Majuli River Island Virtual Tour

Code Design Document

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Contents

1 Introduction

By laying out the specifics of how the software should be constructed, this software design document provides documentation that will be used to help with software development. This software design document includes narrative and graphical documentation of the software design for the project, as well as data flow diagrams of each level and a corresponding ER diagram that graphically represent the flow of data and logic within the software system and help to understand how the software components interact with one another.

1.1 Purpose

This software design document's main goal is to give readers a thorough overview of the Majuli River Island virtual tour system. This gives enough information about a system's design that software development can move forward knowing exactly what needs to be built and how it should be built.Users can easily and without prior tech knowledge navigate the tour thanks to an intuitive and user-friendly interface. Compatibility with Google Cardboard, which allows users to experience the virtual tour using a simple and accessible device and controller used for the movement.

1.2 Scope of Project

The scope of our system is to provide a realistic, immersive and interactive experience for users, allowing them to explore the island's natural beauty, and daily life activities and cultural heritage. The system utilizes Google Cardboard and controller to simulate a visit to the island, providing an intuitive and engaging user interface.

1.3 References

- Tools for Data Flow diagrams and ER diagrams:
  - `https://www.canva.com/`

- Sources for reference
  - NPTEL MOOCs course on design and implementation of human computer interfaces
  `https://archive.nptel.ac.in/courses/106/103/106103237/`

1.4 Overview

The various sections of this software design document are

1. Introduction
2. Glossary
3. Data Flow Diagram
4. Entity Relationship Diagram

2 Glossary

1. Majuli Island:
   A river island in Assam, India known as the largest river island of the world. This is our location for the virtual tour.

2. Virtual Tour System:
   The software application that enables users to explore Majuli Island in a virtual environment using a Google Cardboard device and eye gaze technology.

3. Google Cardboard:
   This software application that enables users to explore Majuli Island in a virtual environment using Google Cardboard device and controller technology.

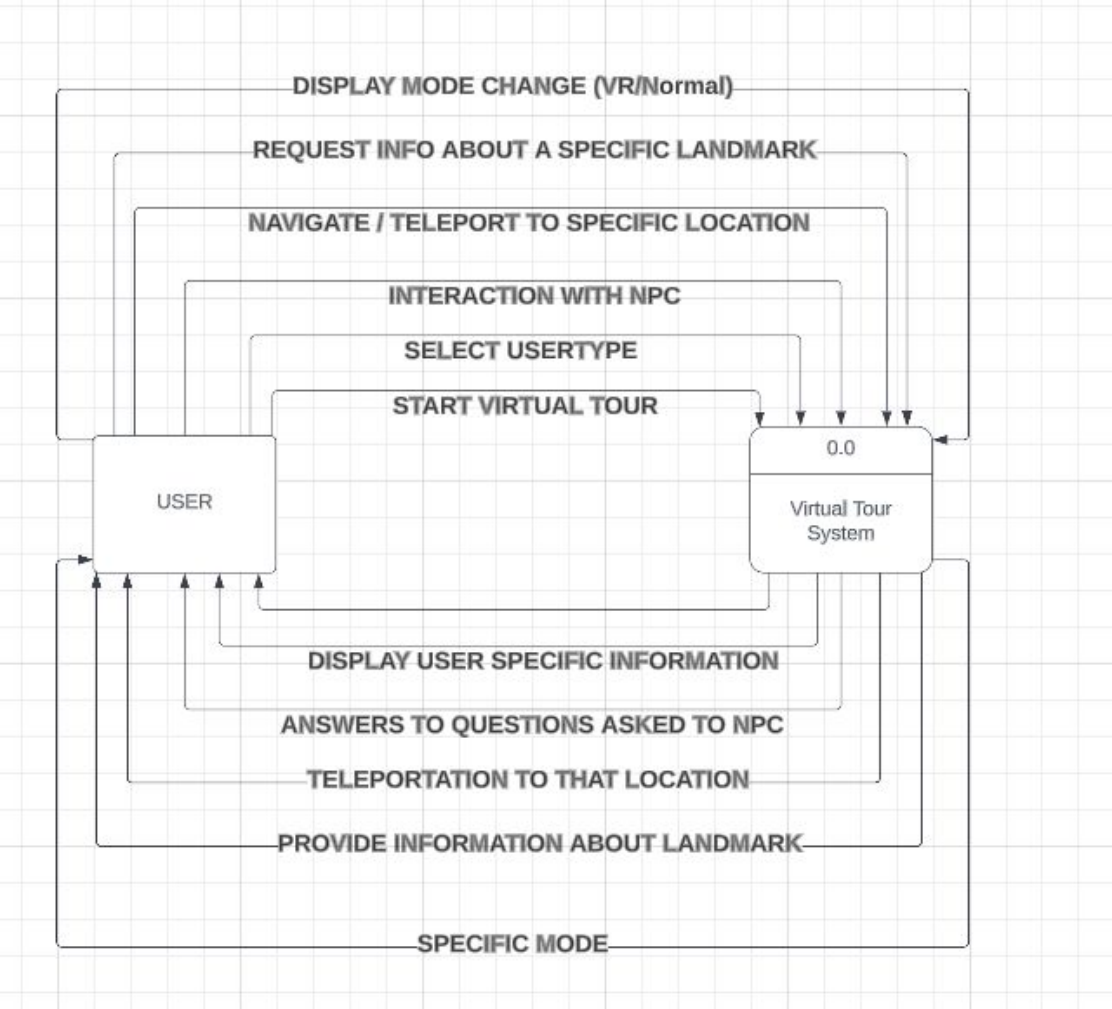
4. Controller Technology:
   A type of assistive technology that uses a controller enabling them to interact with the virtual environment.

5. Touch Screen Technology:
   A type of assistive technology that takes our touch on the screen as the input and allows user to interact with the virtual environment. It works in similar way as the controller.

3 Data Flow Diagram

3.1 Level-0: Context Diagram

The virtual tour system's context diagram gives a general overview of the island's interactive tour. Only one process and one external entity are depicted in this instance. The tour's goal is to immerse visitors in the island's culture, highlight its distinctive features, and give them a sense of what it's like to visit in person. Interactive elements like 360-degree views, interactive audio guides, and videos that provide additional details and context for the island's attractions and features will be included as special features of the tour.



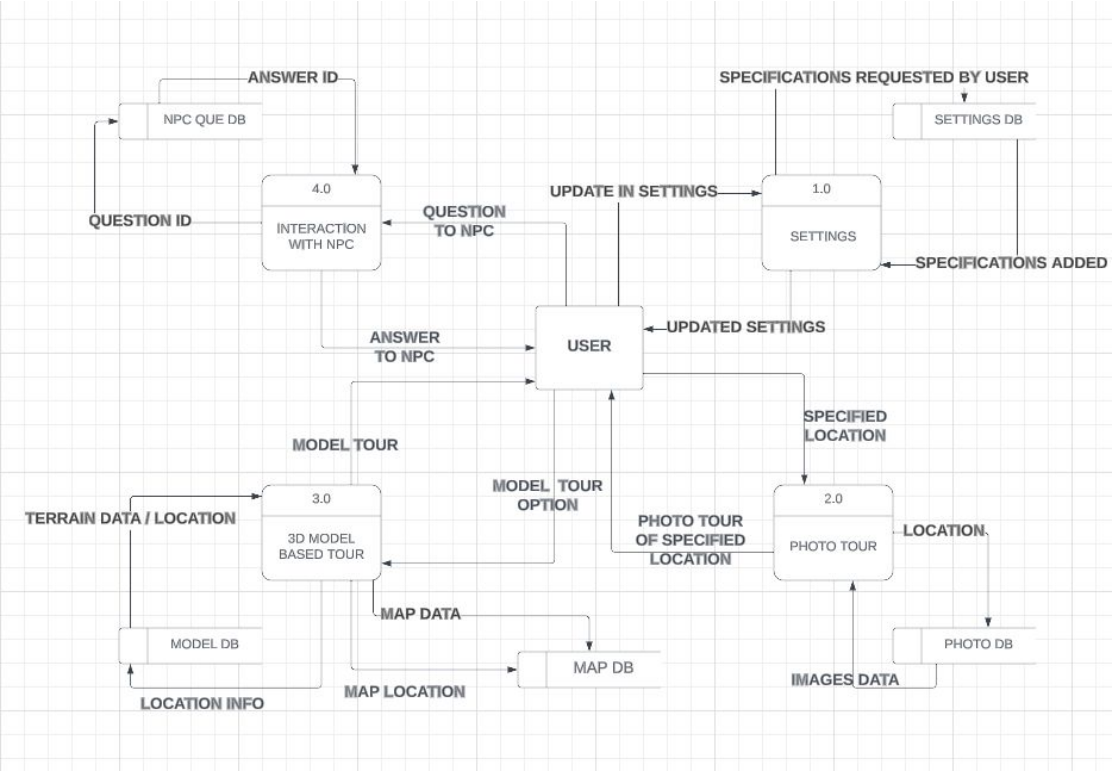
3.2 Level-1: Overview Diagram

An overview diagram in a data flow diagram (DFD) provides a high-level view of the system and its components, showing the major processes, data flows, and data stores. The purpose of the overview diagram is to give a clear understanding of the system's overall structure and to help them identify the main components of the system.

3.2.1 Processes

The incoming and outgoing arrows represent the data flows into and out of the system respectively. User's requests for the tour is repre-

sented by incoming arrows while outgoing arrows represents audio, video, and other information provided by the system in response to those requests. This diagram helps to identify the inputs and outputs of the system, and to identify any data transformations or processes that occur within the system.



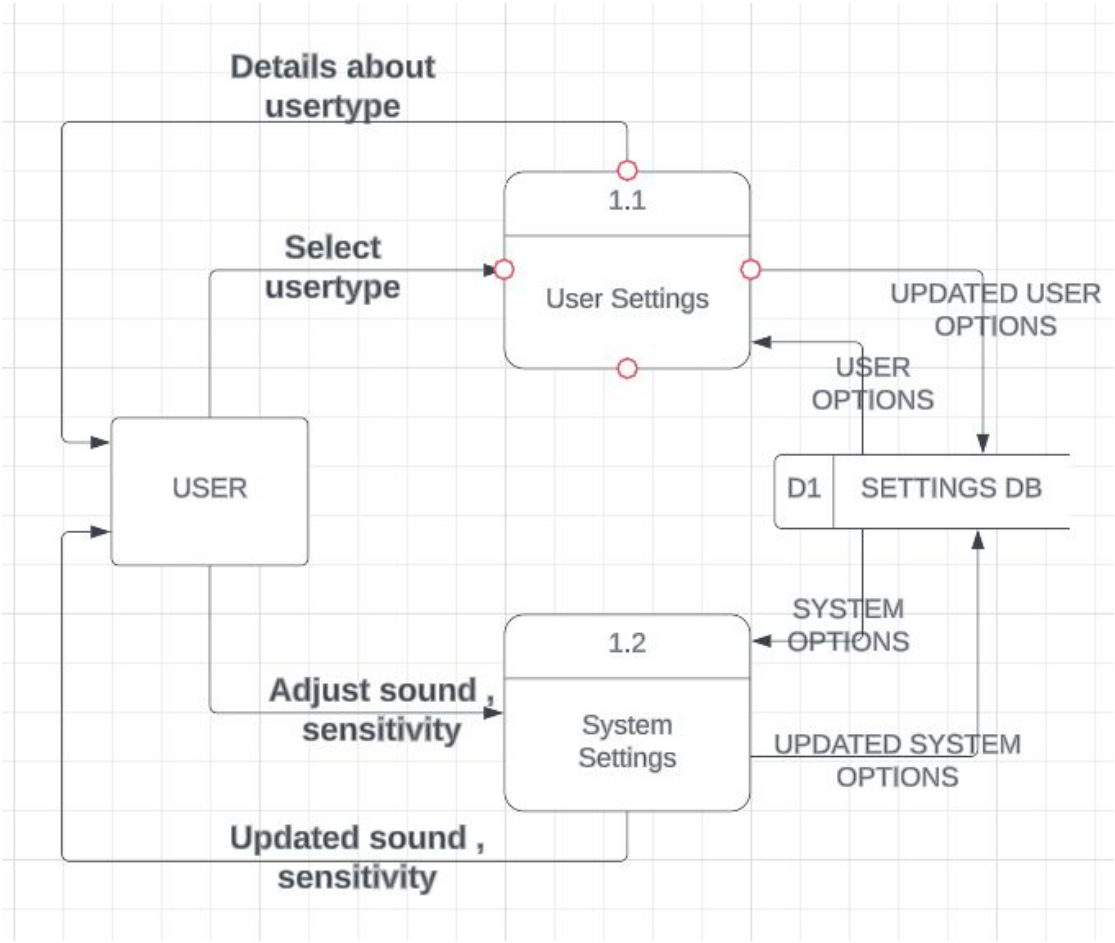
3.3 Level-2: Detailed Diagram

The detailed data flow diagram of a virtual tour provides a more detailed view of the data flows, processes and data stores involved in the system. It builds upon the overview diagram by breaking down the system into smaller, more manageable components.

3.3.1 Process-1.0

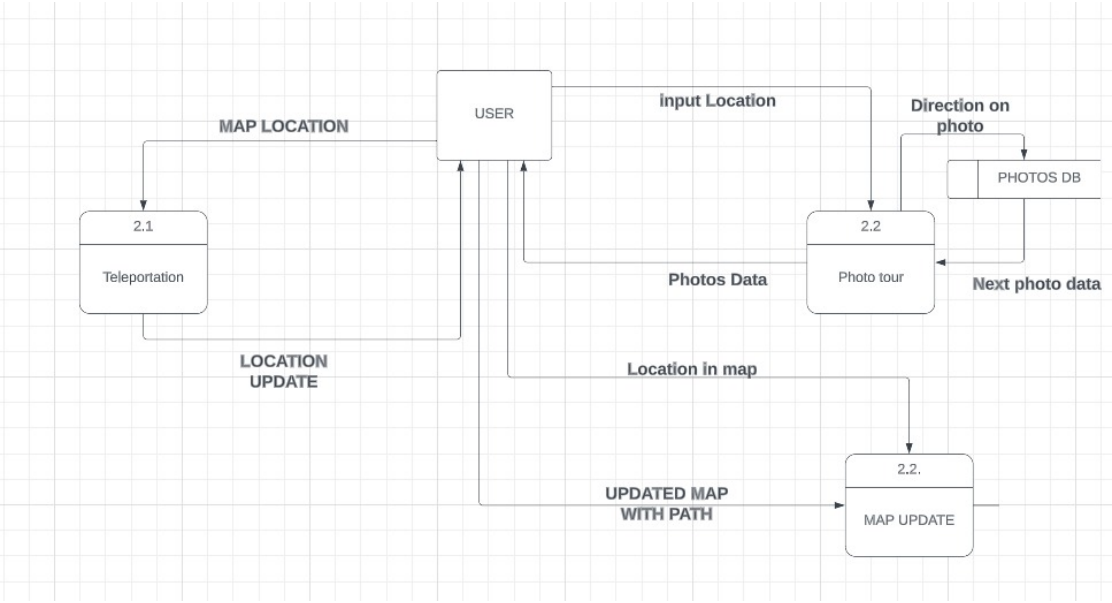
This diagram represents the data flow, data stores between the processes and external entity i.e.user. User can change the system set-

tings(vol. and sensitivity) and even the user type during the virtual tour.



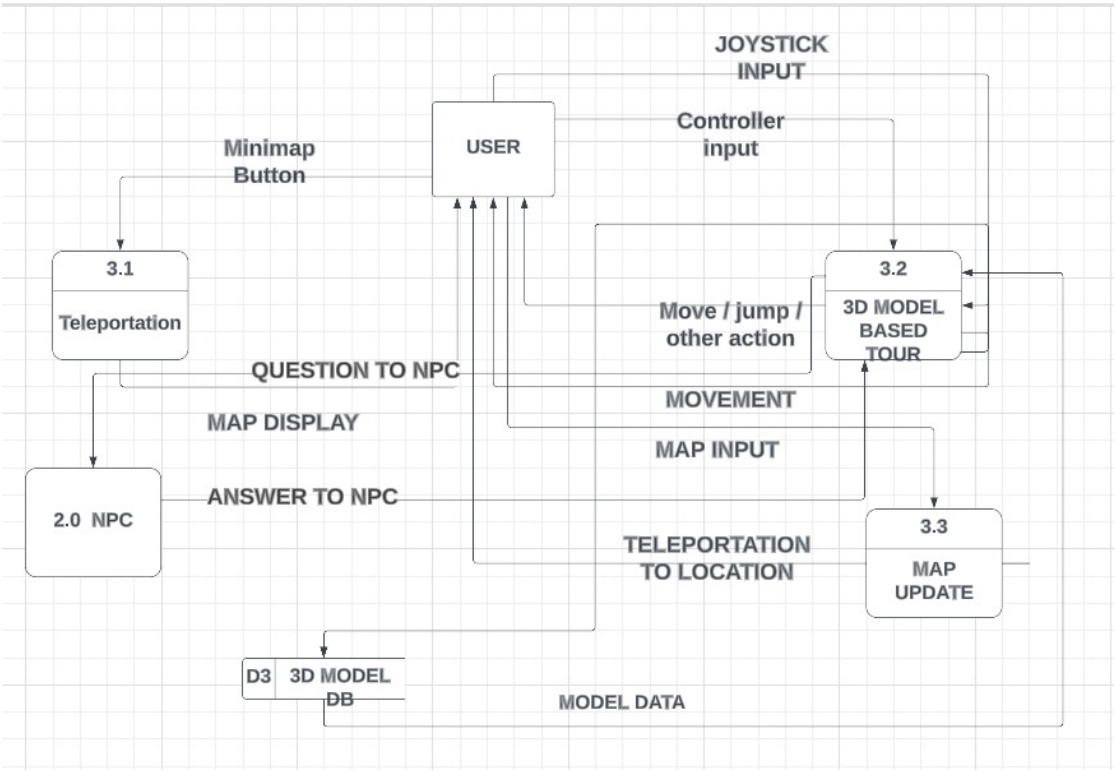
3.3.2 Process-2.0

These processes represents the teleportation to a place, map update, location update and 360-degree tour of a place accordingly and also the data flow and data stores between the processes and the external entity(user).



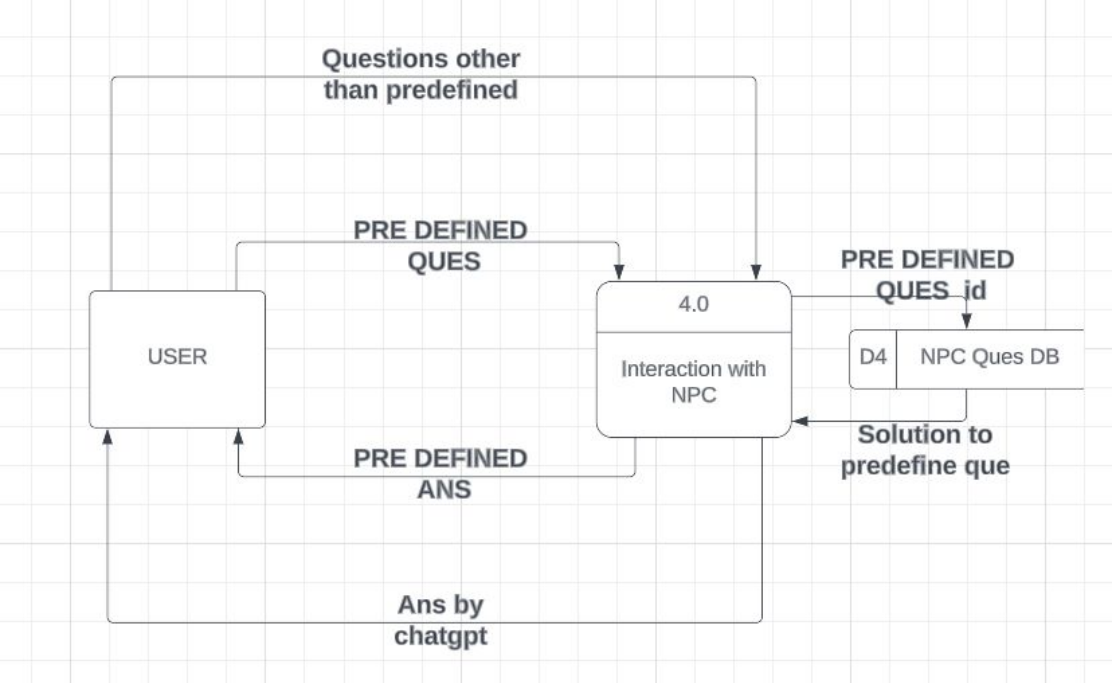
3.3.3 Process-3.0

These processes represents the detailed tour overview and also data flow, data stores between the processes and the user. Here the user can get even more detailed tour of the majuli environment. Functions like teleportation, movement, interaction with in-game characters are depicted.



3.3.4 Process-4.0

These processes represents interaction option for the user. It represents the different ways a user can interact with an in-game character. Different ways to interact is either by pre-defined questions or asking AI. The diagram shows the data flow and data stores between the processes and the external entity(user).

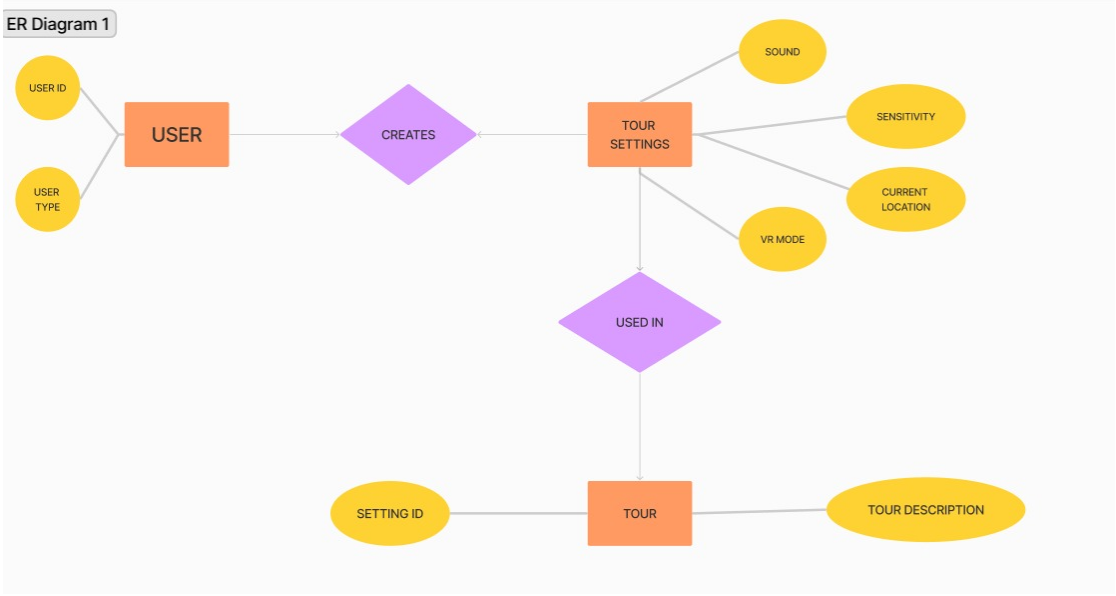


4 Entity Relationship Diagram

4.1 Database store-1

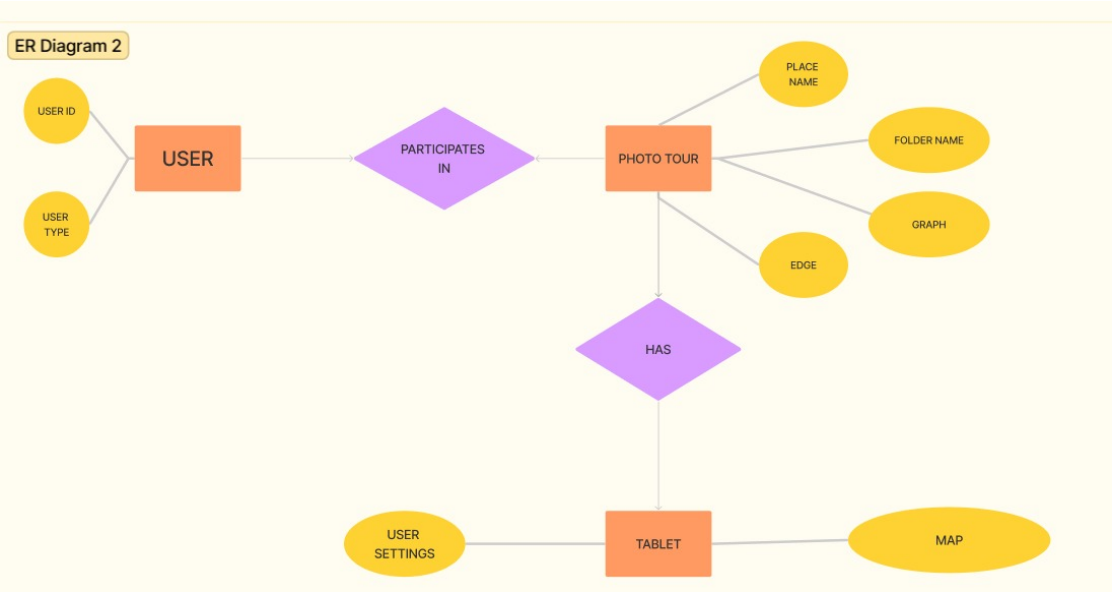
The ER diagram for a tour guide database includes three entities: User, Tour Setting and Tour.

The User entity represents the user of the system, and each user can create multiple tour settings. The Tour Settings entity represents a tour setting and contains information such as the sound, sensitivity, current location and VR mode. Each tour setting is created by a single user, and multiple tours can be associated with a single tour settings. The Tour entity contains information such as the setting ID and description.



4.2 Database store-2

The ER diagram for a map database includes three entities:User, Photo Tour and Tablet.
The User entity contains information such as the user ID and user type. Each user can be associated with multiple tours. The Photo Tour entity contains information such as the place name, folder name, graph and edge. Each place has a single tablet. The Tablet entity contains information such as user settings and map.



4.3 Database store-3

The ER diagram for a tour database includes two entities: User, and NPC.
The User entity represents the user of the system, and each user can interact with multiple NPC/in-game characters. The User entity represents an interaction and contains information such as the user ID and user type. Each interaction is done by a single user, and multiple interactions can be associated with a single user.