Purpose: In this experiment, you will design a combinational circuit, then implement it using XILINX Vivado schematic tools and test its functionality.

- **The Lab Preliminary Report** should contain the following (necessarily in this order):

- **Heading**

  The experiment number, the lab title, your name, and date should be at the top right hand side of each page.

- **Abstract / Objective**

  The purpose of the abstract is to provide a brief overview of the report. In your own words, state the purpose of the laboratory exercise, the basic concepts covered, a very brief (one or two sentences) overview of the procedure followed.

- **Design Specification Plan**

  For a set of requirements, there are many ways to design a system that meets the requirement. The Design Specification Plan describes the methodology chosen and the reason for the selection (why).

- **Proposed Design Methodology**

  The experiment can be done from the information given in your report. Include the needed steps taken in the design of the circuit: Logic Schematic Diagram, Truth Table, assumptions, definitions, algebraic simplification steps, test plan etc…, if necessary. The proposed design procedure section should be a few paragraphs and no longer than one page.

- **The Lab Report** should contain the following (necessarily in this order):

- **Heading**

  The experiment number, the lab title, date of the experiment, your section and your name should be at the top right hand side of each page.

- **The Design Methodology**

  The design methodology presents much of theory behind the lab exercise, which was confirmed with software simulation, hardware implementation, algebraic, etc... You should write how to make design it. Please do not copy text from your "Proposed Design Methodology" part of your Preliminary Work. You must write the changes according to the "Proposed Design Methodology" which have been mentioned in your Preliminary Work.

- **Results**

  In this section, you should include the results of your design procedure. The laboratory report is the record of all work pertaining to your experiment .The results section will have subsections if there are more than one result to present. The results section will typically include RTL schematics, equations, circuit diagrams, simulation commands, waveforms, etc..., if necessary. Any of included figures must be labeled. All results must be explained and discussed.

- **Conclusion**

  In this section you should write about the concepts that you learned in the laboratory and how they are related to other aspects of the course or digital design in general. If you experience problems or obtained data that is incorrect, here is where you might elaborate on the causes and ideas for solutions.

- **Appendices**

  Other material that is referred in your report (VHDL codes, VHDL test bench codes… etc.).

NOTES:

1. You must prepare and upload your preliminary work report to Moodle before its due date. If you have not done your preliminary work on time, you are welcome to attend the lab but you will get zero from that lab.

2. You must show your lab results (Demo on BASYS 3, test bench simulation) to your assistant and get his/her approval in lab hours.

3. Before you leave the lab you must upload the Lab reports to Moodle. You are not allowed to write our reports after the lab.

4. The photographs of VHDL codes will not accepted and you should include them to your lab reports by just copy pasting.

5. You can write your lab report in Open Office\Microsoft Office. After the completing writing process, "**Save the report in pdf format**", upload it to Moodle before leaving the laboratory. This report will also be used as a proof of your attendance .Your laboratory report is an individual effort and should be unique. Original work is required by all the students. (NO PHOTOCOPIES, DUPLICATE PRINTOUTS OR CHEATING).