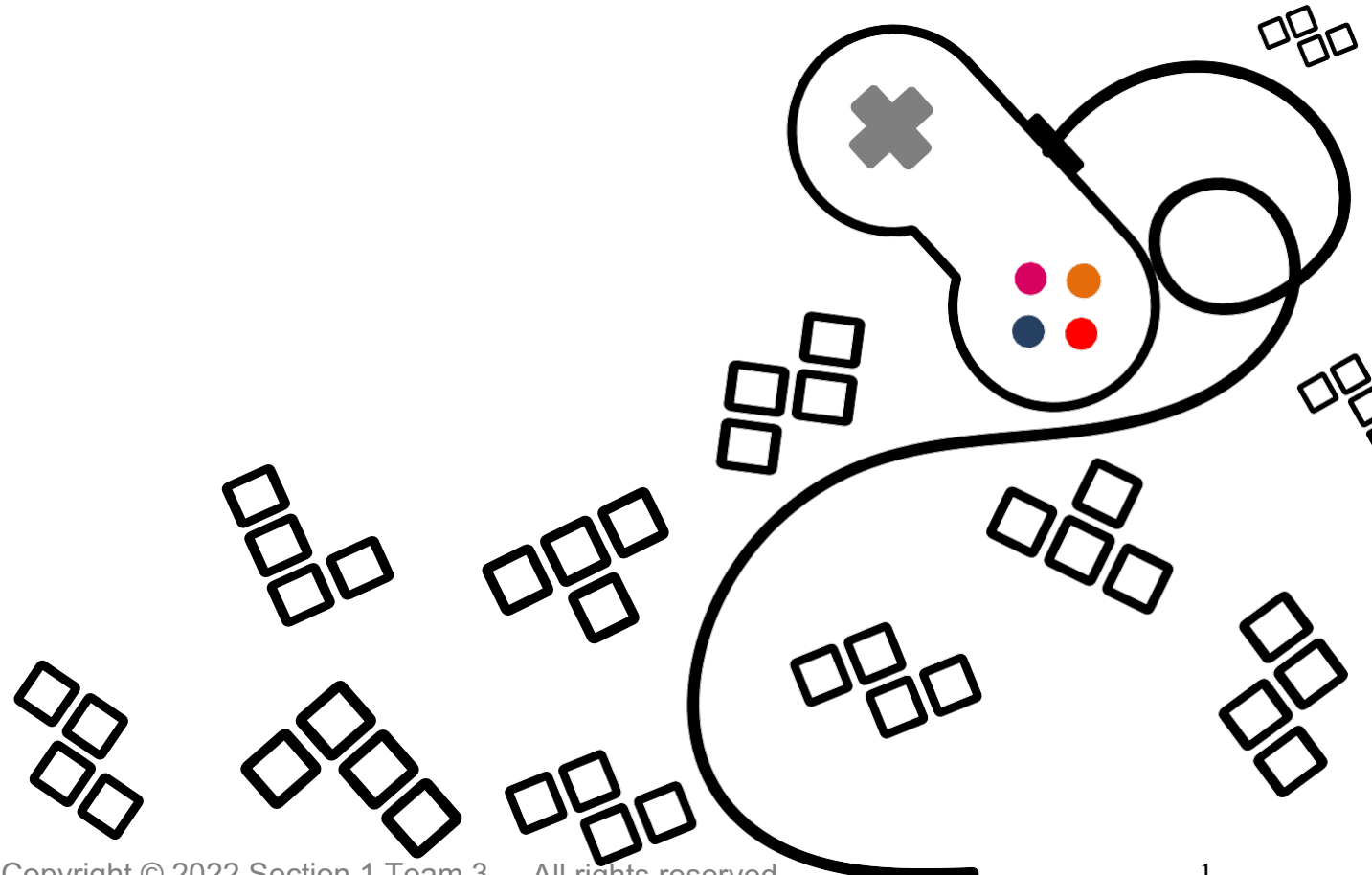
Project Team – 03

ShootAR Game

Software Design Specifications
Milestone - 2



Object:

Document Title
Software Design Specifications

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Date : **20-March-2022**

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Software Design Specifications

1. Introduction

This Software Requirements Specification (SRS) outlines the fundamental SRS with purpose, scope, definitions, acronyms, abbreviations, references and intended audience of the SRS.

1.1 Document Purpose

Our SDS document aims to provide detailed design and descriptions of the game we develop. Our system is categorized into Four parts

1. The initial page for the game is the first page when we open the game and
2. warmup page, which gives the user their first AR experience once the game begins.
3. Level 1 Design and complete Implementation
4. On successful completion of level 1 player moves to Level 2.

1.2 System Overview

Although AR provides a futuristic vision or may sound like a revolutionary technology, the facts say that it has been around for more than five decades now. As an AR game, ShootAR brings your digital environment to reality by identifying virtual objects in the real world. Our game recreates the movements of a human hand in remarkable detail, giving it an entertainment angle providing user with an immersive AR experience with background music and shoot effects upon shooting enemy object. Interactive Popups for better navigation during the game change levels and a timer to give the player an edge of the seat experience.

Our project seeks to determine the influence of AR mobile games on fine motor skills in young adults, an area of incomplete result and verification. With ShootAR, we aim to positively influence the basic motor skills of individuals, such as precision, aiming, speed, agility, or tremor. Our game players will perform significantly better in the accuracy of arm-hand movements with lower time and error rates.

1.3 Design Map

This document aims to collect, analyze and produce an in-depth understanding of the features we have implemented until milestone 2 to our professor, project manager and customer. We will describe the game features, characteristics, and design implementations. The detailed requirements of the ShootAR system are provided in this document.

2. Functional Requirements

This section discusses the software system and functions implemented in the project's second phase. It also includes features of prime focus to the user and the customers.

2.1 User Interface

When it comes to the User interface of the AR games, we wanted to reinvent the wheels of the UX design. Our interface is clean, interactive, and compatible with all iOS and Android devices. It is tested on real devices and emulators for better performance. In this part, we have implemented the needs for customer by taking inputs from our experienced Project directors.

Currently, the initial page and warmup page allow you to direct your input in AR space through an action (shooting the PLAY button) and launch the playable screen. At this stage, by interacting with our game, you will feel like you are interacting within a natural world environment which acts as a tutorial for the player and get familiar with the UI and UX of the game. Upon successful completion of tutorial, player would be moved to play the Level 1 of actual game.

2.2 Software Interface

The software for ShootAR is made using a variety of complementary technologies where the core software technologies include:

2.2.1 Unity & C#

Unity is the backbone of our immersive ShootAR game. It provides rich toolsets, libraries and packages to develop industry-leading games. We are using Unity with the C# coding language to build the scripts which perform different functions. It provides engaging augmented reality experiences that intelligently interact with the game user.

The coding scripts are also used to create the starting page warmup page, level 1 page, respond on touch, add icons on the gameplay, Background music, action sounds, timer and more. Using different libraries supported by Unity, we make and test our game on different platforms like Android or iOS without any additional efforts. This package is open-source and easily downloaded for Linux, Windows, or Mac OS.

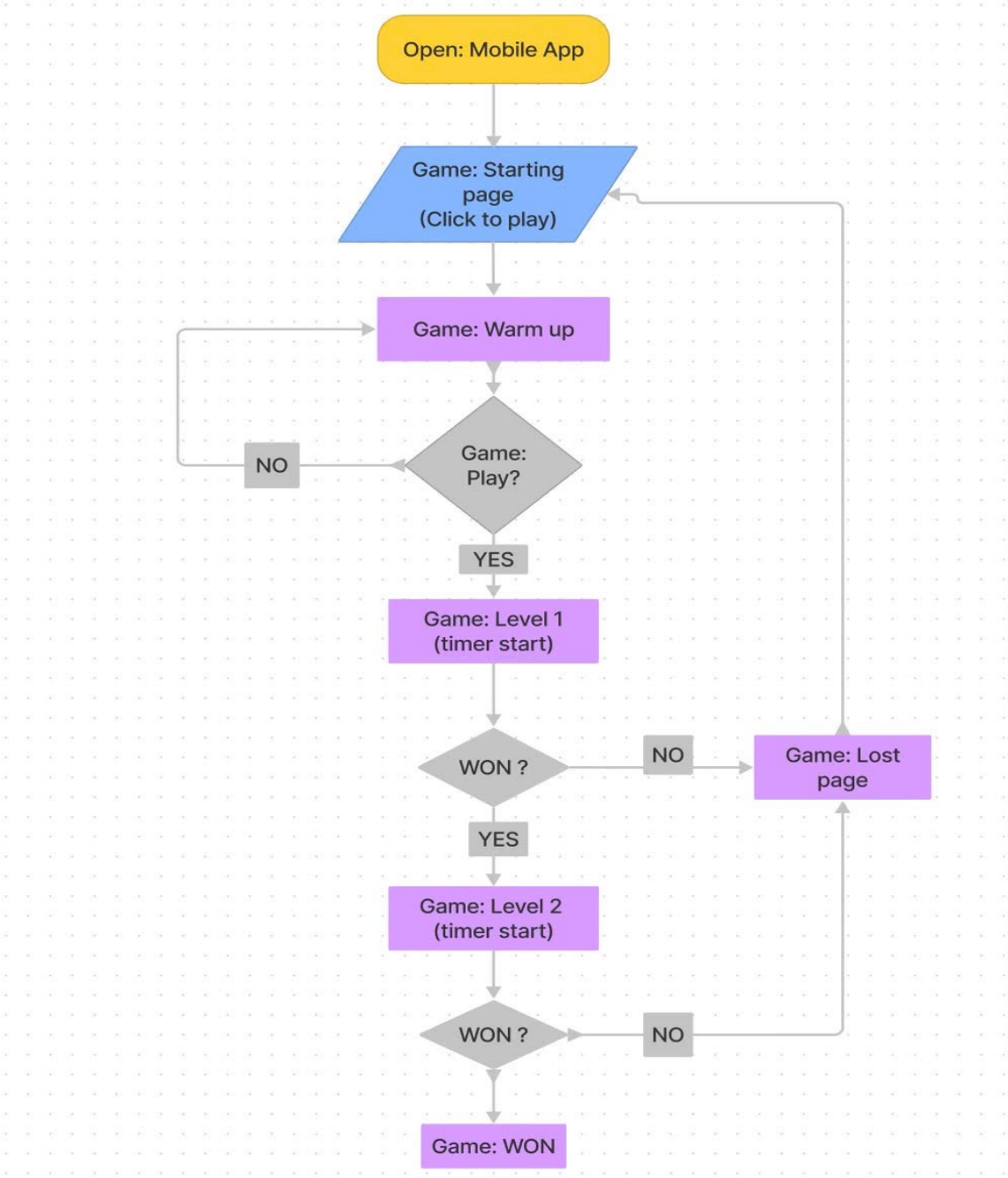
C# scripts are well supported by Unity, and it powers everything the engine does for 3D rendering. Using C# scripts is the best tool that allows a developer to make an AR game on Unity and create custom actions and interactions within a game space.

2.2.2 JIRA & GitHub

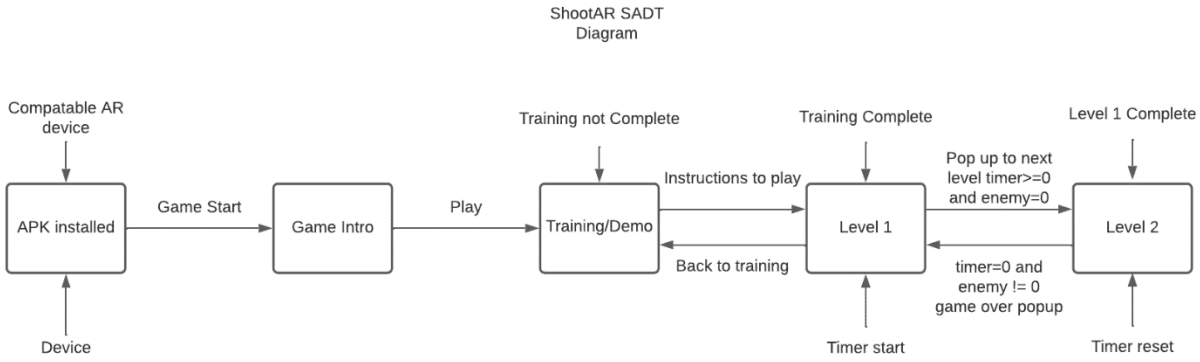
JIRA and GitHub are software technology tools that help keep track of the progress. JIRA is an open-source software using which we assign, organize, and implement changes and modifications. It helps our team to drive workload to agile software development. It also helps us report and resolve bugs and issues by tracking them in the cloud storage.

GitHub is another open-source internet hosting tool for software hosting and version control. We track source code functionality and other game features being developed using this tool. It helps all the team members to collaborate and work together on the ShootAR game remotely. It is a great tool that is safe, secure, and easy to use for all software engineers.

2.3 Flow Chart



2.4 SADT Diagram



3. Architecture

3.1 Overview

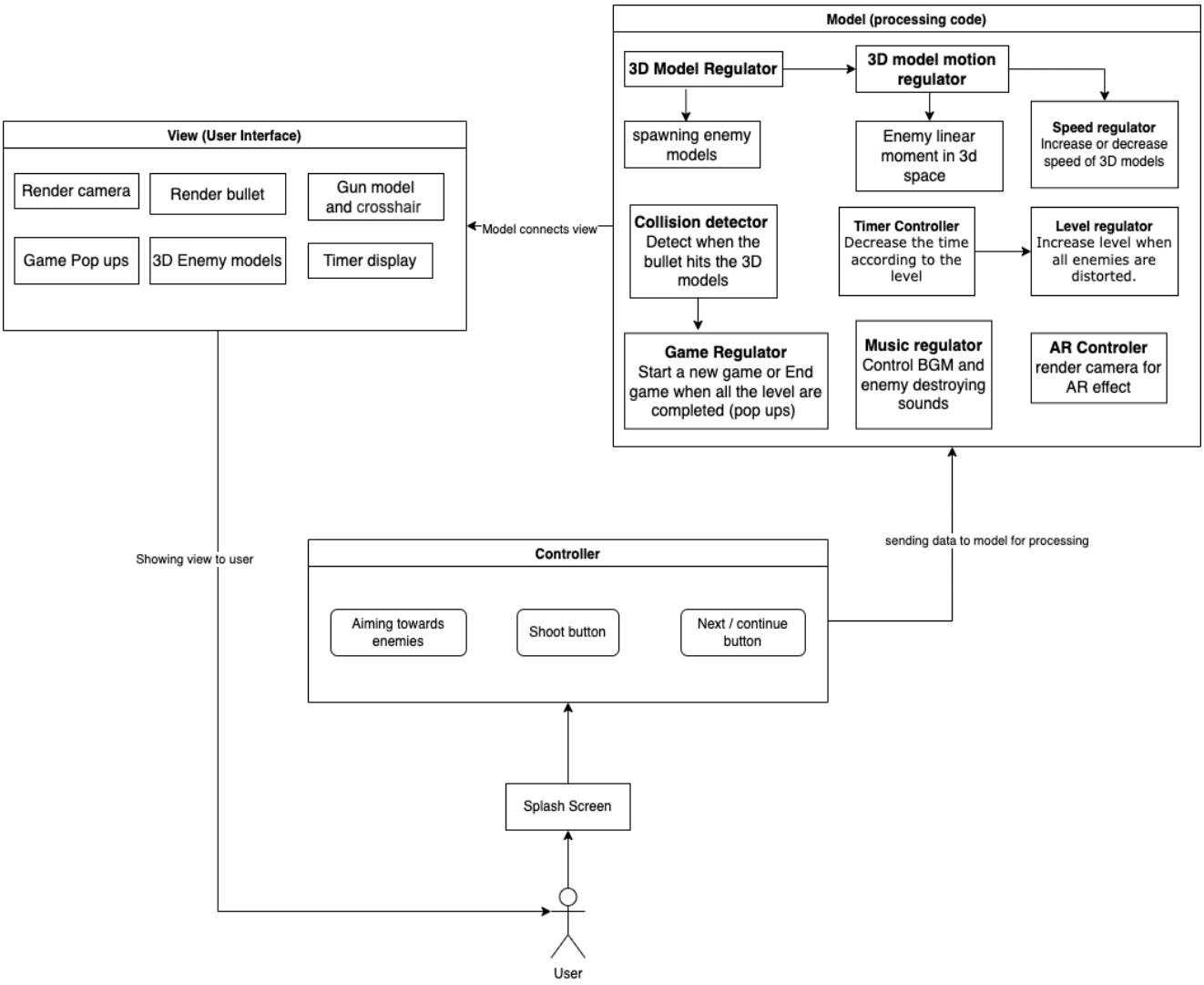
This section provides a detailed overview of the structural and functional decomposition of the ShootAR game. We will focus on details of the components.

The player plays the game using his mobile phone. The unity game engine is the heart of the game, it renders the AR objects and displays it on the screen. The player moves around to find the enemy objects and shoots them. If all the enemies are killed the game ends.

For this game we are using Model view controller architecture as it is one the best suitable architecture for our game. In our architecture (MVC) user interacts with the controller where all the controllers (ex: shoot button) of the game is situated. Then user sends a request to the model where all the core operation takes place. Model contains all the main code which process the controls send by the user and send this to view, from which the user can see the output.

3.2 High level Architecture

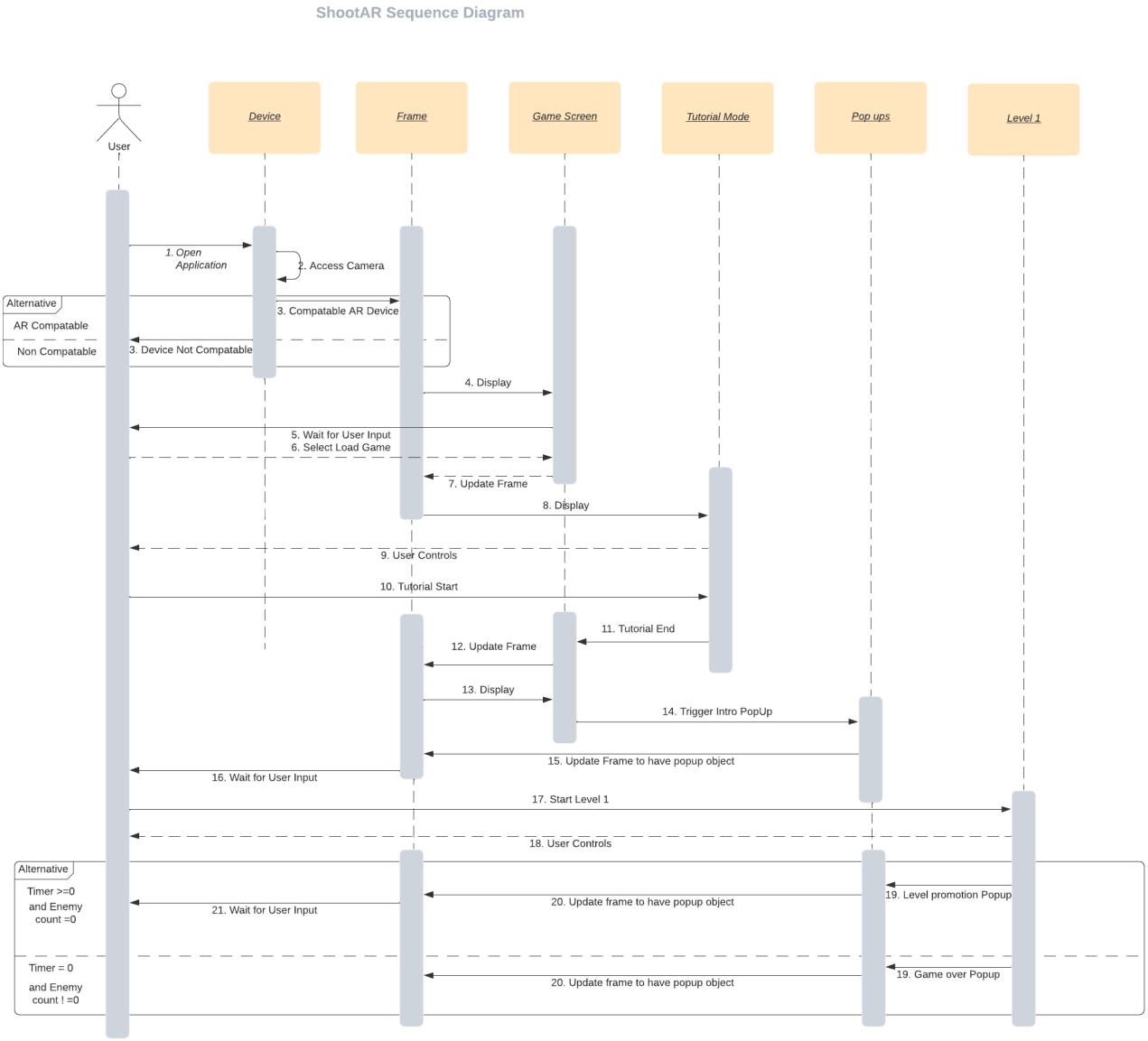
This is the view of architecture where we will display the overview of the syste**m and identify the main components in the system**



High Level Architecture diagram

3.3 Low level Architecture

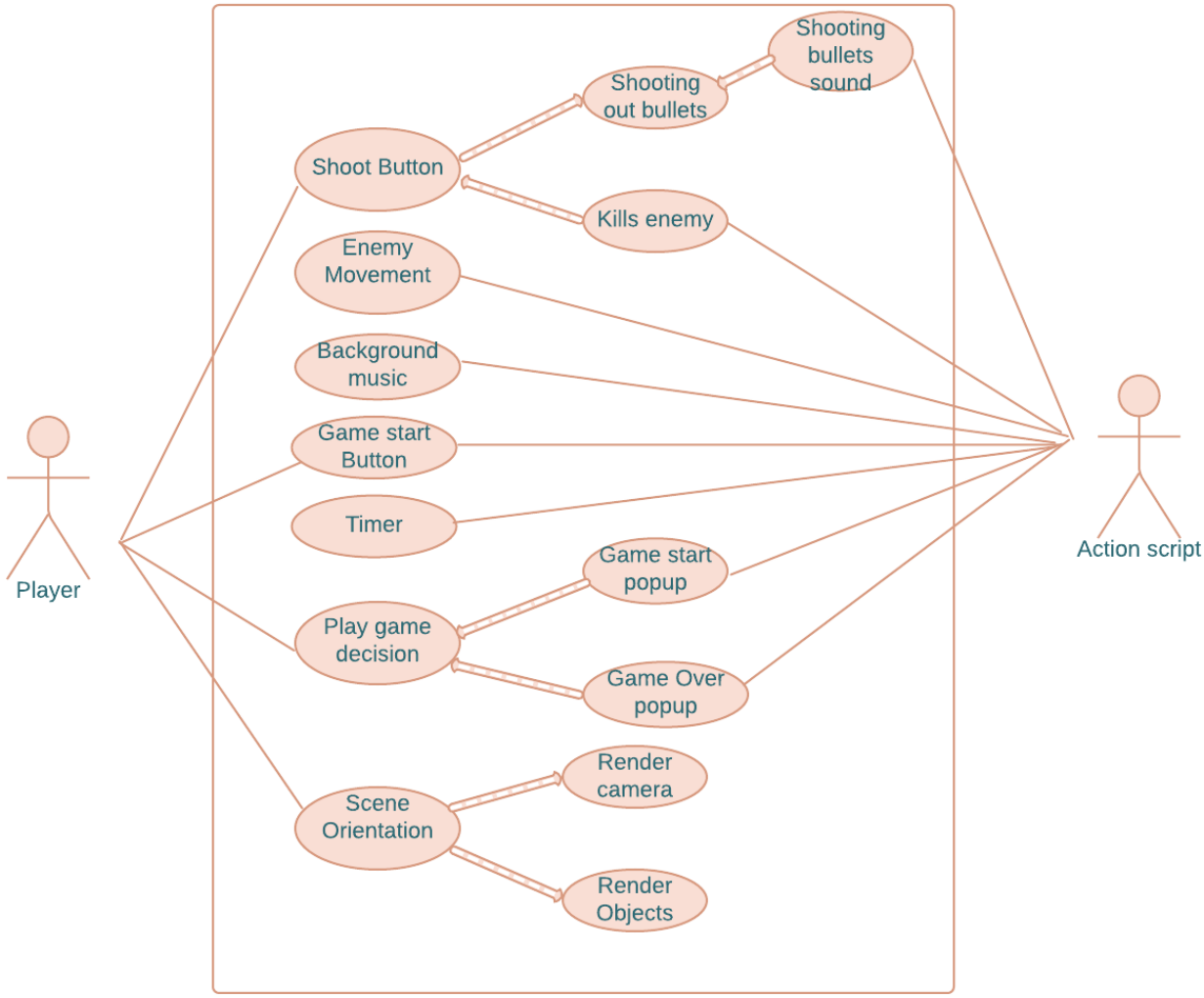
In this low level architecture diagram we have mention the step by step process of the game and its design. We have expressed this architecture in sequence diagram.



Sequence Diagram ShootAR

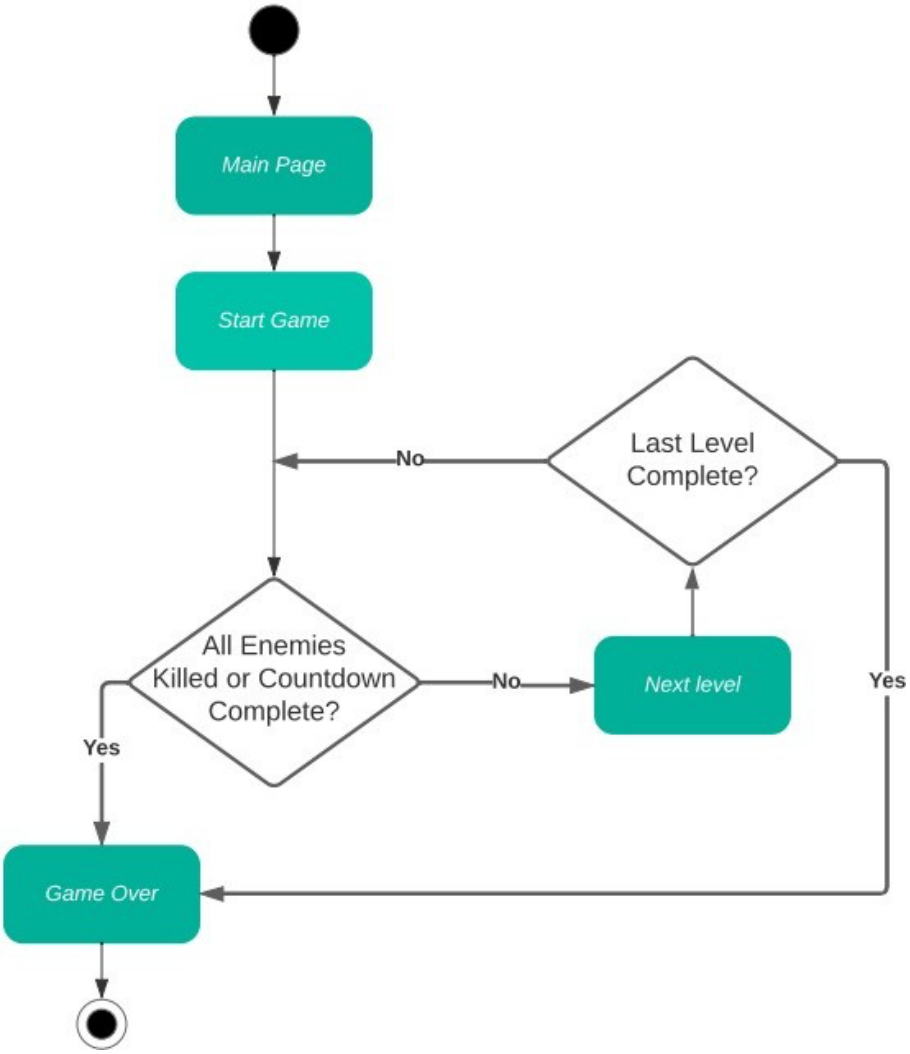
4. UML Diagrams

4.1 Use Case Diagram



ShootAR UML Diagram

4.2 Activity Diagram



ShootAR Activity Diagram