SumSaber User Guide

By Sicong Nie

Introduction

SumSaber is a VR game where players wield two lightsabers to solve math problems by slicing through cubes. This guide provides an overview of the game's settings and structure. This guide offers a comprehensive overview of the game, aiding successors in seamlessly continuing the development of this project.
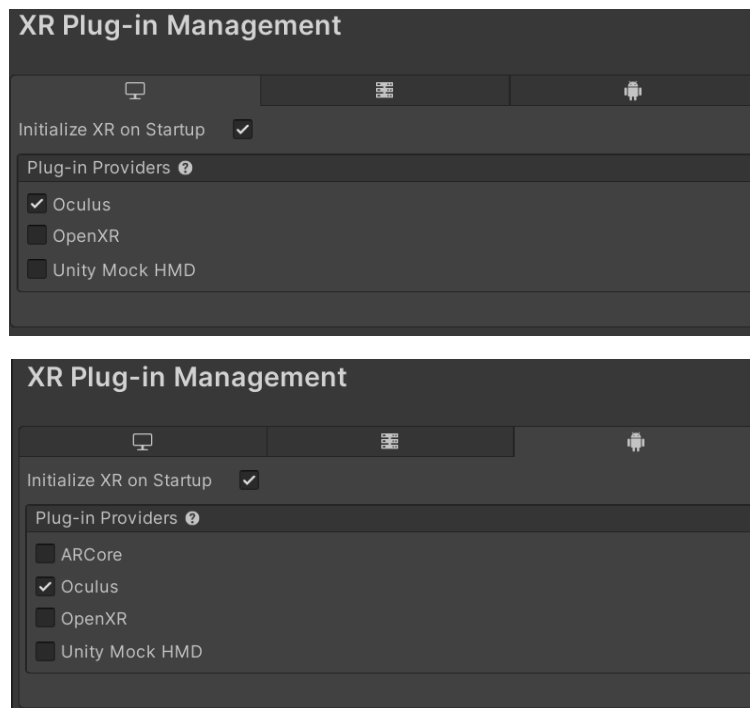
Settings

Unity version

2021.3.8f1

VR headset used during development

 Meta Quest 2

Unity package used for VR

XR Interaction Toolkit

XR Plug-in Management settings

I followed this tutorial to configure the VR settings for the project:

https://www.youtube.com/watch?v=yxMzAw2Sg5w

Project structure

There are the important folders for the game. Please refrain from deleting anything in these files until you fully understand their functions and roles:

Resources folder

This folder contains the following essential game resources:

- **Dark UI**: This subfolder contains sprites used for the game's menus
- **Fonts**: fonts used for displaying text within the game
- **LocalSetting**: This subfolder holds settings and tables related to localization, enabling the implementation of a multi-language system for seamless translation and localization.
- **Material**: materials used for rendering the cubes, lightsabers, and the game environment.
- **Models**: The models subfolder stores assets imported from Blender
- **Prefabs**: prefabricated game objects that can be reused and instantiated in multiple scenes
- **Shaders**: shaders of the lightsabers
- **Sounds**: the background music, sound effects and audio mixer of the game.

Scenes folder

Includes all scene files, including the main menu, game levels, and end screens.

- **Lightmaping folder**: Within this subfolder, you'll find the baked lighting files for the game. These lightmaps enhance the visual quality of the scenes by pre-calculating the lighting effects and shadows.
- **Gameplay**: Scene of the core gameplay environment where players immerse themselves in the virtual space, slicing cubes and solving math problems.
- **Home**: Scene of the start menu
- **ModeMenu**: Scene of the mode menu and options menu where players the mode and difficulty of the game can choose.
- **SettingMenu**: Scene of the setting menu where player the setting of the game can adjust

Scripts folder

Contains all game scripts organized by functional modules, such as Cubes, Lightsabers, UI, etc. Each script has special comments for its functions.

Note: For the slicing function in SumSaber, I utilized scripts from a tutorial on object slicing and customized them to suit the game. I followed this tutorial as a reference:

https://www.youtube.com/watch?v=BVCNDUcnE1o

The related scripts are: Sliceable, Slice1, Slice Metadata, Object Cut and Lightsaber.

Settings folder

The settings folder contains assets and configurations related to the Universal Render Pipeline across various quality levels. It offers rendering features and optimizations tailored to different platforms, ensuring optimal performance and visual fidelity. The quality levels available within the settings folder are as follows:

Very Low – Low – Medium – High Very – High – Ultra

The level which used during the development is High.

Game Flow

1. **Start Menu**: The game begins with a start menu where players can view the game logo, navigate to the main menu, or exit the game.
2. **Main Menu**: Within the main menu, players have the option to select game modes and configure advanced settings. They can adjust the mode's difficulty level, start a new game, and explore various options.
3. **Gameplay**: In the game, players find themselves in a virtual space filled with cubes representing mathematical sums. They use their lightsabers to slice the cubes and solve the sums.
4. **Scoring**: The score starts at 10.0, and players must strive to solve the sums correctly in order to maintain this high score throughout the game.
5. **Game Over**: The game concludes either when players have successfully completed all the sums or when they choose to exit the game. A result menu displays their achievements and performance before concluding the gameplay session.
6. **Pause menu**: During gameplay, players have the option to pause the game, accessing a pause menu where they can resume or quit the current session.
7. **Setting Menu**: Players can access the settings menu from the main menu, where they can fine-tune various aspects of the game. This includes adjusting the game's volume, language preferences, and even customizing the colours of their lightsabers for a personalized experience.