Testing and Conceptual Design

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Activity 19.5 Conceptual Design for Museum 3-D/VR Web Application

The conceptual design of the proposed system will be broken down into the following sections: concept formulation, problem understanding, system proposal development, feasibility study, and system structure development (Sommerville, 2015, p.550).

Concept Formulation

The purpose of this application is to alloy the user to experience ancient Greece digitally in two different mediums. One is to be experienced in the browser and the other is to be experienced in virtual reality. Due to the requirement of being needing to interface with multiple devices, the interface should be regulated to the browser. This application will allow users to register and create an account. After logging in the user will be promoted with different experiences that they can choose from to experience ancient Greece. After selection, the user will be prompted to switch VR device, if such device is detected. Based on the selection, the system will load the correct experience with an option to go to the selection screen. The experiences

Problem Understanding

The largest problem to understand is how the system will adequately handle users while they are in VR mode. By definition, the user will be completely blind to the environment around them, and their physical location will be varied. Keeping the user safe would be the main concern so this will need to be at the forefront of experience design. For this purpose, all experience should prompt the user to secure a safe location and to limit movement to at most turning in a 360 degree to look around. Also, before each experience, a tutorial should be played to ensure user safety.

System Proposal and Feasibility

Procurement of the system will be straight forward. There are plenty of web based applications that will allow for the use of switching between visual inputs. The need to being able to add new and switch out user experiences is key and this is a major requirement for the system. The system should be able to store components and visual assets. The 3-D experience will need to have functionality for the user to manipulate.

System Structure Development

A layered architecture is what is being proposed for the system. The layered architecture will allow for three separate benefits. It will allow for ease of swapping out new experiences when they are developed for the future. It will allow for better security for it will place multiple layers between any threat and the secure data. As it pertains to the high level system outline, it is as follows. The first layer would be the user nterface layer. This will include the log in screen, the register screen, the hope page with the 3-d experience selection, and the actual 3-d models. The next layer would be the data transfer layer. This will be responsible for the HTTP protocol to serve the web application. The bottom layer will be the database and storage system. This is what the data retrieval layer will communicate with. This is where the assets for the user interface will be stored, as well as the authentication information for the users. This all would need to be deployed to a host server that is running at 24 7. Most cloud platforms carry AI services. This could also be leveraged to add some user interactivity if text input is available.

Activity 8.7 Weather Station Testing Scenario

The weather station has a use case that was well articulated (Sommerville, 2015, p.163)

. This use case of reporting the weather is what will be used as one of the scenarios to test validity of the system. The testing scenario is as follows; the weather information system establishes a communication link with the weather station and then requests data. The data the weather station is supposed to send is the maximum and minimum and average of various field instruments such as ground temperature, air pressure, rain fall, wind speed and wind direction. The test should show that all of these different outputs are indeed being transmitted over to the information station. This process is supposed to occur every hour, so the text should include a prolonged test to ensure multiple transmissions. Another testing scenario would be to test all the instruments that were mentioned, the ground thermometer, anemometer, and the barometer (Sommerville, 2015, p.165). Each object has a get and set function to allow functionality with the weather station. These methods have no parameters; therefore, the test should just check for outputs. The final testing scenario to be discussed is the reconfigure use case. Based on the diagram, the system must be put into a shutdown state prior to the reconfigure. The system should be shut down when the weather station sends the reconfigure trigger. The system should also attempt to reconfigure when the system is in the running state to make sure this is not  *Citations*

Sommerville, I (2015). *Software engineering* (10th ed.). Pearson.