Accessible Camelot Installation Instructions

Materials: We designed our prototype around the hobby board game Shadows Over Camelot. A copy is not mandatory to see the prototype working, but does not make a lot of sense without it.

Step 1: Download Python and Required Libraries

Download Python 3 if not already installed. Python can be found here: https://www.python.org/downloads/

Next, download the OpenCV library. To do this, open a command window and type “pip install opencv-contrib-python –upgrade”.

Step 2: Setup XAMPP

Download and install XAMPP from https://www.apachefriends.org/index.html. Alternatively, and PHP server that allows for the use of HTTPS will work. Ensure that the Apache service runs properly and is started. Figure 1 shows what XAMPP should look like when started properly. XAMPP’s website has a detailed FAQ if more help is needed.

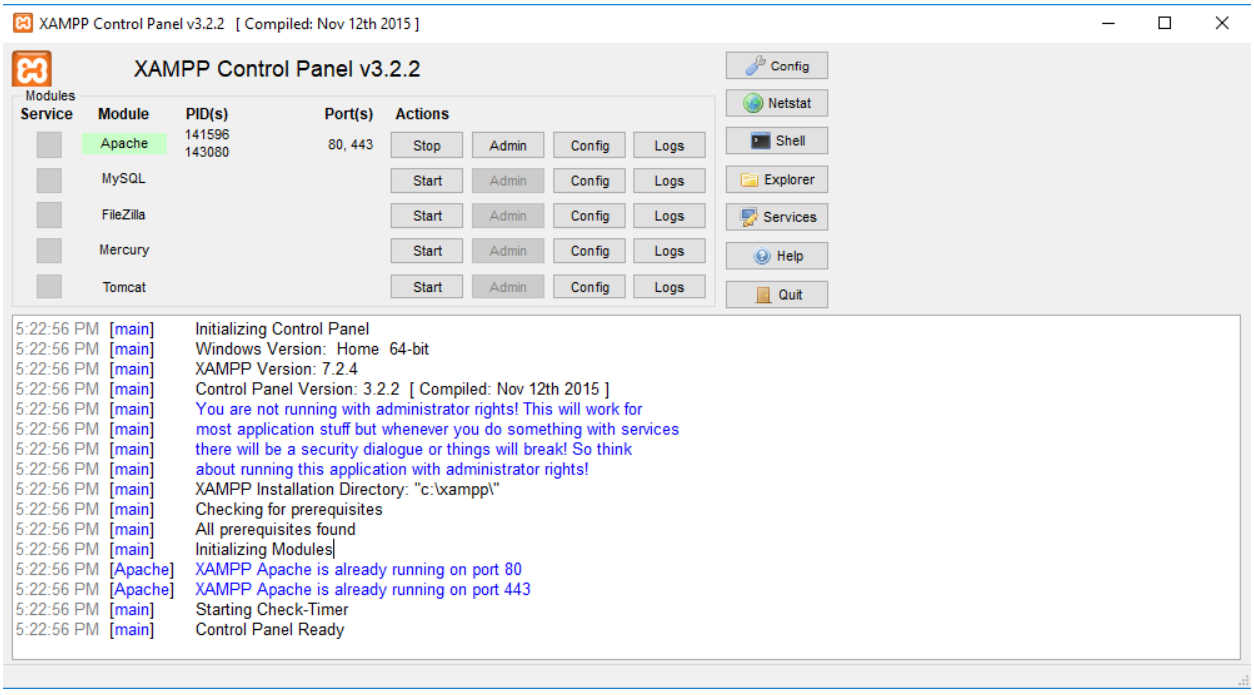

Figure 1: XAMPP running correctly.

Step 3: Download code and load to XAMPP

Override all files stored at /xampp/htdocs with our source code, which can be found at our GitHub repo at https://github.com/jbp173/CSCI5849-FinalProject.

Step 4: Print Markers

Print out the file “Markers.pdf”. These are the markers that our software analyzes images for and uses to provide information about the game state. Cut these out, ensuring there is some white space around the entire marker. The numeric label need not be included, but should be noted for the next step. An extra set of markers are provided for sake of redundancy.

Step 5: Setup Markers

The maker labeled “1” should be attached (such as with tape or glue) to the spot on the Excalibur quest (from the Shadows Over Camelot game) that is one spot from defeat. Continue attaching markers sequentially, with the “2” marker two spaces from defeat, until the “9” marker is attached one spot from victory. The orientation of the markers does not matter, but markers should not be overlapped. The correct placement can be seen in Figure 2 below.

Figure 2: The Excalibur quest board with markers labeled as to how they should be placed on the board.

Step 6: Setup the Game

The software can be used during the normal play of Shadows Over Camelot, or the board state can just be mocked for a demo. For this, place Excalibur on top of any marker.

Step 7: Run Python Script

Open a command prompt inside the /xampp/htdocs folder. Type “python Excalibur.py” to start the backend script. If needed, it can be stopped at any time with the command “ctrl + C” on most systems.

Step 8: Access the Website

We recommend using a mobile device. To do this, first ensure the device running your PHP server and your mobile device are on the same network. In a phone browser, navigate to [Your IP Address]/mobile.html. If you want to use the computer running the PHP server, you can navigate a browser to localhost/index.html.

Step 9: Use the Software

For mobile: Tap the “Excalibur” button. Then, tap “Choose File” and select “Take a picture” when prompted. Take a picture of the Excalibur quest, and then tap “Upload Image.” After a few seconds, a results page should appear.

For desktop: Click the “Excalibur” button. Then, position your camera over the Excalibur quest, and click “Take a Photo”. Download this photo, then select it using the “Choose File” button. Finally, click the “Upload Image” button. After a few seconds, a results page should appear.

In both cases, this process can be repeated as many times as desired.

Our app uses the schema shown in Figure 3 for displaying where Excalibur is on the board. Its starting position is “0”, and for each space it moves closer to victory, its position is its previous position +1. For each spot it moves closer to defeat, its position is its previous position -1.

If more than one marker is being occluded (Excalibur should be occluding one), our program will display all the possible locations it could be at. At this point, your prior knowledge of the game state could be enough for you to know which of the possibilities it is, or you will have to retake the picture.

Figure 3: The Excalibur quest board with markers labed with their corresponding positions that our program reports.

Troubleshooting:

If a marker is not being read properly, make sure the entire marker can be seen. If it is even slightly occluded in some way, the program will not be able to recognize it. This could also be because of a printing error causing a maker to not be complete, in which case the backup marker should be used, or a new set should be printed.