

Purpose: Design and implement a Finite State Machine (FSM) on a breadboard. You will decide how to demonstrate output(s) of your implementation.

NOTES:

1. Please find the list of available gates in the lab, in the document “LogicGates.pdf”. *If you need additional gates that are not on this list, please contact Onur Bostancı for ordering as soon as possible, or you may buy them from Konya Sokak.* Search for the datasheets of gates on the internet that you find useful for your design. After studying the datasheets finalize your design by deciding which gates you will use.
2. You must prepare and upload your preliminary work report to Moodle before its due date. *Late submissions are not allowed.* 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.
3. You must show your lab results (implemented circuit on breadboard working properly) to your assistant and get his/her *approval* in lab hours.
4. Before you leave the lab you must upload the Lab reports to Moodle. You are not allowed to write your reports after the lab. *Late submissions are not allowed.*
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 be also 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).

➤ **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.

□ **Gates**

Write the names and numbers of the gates you will use in your design.

□ **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 (two or three 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: Steps of FSM design procedure, Logic Equation(s), Truth Table, Karnaugh Map(s), algebraic simplification steps, circuit diagram with gates demonstrating all the connections between pins, voltage supply and ground etc. 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 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 mentioned to your Preliminary Work.

□ **Results**

In this section, you should clearly explain needed steps what to do in the lab and how to implement the circuit on breadboard. The laboratory report is the record of all work pertaining to your experiment. The results section will have subsections if there is more than one result to present. You will include the results of your design procedure. The results section will typically attach your equations, circuit diagrams, waveforms observed, observed results 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 relate to other aspects of the course or digital design in general. If you experienced problems or obtained data that was incorrect, here is where you might elaborate on the causes and ideas for solutions.

□ **Appendices**

Other material that is referred in your report.