**Computer Architecture for Game Devices**

**Project Specification**

**Total Marks**: 100, **Weight:** 30%

**Submission**

You are required to upload an electronic copy (a pdf) of your project report (2-3 pages: minimum 2 pages) and a PPT for the presentation (**max 6 slide**s) to Turnitin (upload link will be provided at Blackboard). All files can be submitted before **5PM on the 6th of December 2023**. There will be no extension. Only one member of the group is required to upload these files.

For the project report IEEE referencing style must be used; Microsoft Word and LATEX templates are available at:

<http://www.ieee.org/conferences_events/conferences/publishing/templates.html>.

**Formation of Group**

1 to 4 students. In the end of the report, include the table shown explaining contributions of each group member to the project. If you carry out this project individually, you do not need to attach this table.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | Topic | % Contributions |
| Student 1 |  |  |
| Student 2 |  |  |
| Student 3 |  |  |
| Student 4 |  |  |

**Project Report**

You are required to produce a report that describes a logic circuit for a problem (of the chosen topic of interest) such as rain alarm, heat sensor, automatic fan controller, traffic signal system, air temperature controller, air pollution monitoring system, electronic queuing system, speed meter, pest repeller, digital clock, smart energy system, simple ALU, thief detection system, computer interface system. You are free to choose your topic, and you should explain as clearly as possible the topic you chose. You are required to include **a logic diagram of the circuit** to be used for the problem. You should describe each component of the circuit and explain how the circuit is used to solve the problem. You also need to explain and justify how well this circuit would work in reality. You should explain how you want to improve the solution (i.e., circuit) and what changes you want to make in the existing solution if you are given more time.

You should write each section as clearly as possible. If needed, you can include figures, tables etc. in the report.

**Presentation**

The presentation should not exceed **5-6 minutes** in length. This should illustrate the key parts of the project.

Date and Time: **7th December** and **9-11**AM

Room: **A313**

Possible sources where you can find logic circuit projects include, but are not limited to:

1. <https://www.circuitspecialists.com/blogs/news/electronics-projects>
2. <https://microcontrollerslab.com/digital-logic-design-projects-list/>
3. <https://www.circuiteasy.com/>

How to construct gates using transistors; see tutorials:

1. <https://www.youtube.com/watch?v=IcrBqCFLHIY>
2. https://www.youtube.com/watch?v=J4oO7PT\_nzQ

**Marking**

Report and Implementation: 70%

The report will be assessed based on their novelty, technical quality, insightfulness, depth, clarity, quality of writing (see Marking Rubric).

Presentation: 30%

The presentation will be assessed based on the second row of the table below (Marking Rubrics).

**Marking Rubrics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 90-100 | 70-90 | 60-70 | 50-60 | 40-50 | 0-40 |
| Project and Report | Very challenging project objectives are well presented, met and thoroughly motivated as well as discussed.  Exceptionally well written, and presented, with no mistakes in formatting or referencing. | Challenging project objectives are well presented, met and thoroughly motivated as well as discussed.  Well written, with no (large) language errors. All figures are well conceived and readable. The IEEE template is adhered to. Report does not exceed the length limits. References are appropriately and correctly used. | Appropriate project objectives are well presented, met and thoroughly motivated as well as discussed.  Main document has a few language and/or style errors. Figures are well presented. IEEE template and length limit are adhered to. References are complete, and correctly used. | Appropriate project objectives are presented, mostly met and motivated as well as discussed.  Main document is readable with some language and/or style errors. Some figures are mostly well presented. IEEE template is largely adhered to. References are mostly complete and correctly used. | There are clear objectives, which are at least partially met.  Main document is readable with some language and/or style errors. Some figures may be hard to read or presented in a suboptimal manner. IEEE template is largely adhered to. References are mostly complete and correctly used. | Cannot discern project objective, and/or if project objectives were met.  Littered with typos, and/or poor use of English. IEEE template may have been broken. Figures may be hard to read. References (if any) are probably incomplete. |
| Presentation | A very well-conceived presentation demonstrating all key functionality and the execution of key methodological aspects. | A well-conceived presentation demonstrating key functionality and the execution of key methodological aspects. | A well-conceived presentation demonstrating essential functionality and the execution of key methodological aspects. | A well-conceived presentation demonstrating some essential functionality and the execution of key methodological aspects. | A presentation shows a functioning methodology. However, the it is poorly conceived and/or lacks some depth. | It does not clearly illustrate key aspects of the project. |