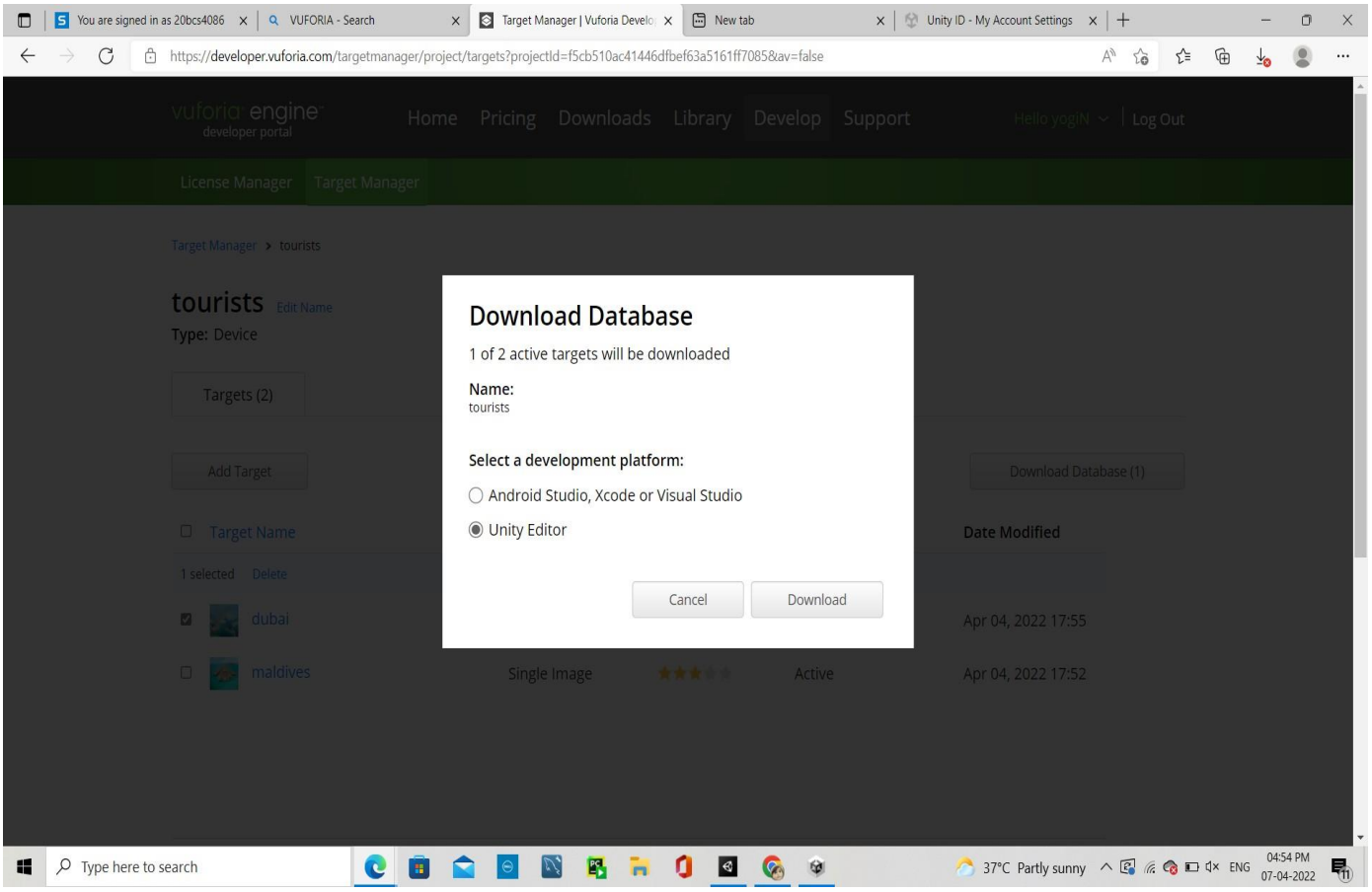

Figure 5.4 Download Database

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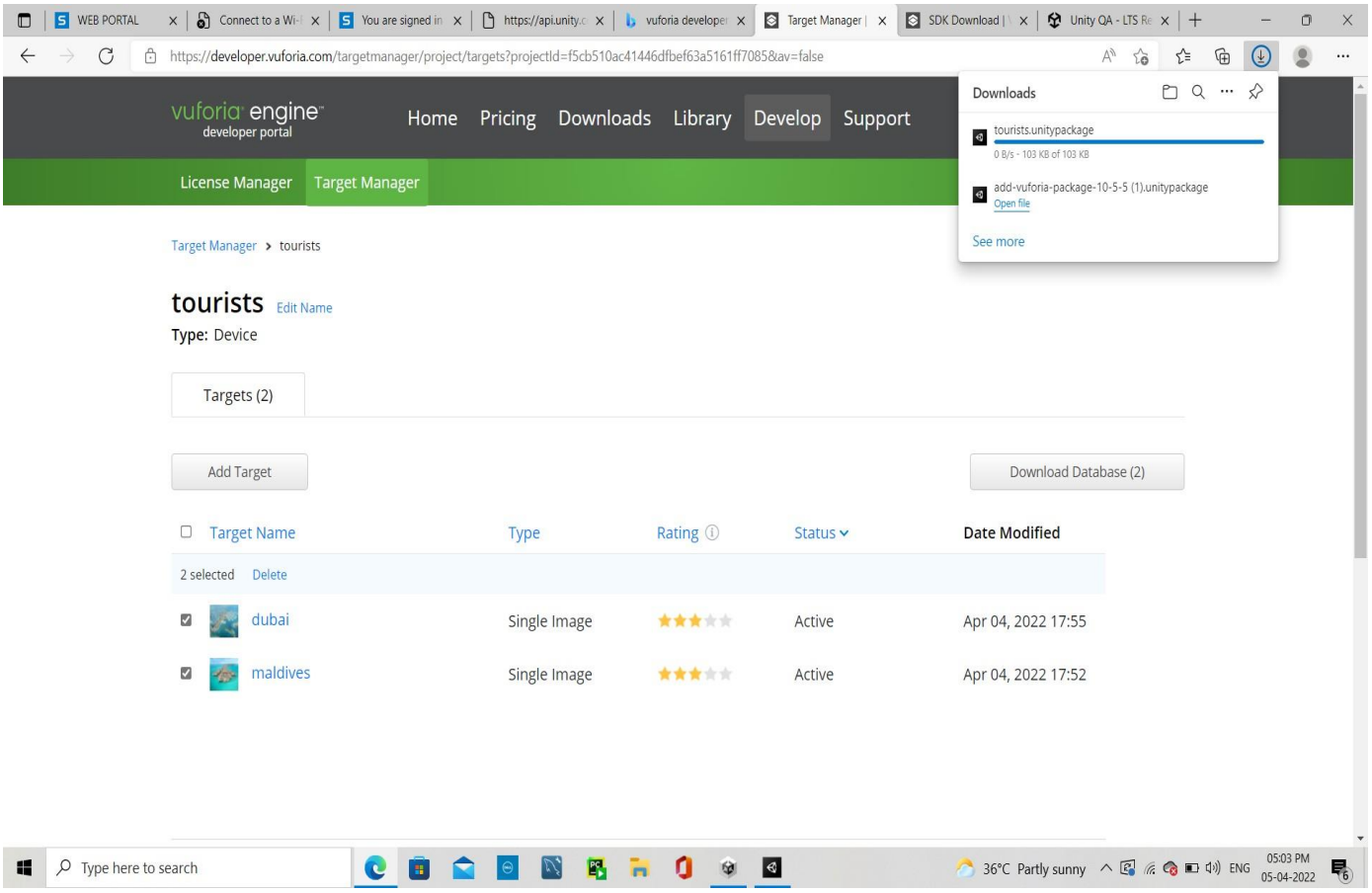

Figure 5.7 Import into Unity Hub

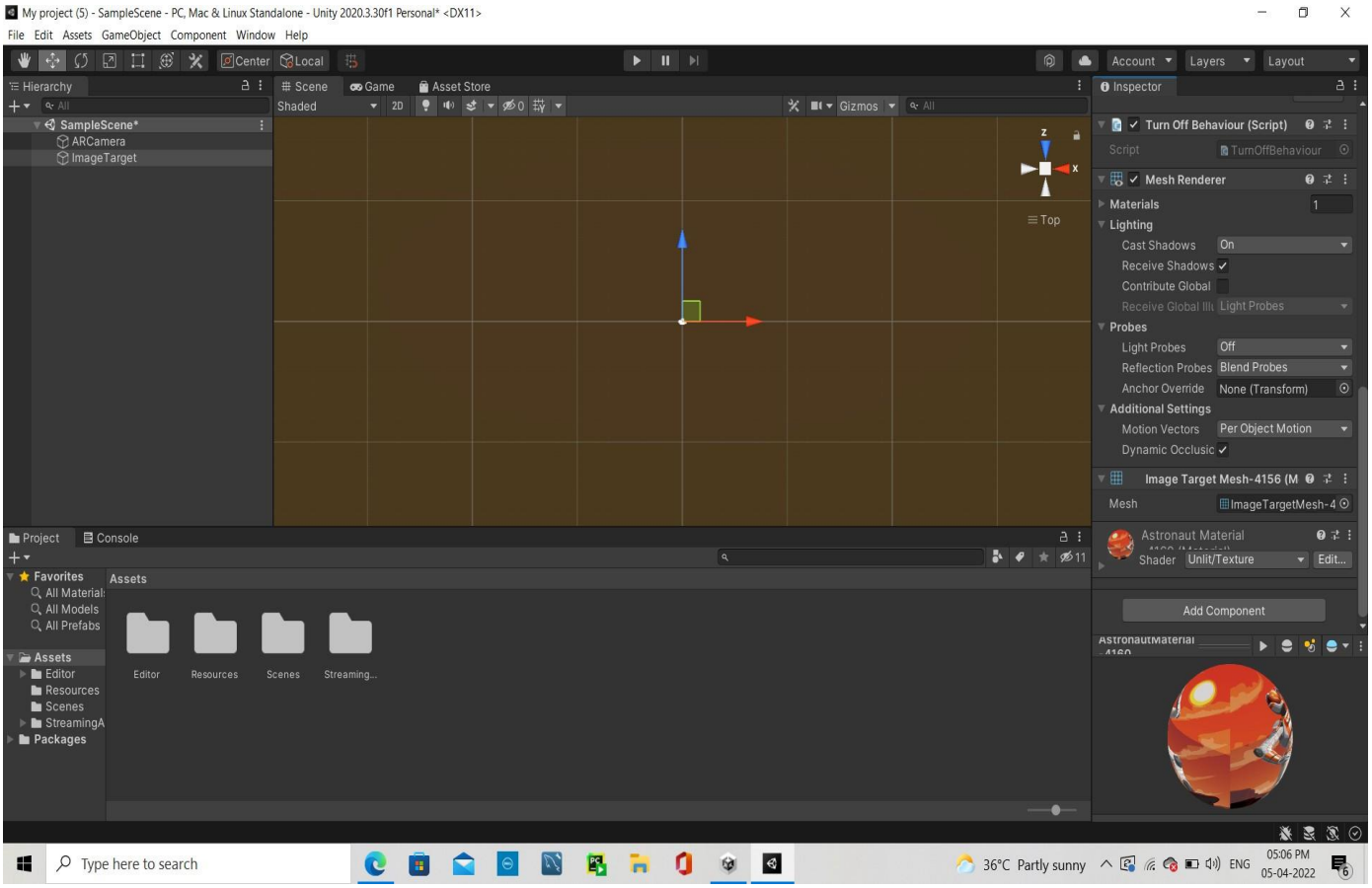

Figure 5.8 Unity Hub

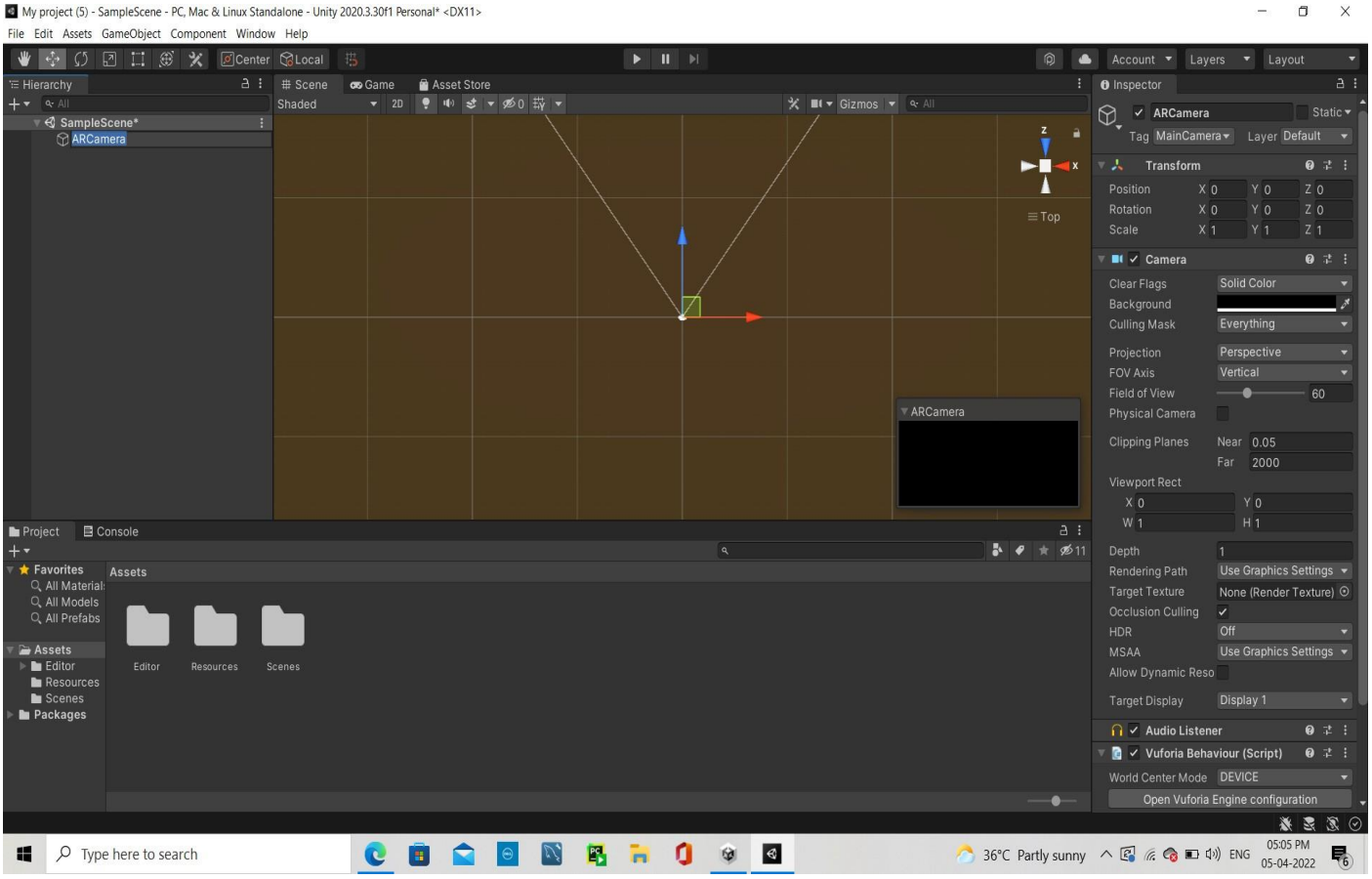

Figure 5.9 Fix theAxis

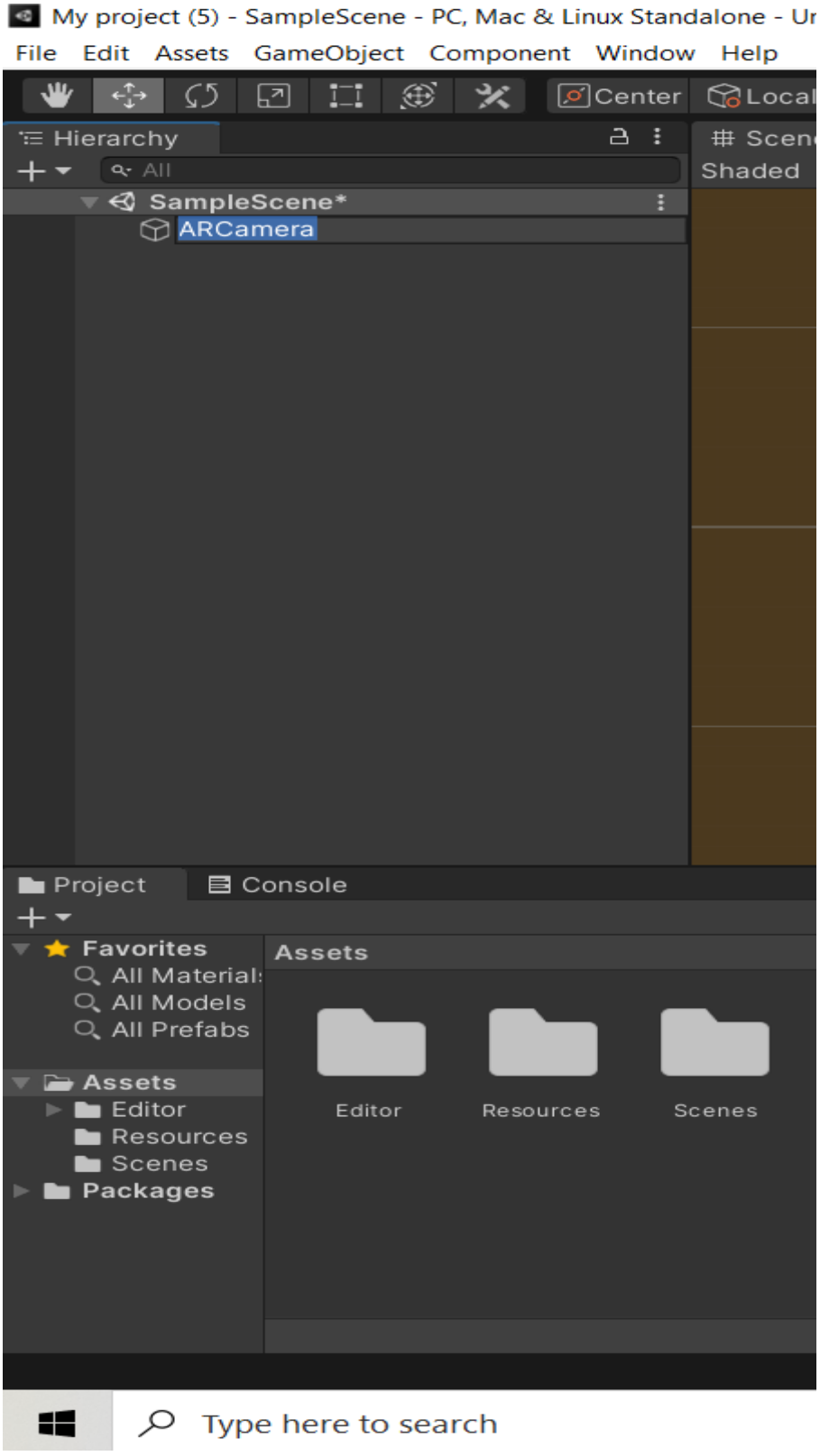

Figure 5.10 AR camera

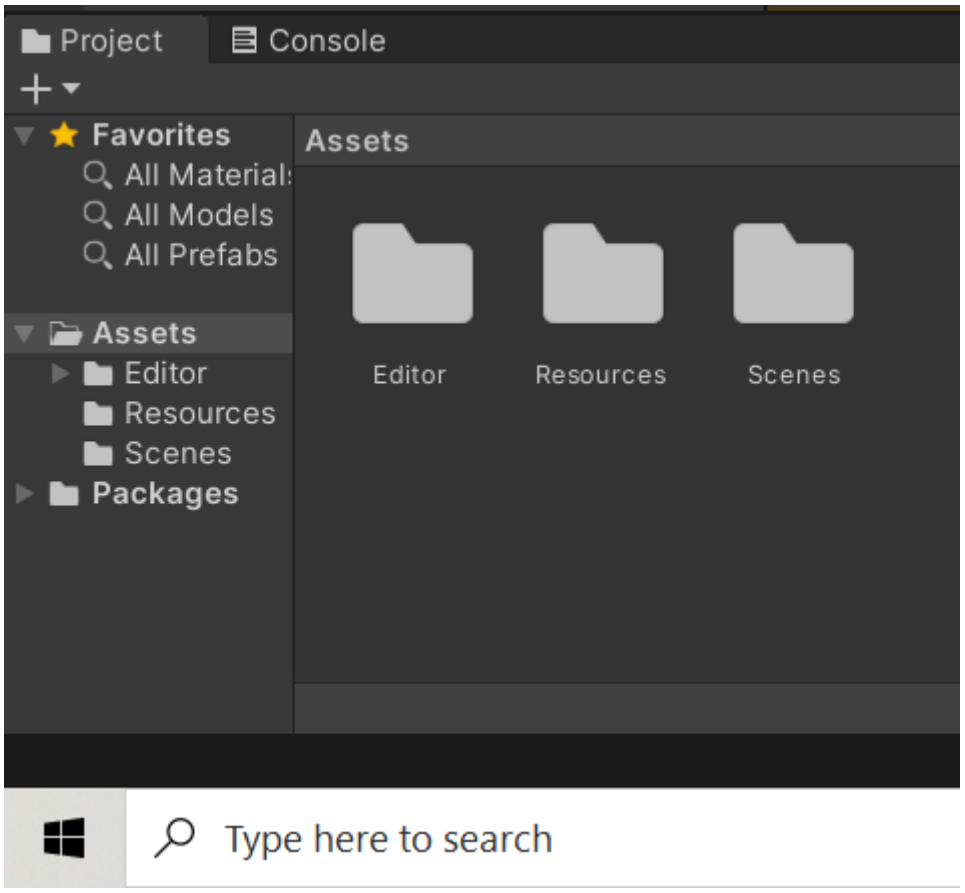

Figure 5.11 Assets

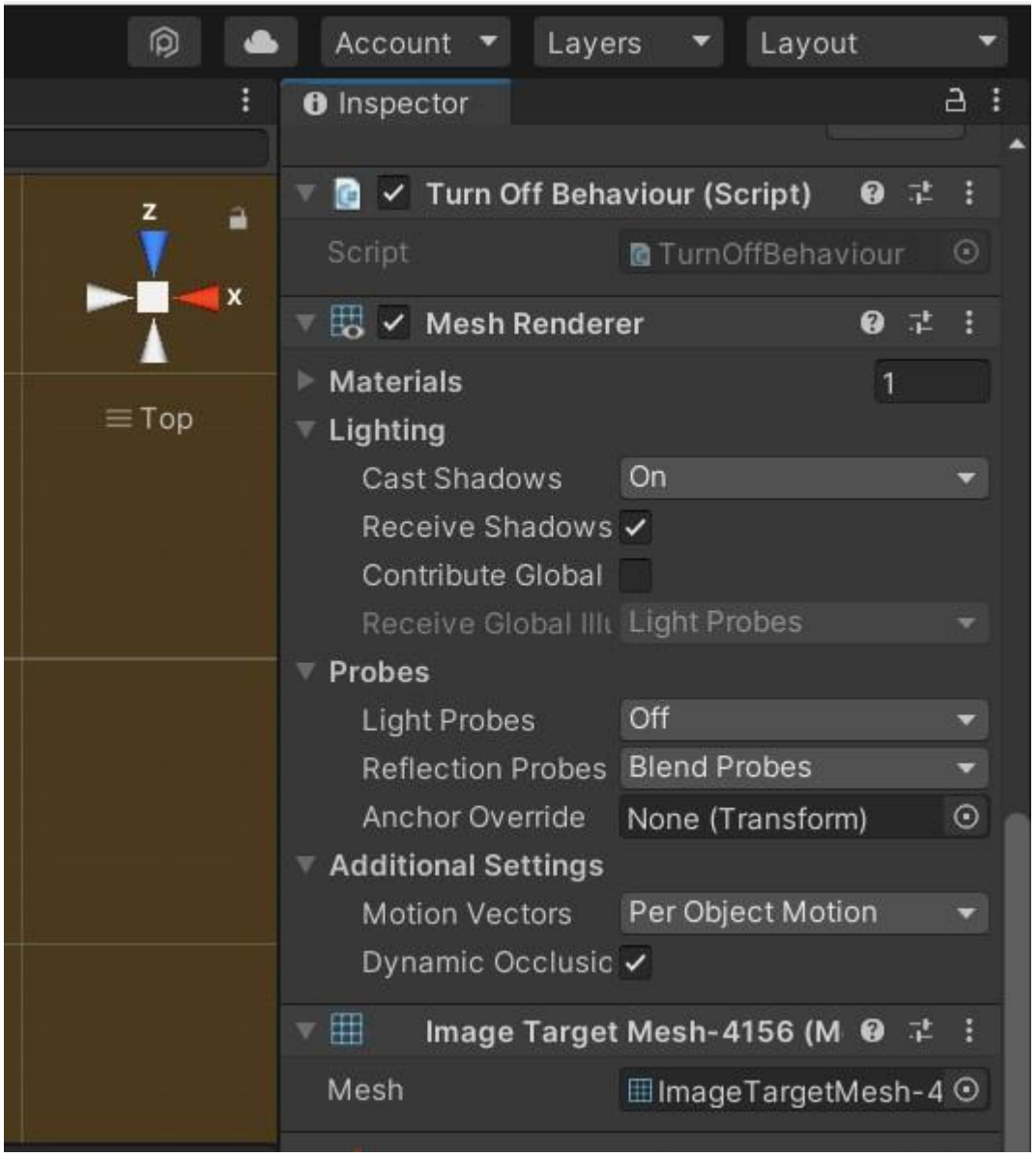

Figure 5.12 Insert Image Target

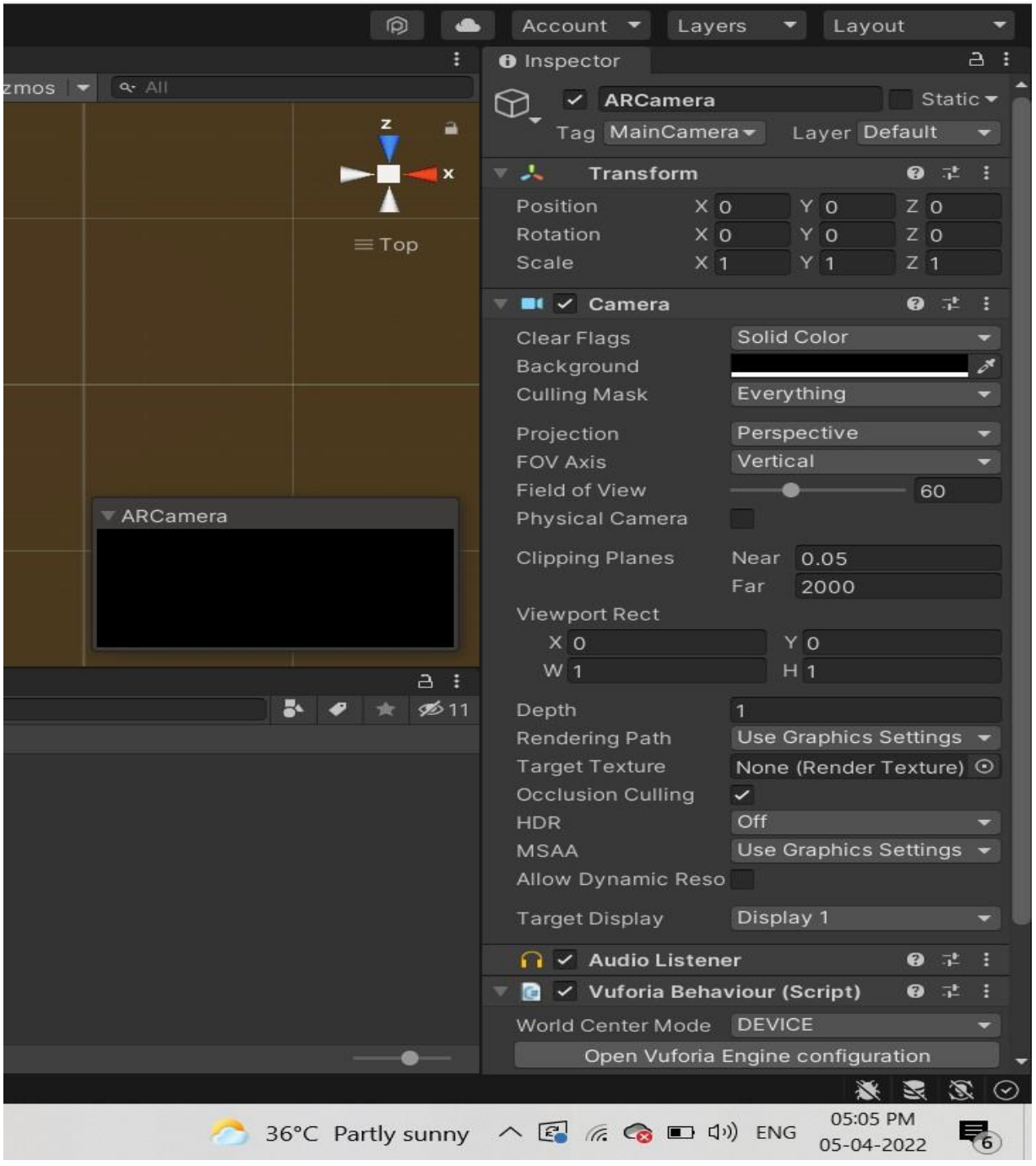

Figure 5.13 Fix the axis

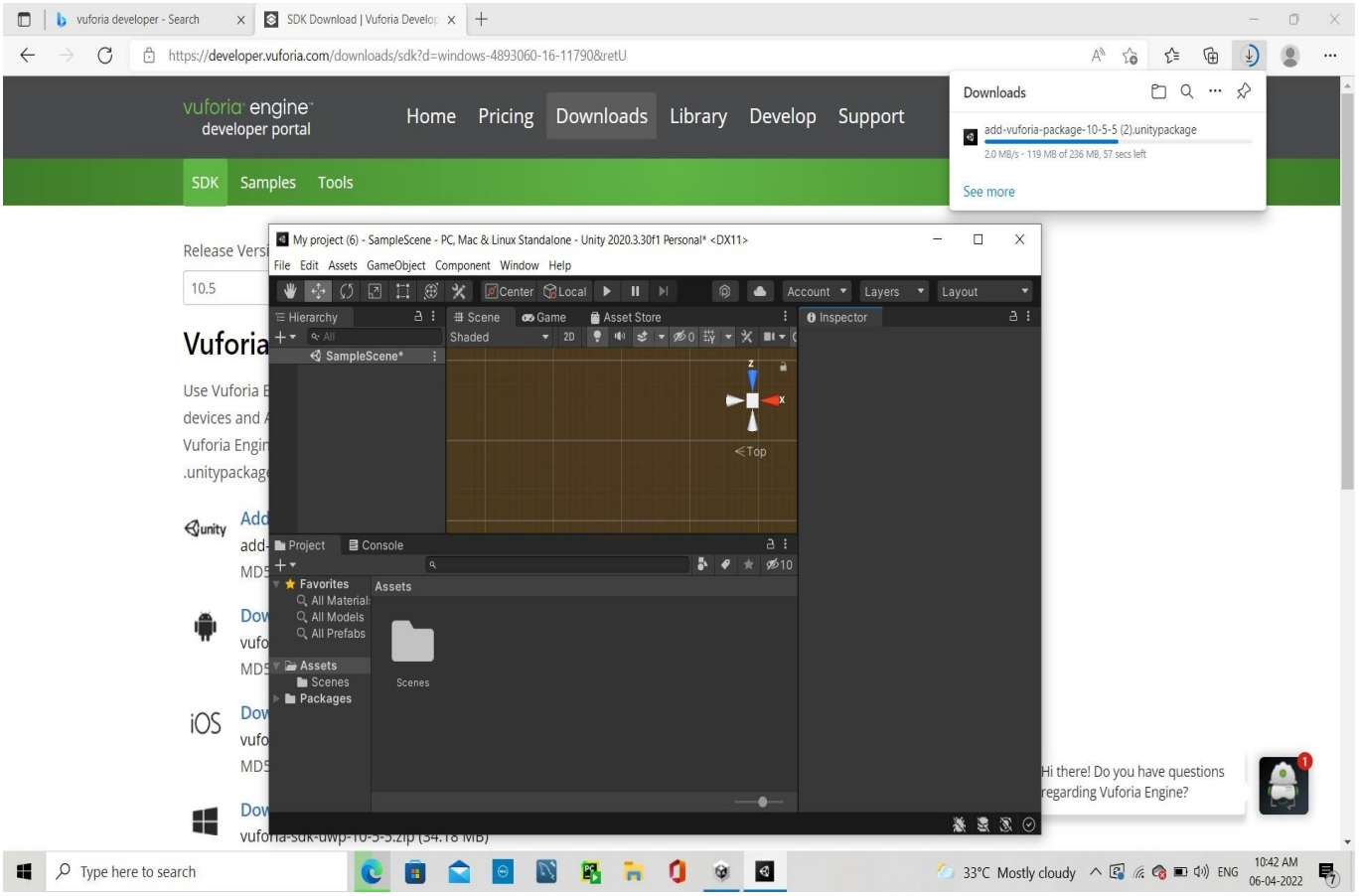

Figure 5.14 View of both Portal

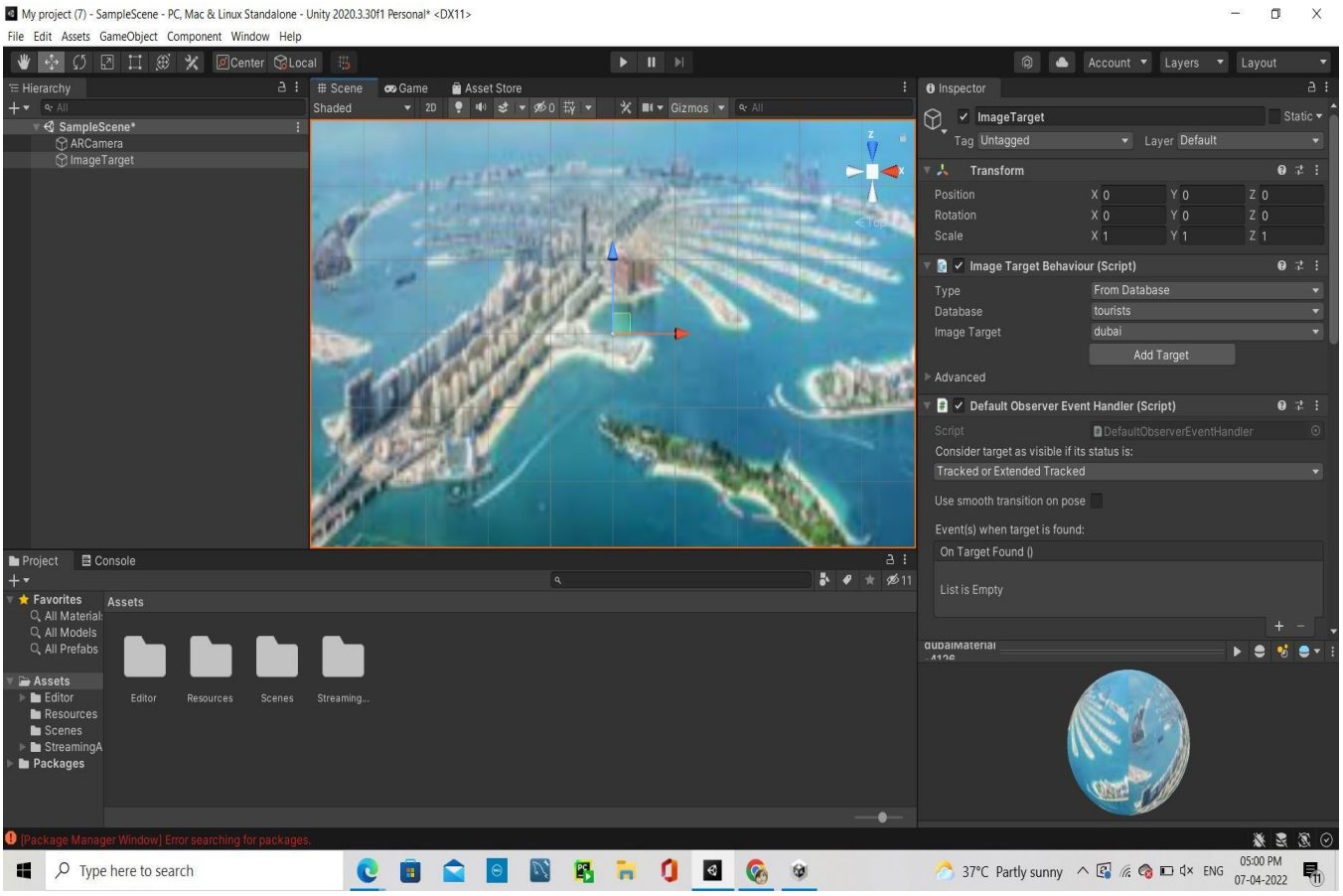

Figure 5.15 Fix the Image

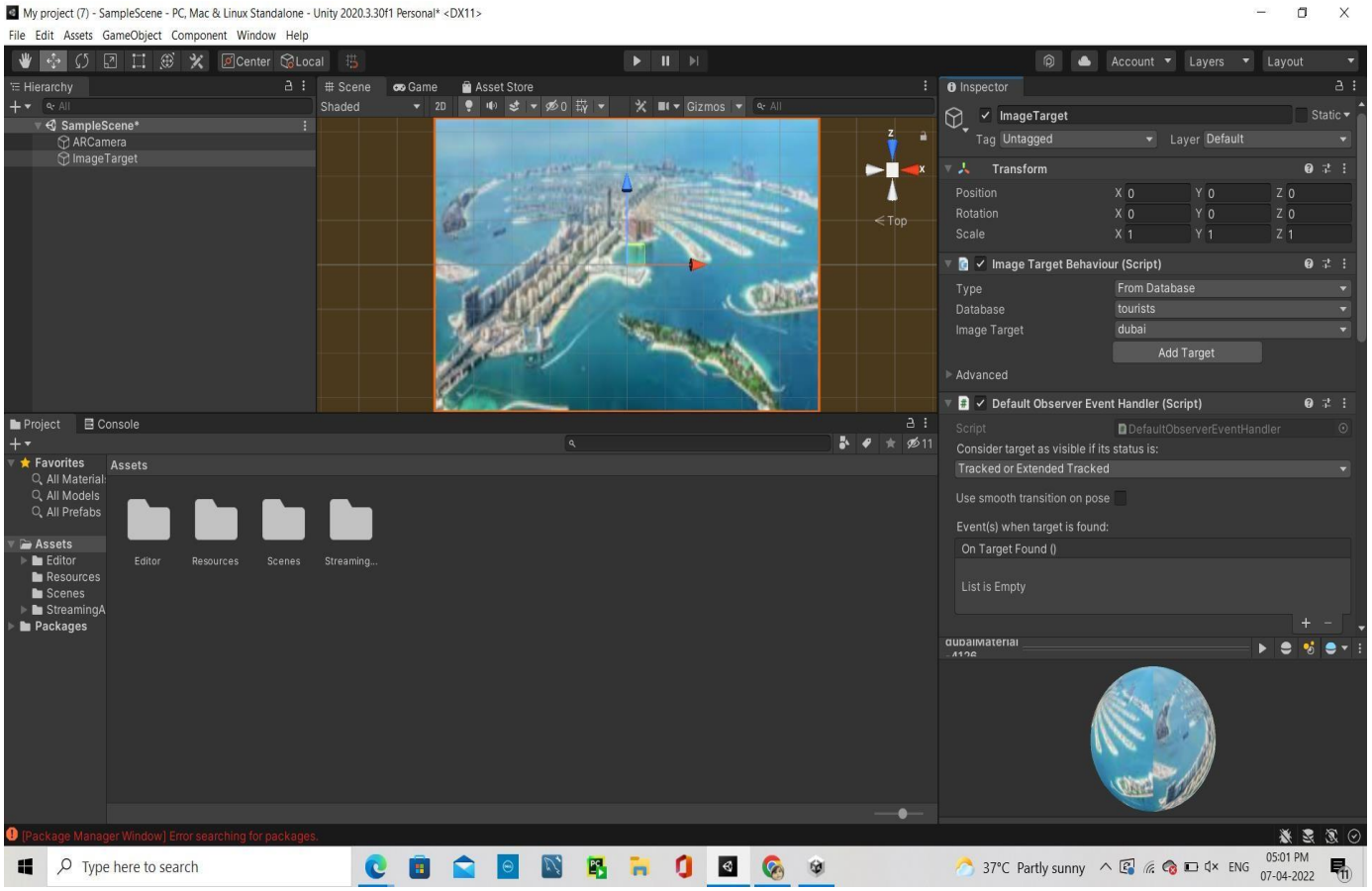

Figure 5.16 Fix the Image 2.

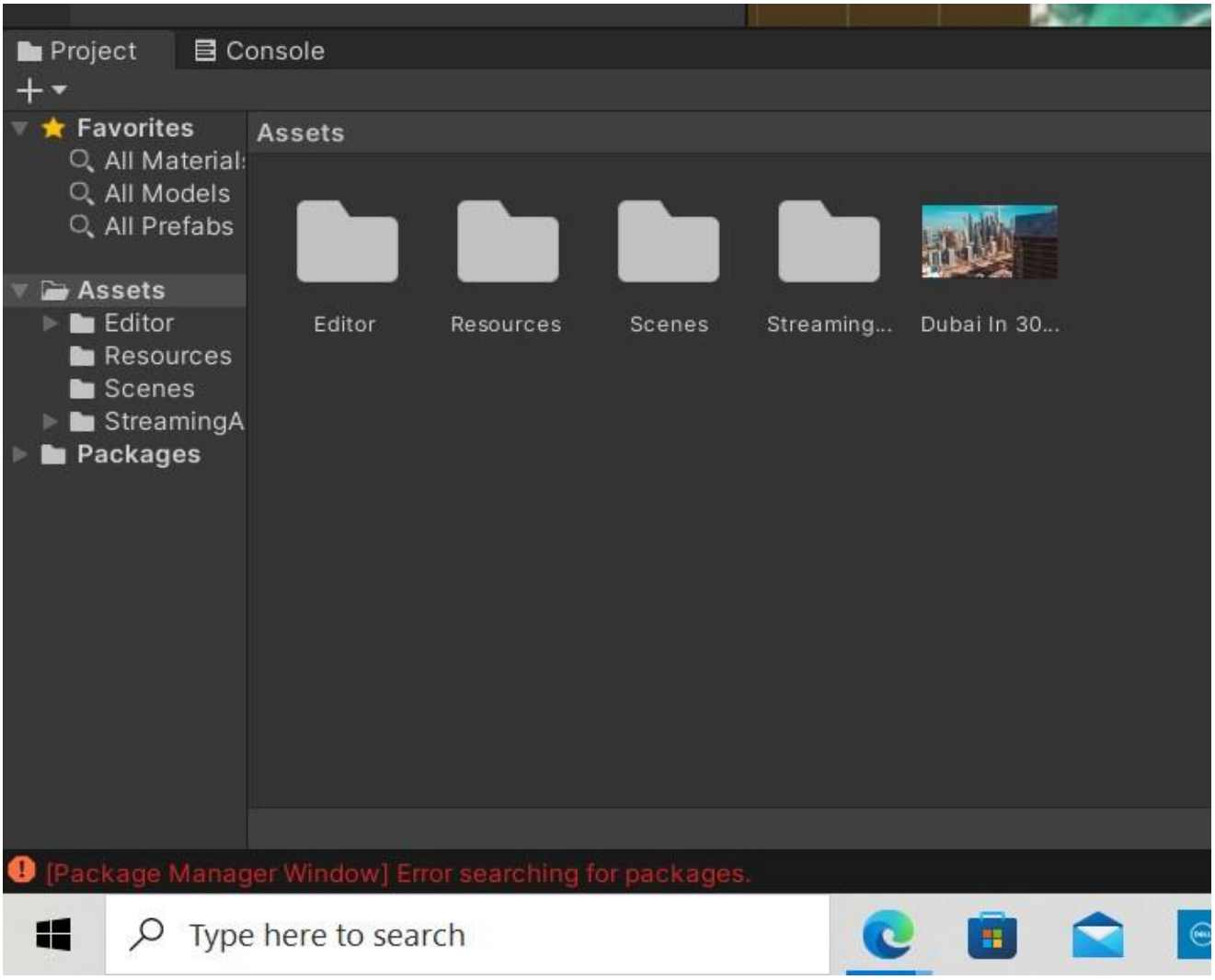

Figure 5.17 Insert the Video.

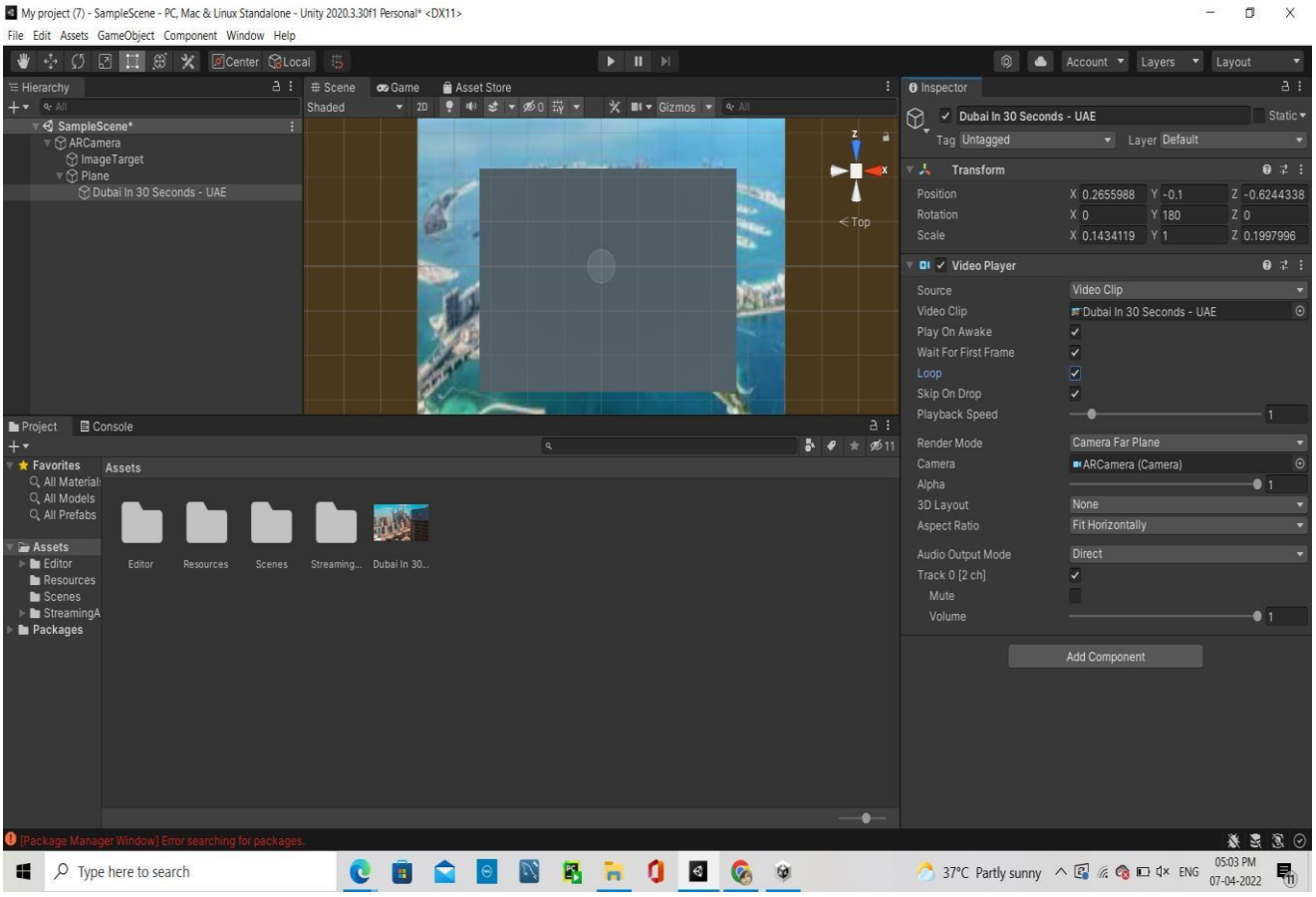

Figure 5.17 Import the video in Image Target

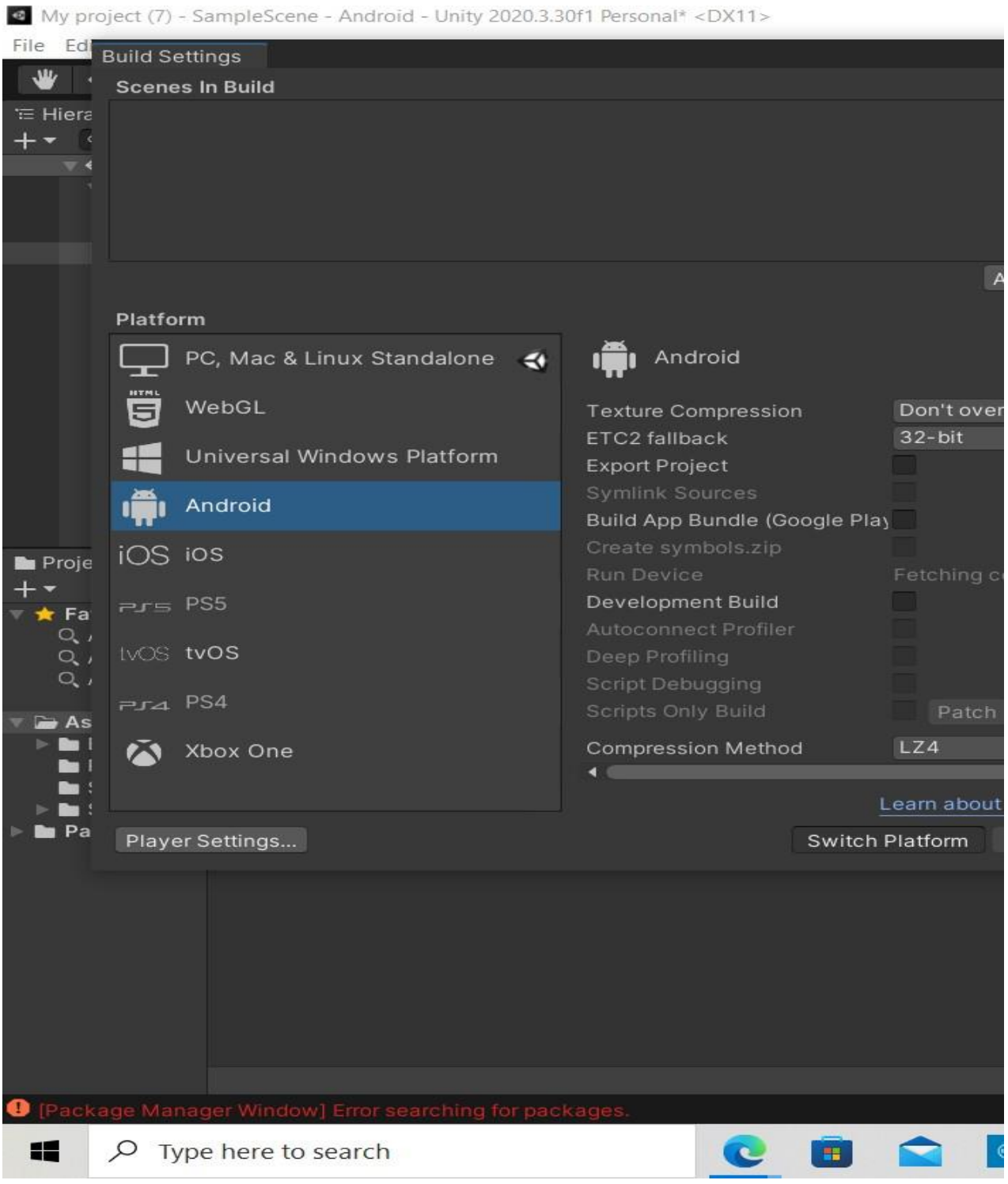

Figure 5.18 Build the settings.

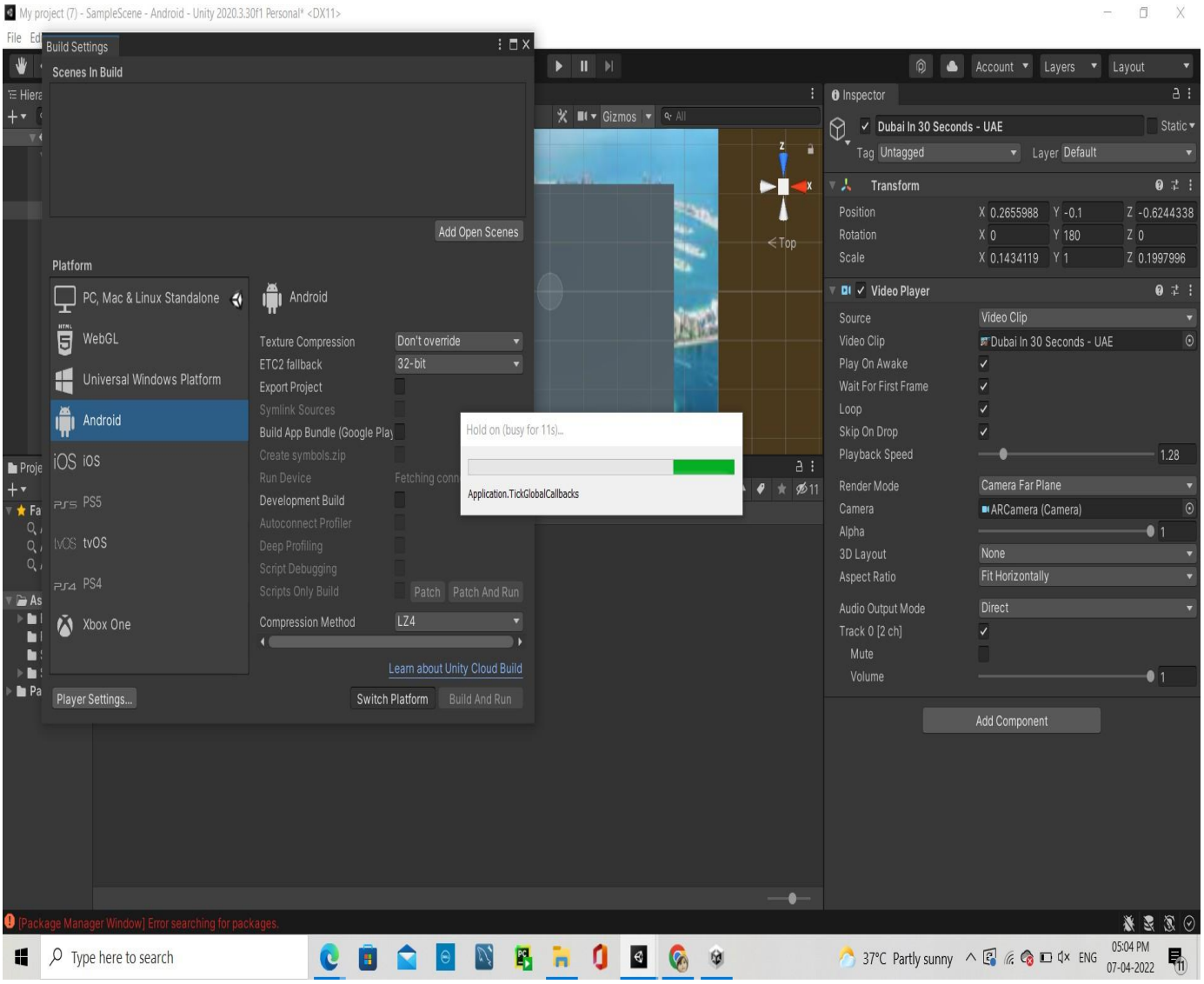

Figure 5.19 Run the Image target

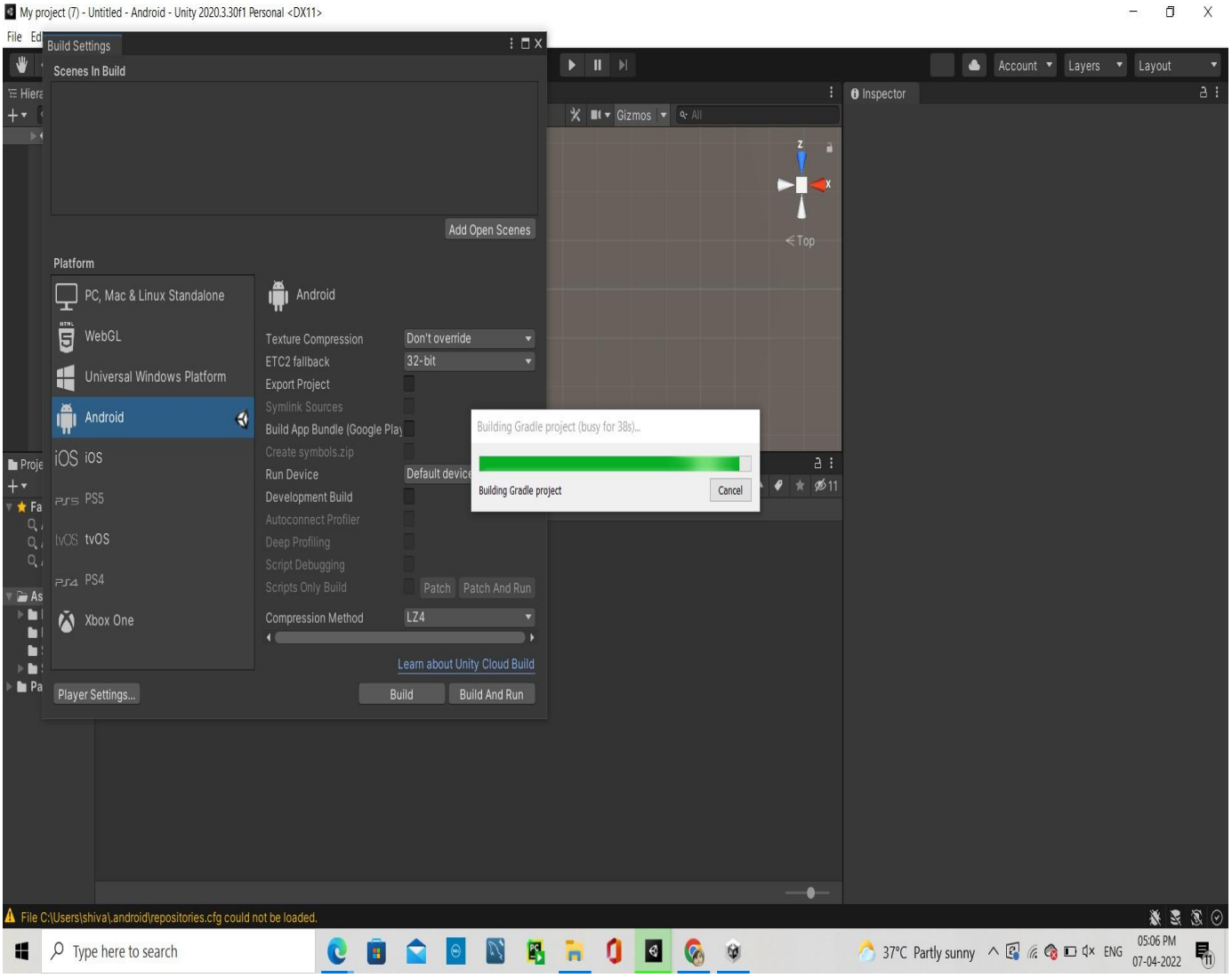

Figure 5.20 Running Process

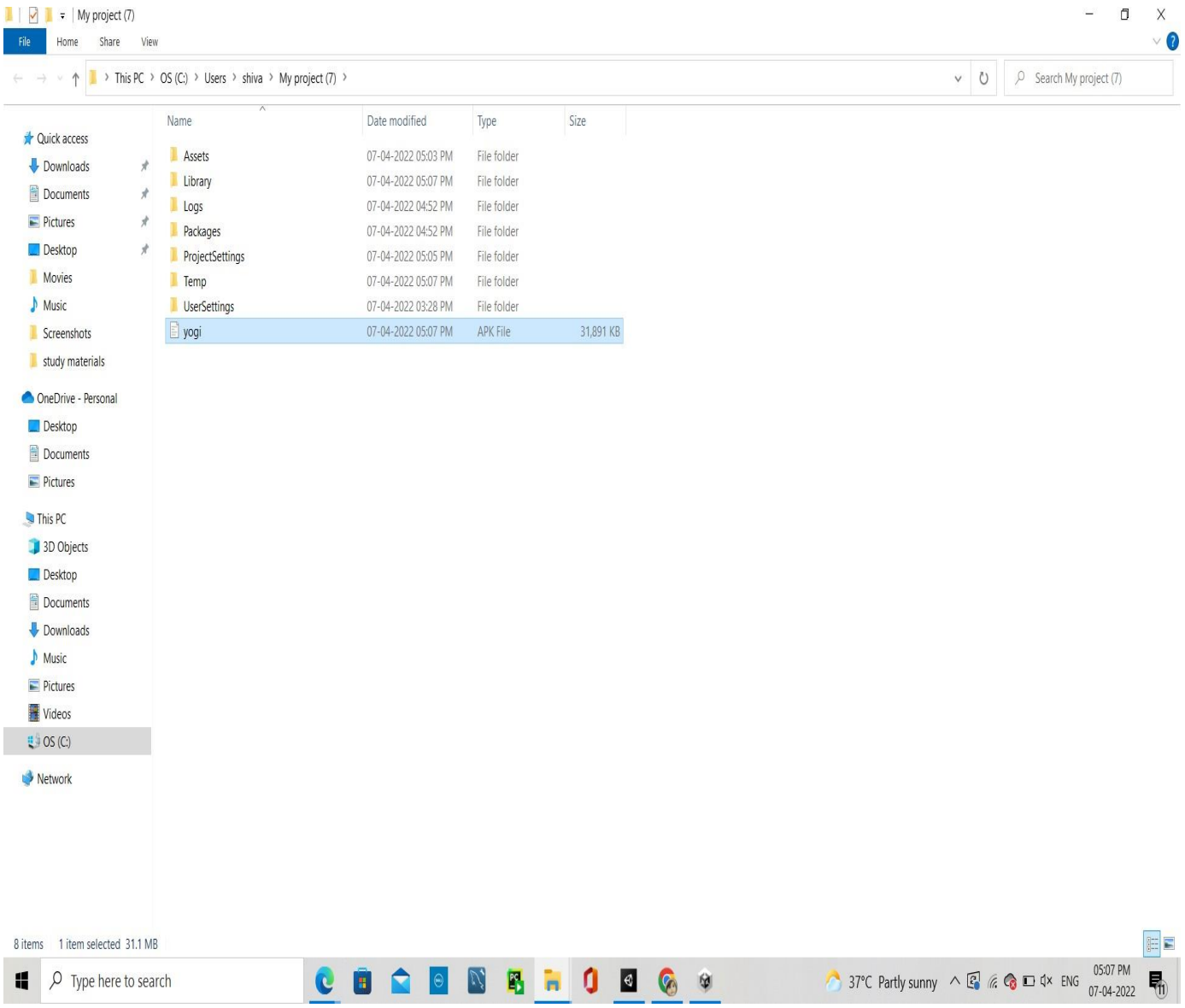

Figure 5.21 APK generated

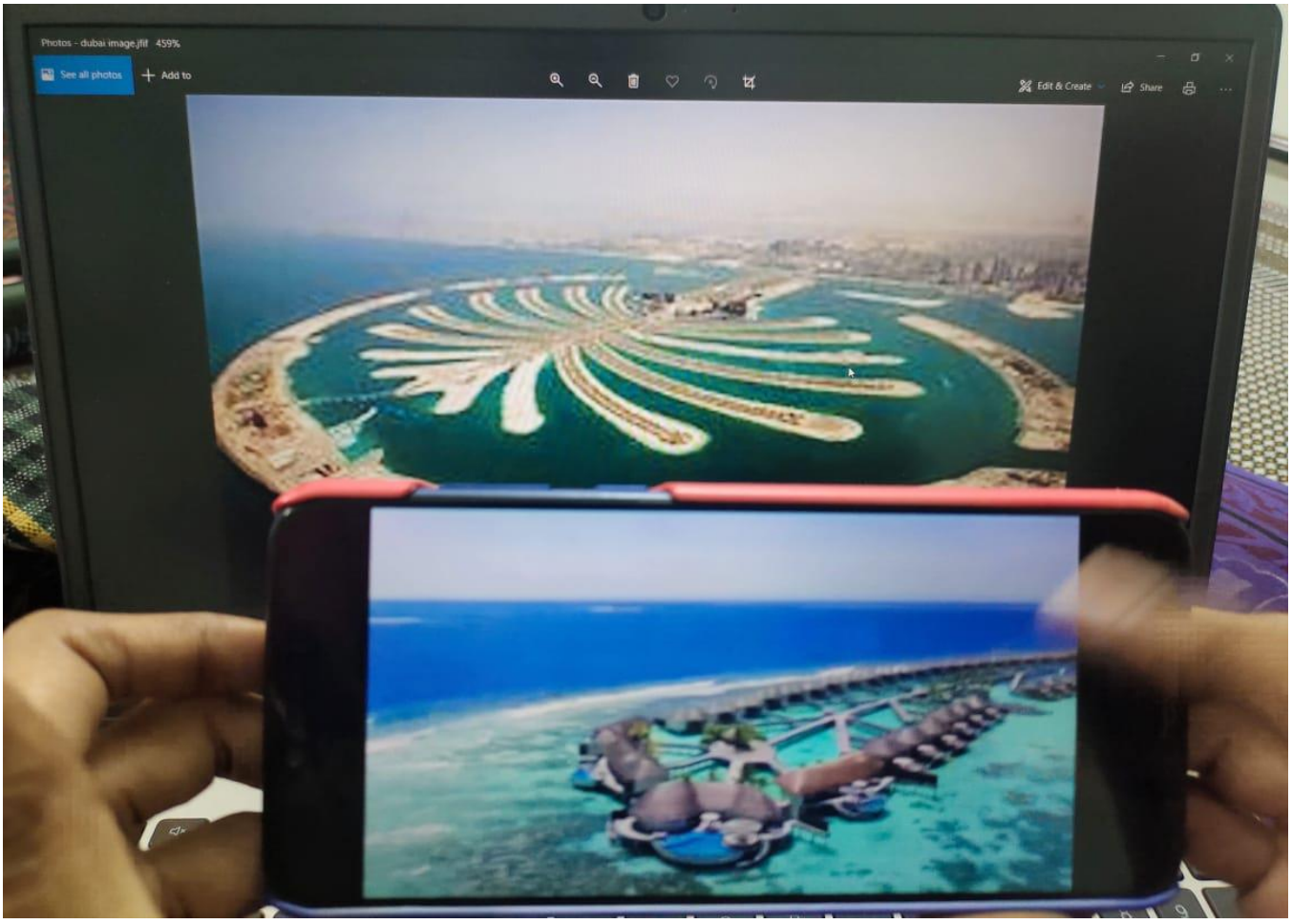

Figure 5.22 Imported image runned in the Image target

CHAPTER 6

CONCLUSION

The “Agumented Reality” can enhance the learning process, learning motivation and effectiveness. Despite the positive results, more research is necessary . In future ,we will add Virtual Reality in addition to give better experience for the users in the real world .

REFERENCES

1) The funding of this study was supported by the Ministry of Science and Technology of Taiwan under grant NSC 100-2511-S-147-002-MY3 and NSC 101-2511-S-147-001

2) https://journals.sagepub.com/doi/full/10.1177/1467358420941913

3) Journal of Software Engineering and Applications, 2014, 7, 745-755 Published Online August 2014 in SciRes , http://www.scirp.org/journal/jsea http://dx.doi.org/10.4236/jsea.2014.79069

4) https://educationaltechnology.wooster.edu/ar-posters/.