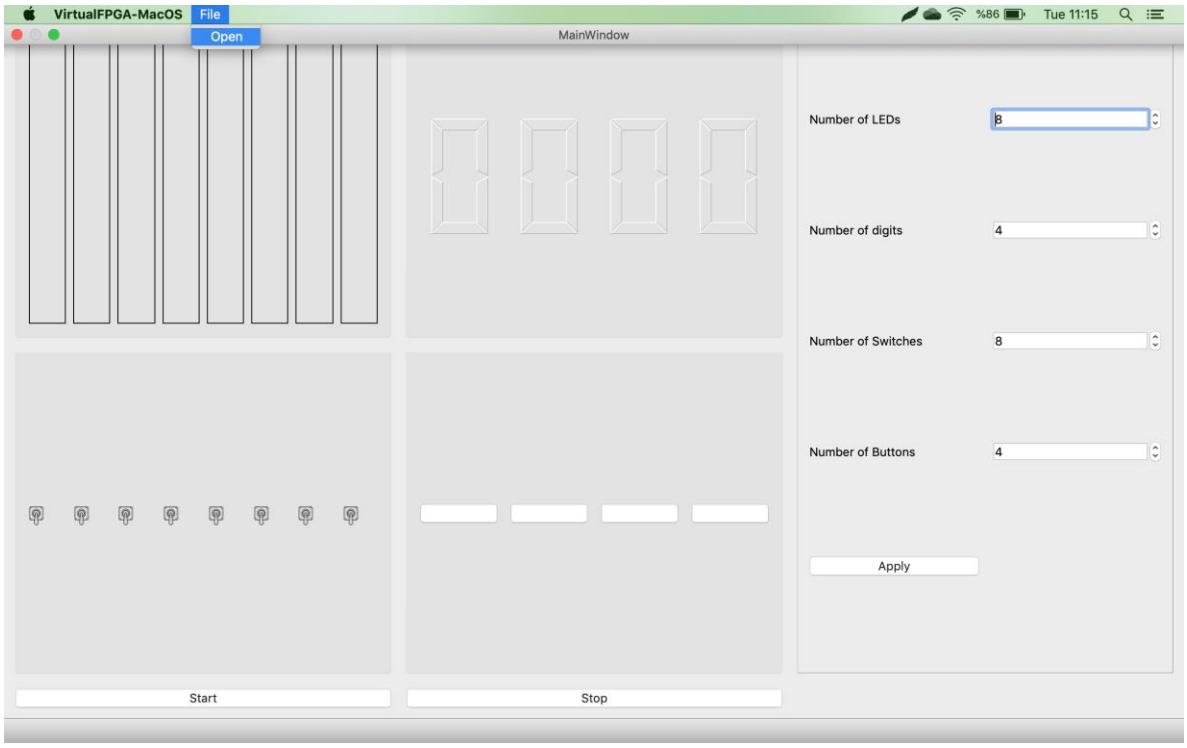
LAB 05

Part 1 – RotatingDot Synthesis and VirtualFPGA

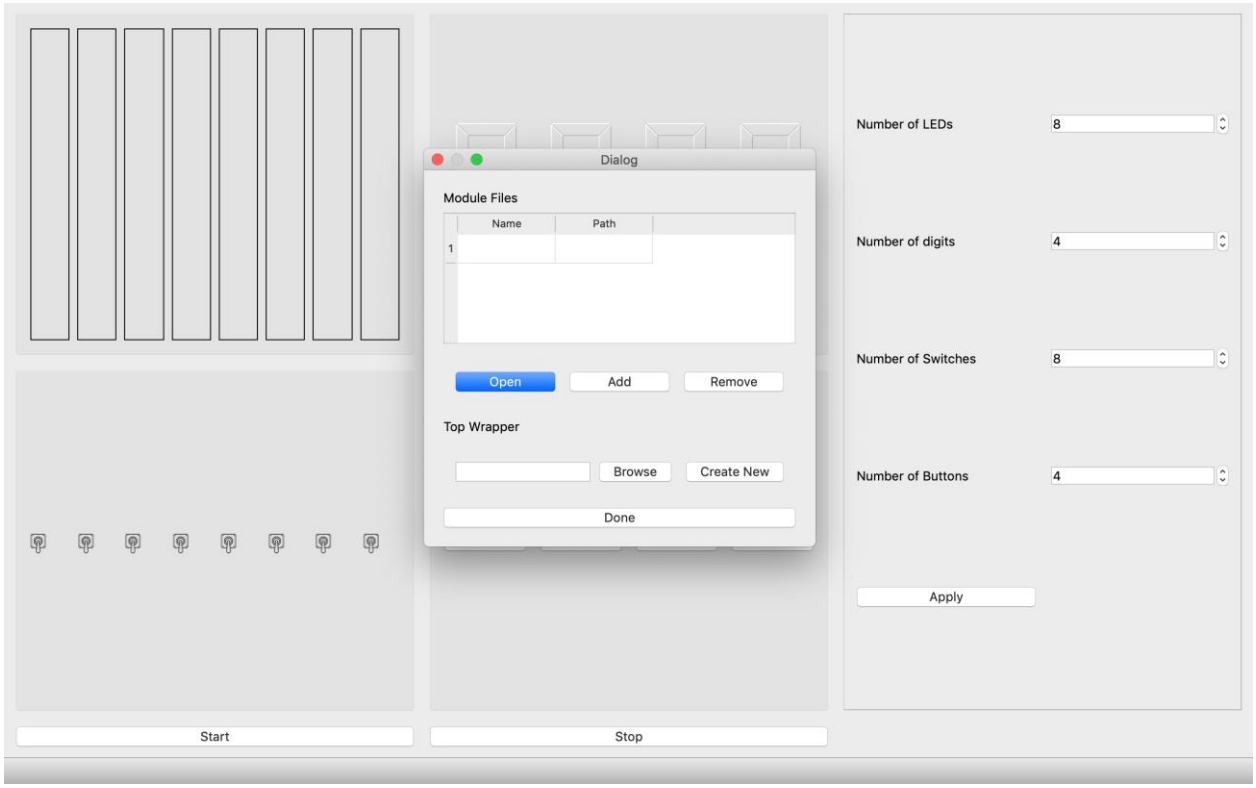
In this part you will modify the rotatingDot.v file given to you so that it synthesizes on Xilinx ISE and runs on the VirtualFPGA. VirtualFPGA should display LEDs lighting up from left to right and then looping back. You have also been given a rotatingDot_wrapper.v file. DO NOT modify this file.

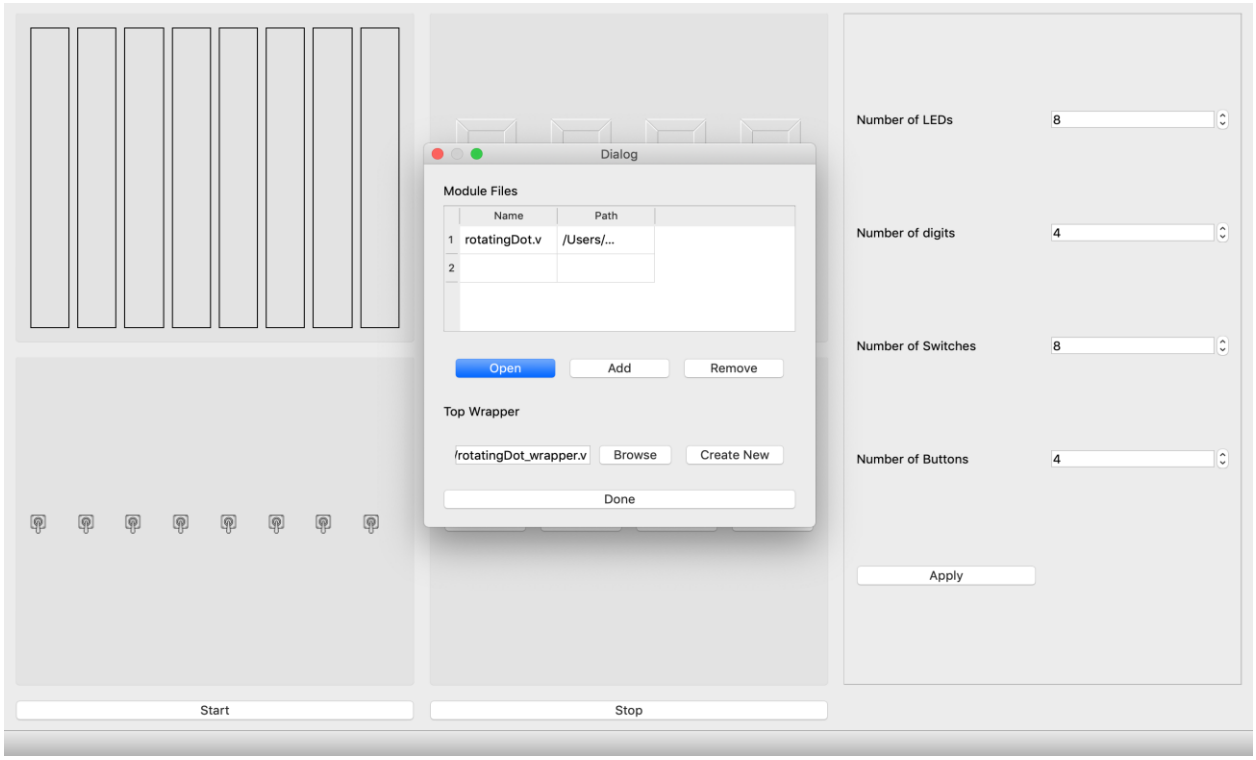
Please go to:

0. https://ozu.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=4a91dc33-a641-4956-a02a-ad0100163fba
1. Watch the video above.
2. Follow the video until the synthesis part. Make sure your design has no errors or warnings except trivial warning at synthesis.
3. Take a screenshot of your successful synthesis. (The whole screen)
4. Open VirtualFPGA.
5. Click on “File” and then “Open”.



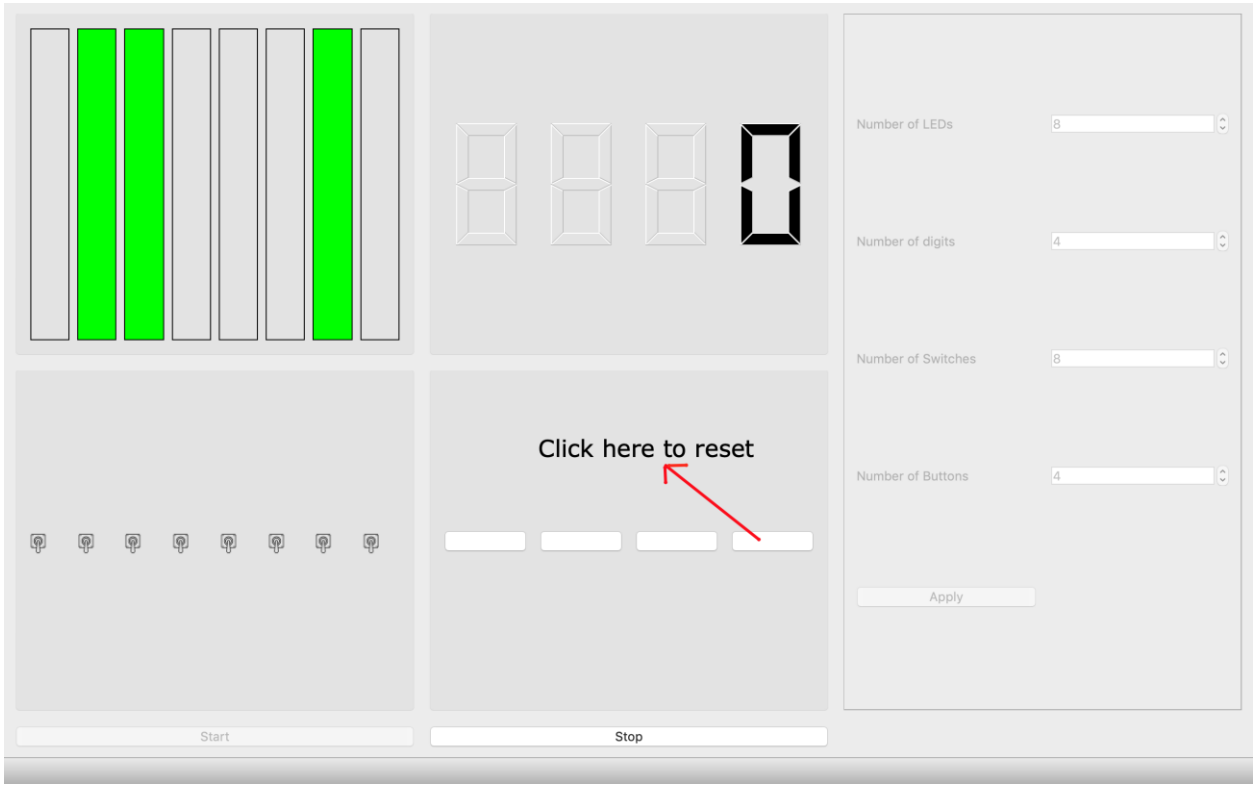
6. Add your rotatingDot.v file by clicking on “Add” and add rotatingDot_wrapper.v by clicking on “Browse” then press “Done”.



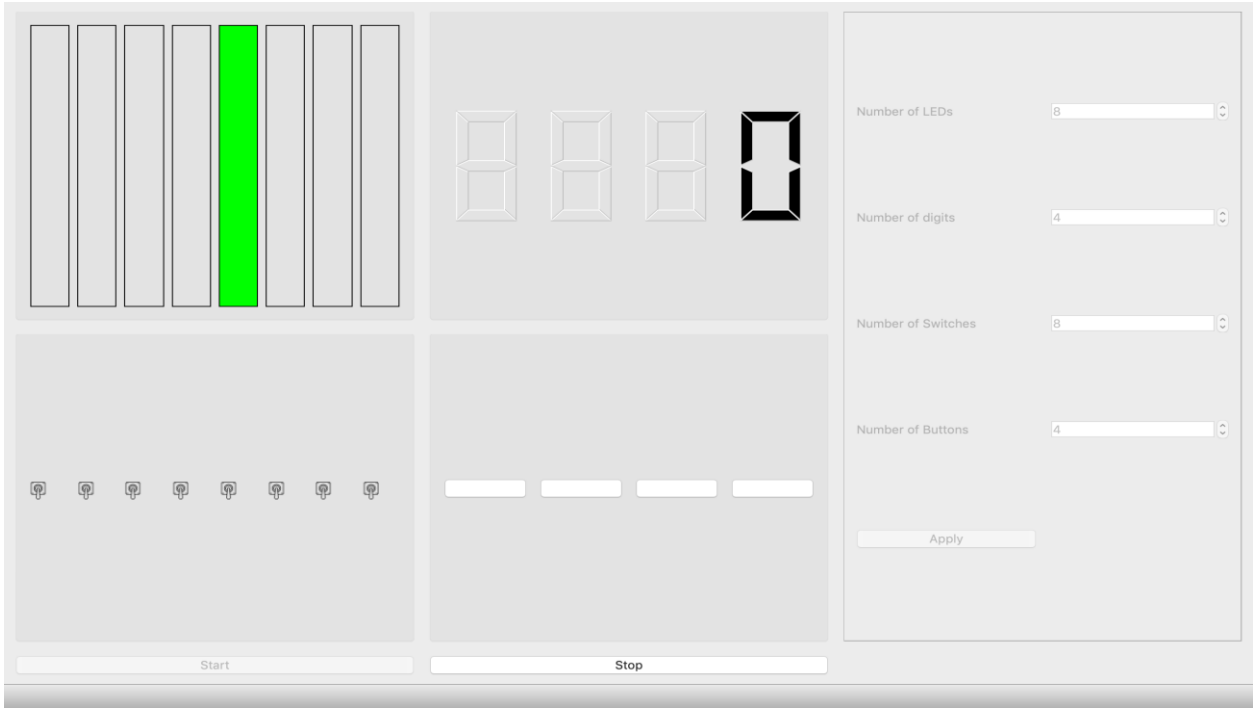


7. Press “Start” to run VirtualFPGA.

8. After you see LEDs lighting up press on the “Reset Button” shown in this image.



9. LEDs should light up from left to right and then loop back again.



Part 2 – KnightRider Synthesis

In this part you will modify the knightRider.v file given to you so that it synthesizes on Xilinx ISE and runs on the VirtualFPGA. You have also been given knightRider_wrapper.v and knightRider_part4_wrapper.v file. DO NOT modify these files.

1. Watch the video and add knightRider.v to your Xilinx ISE Project.
2. Follow the video until the synthesis part. Modify knightRider.v so that it does the required operation. Make sure your design has no error or warnings except trivial warning at synthesis.
3. Take a screenshot of your successful synthesis. (The whole screen)

Part 3 – KnightRider VirtualFPGA

0. Open VirtualFPGA.
1. Add knightRider.v and knightRider_wrapper.v to the VirtualFPGA just like rotatingDot.
2. Start the VirtualFPGA.
3. You can watch check the video to see what your output should look like.

Part 4 – Modified KnightRider

0. In this part you are expected to modify knightRider.v, so that now we have two knightRiders that will light up from left and right and then they will meet in the middle and then go back to their respective corners.
1. Copy your knightRider.v to a new file named knightRider_part4.v and change the module name to “module knightRider_part4(clk, rst, dataOut);” (make sure you don’t lose your original knightRider.v, because you will submit it at the end).
2. Modify your .v file as required.
3. Synthesize and then take a screenshot of your successful synthesis (The whole screen). Make sure your design has no errors or warnings except trivial warning at synthesis.
4. Add knightRider_part4.v and knightRider_part4_wrapper.v to the VirtualFPGA.
5. Start the VirtualFPGA.

Submission

Submit the following files in LMS under the assignment LAB05. Do not zip your files, upload them directly on LMS.

- rotatingDot.v
- rotatingDot.png (or other picture formats like jpg)
- knightRider.v
- knightRider.png
- knightRider_part4.v
- knightRider_part4.png