**ECTE250 Deliverable 3 Design Simulation**

The third deliverable of ECTE250 is a Design Simulation and a Short Technical Report. Teams are required to demonstrate an electronic simulation of the design, and submit the related simulator files and a report file (MS Word document). The report should include schematics, diagrams and tables. Length should not exceed 1000 words. About 500 words should be spend discussing your simulation results with respect to the hardware design and with respect to the required system functionalities. The remaining 500 words (unless otherwise communicated) of your report should address Mentor’s feedback on Deliverable 2 (feedback on functionalities, design, testing, budget and plan). The deadline to show the simulation to Mentor and Tutor is during the laboratory session in Winter-W10. Teams are encouraged to book an appointment to demonstrate their work earlier than that and then focus on other project deliverables. Files (simulation and report) should be submitted to the Tutor during the start of the session. All simulation files designed by the team should be included, as well as team reflections on the results obtained (in the report). All team members must attend and participate in the demonstration. The peer evaluation must be completed by 08:00 pm, one day after the report submission.

*Checklist and Marking Criteria*

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| --- | --- |
| **Element team needs to simulate / demonstrate** | **Checked** |
| State machine with state signaled by LED (one LED per state or per flip flop). |  |
| Sensor circuits (motivate the range of sensor value used in the simulation) |  |
| State Machine Clock/Oscillator |  |
| 555 Time Circuit |  |
| Switches/Push button de-bouncing |  |
| Motor driving circuit |  |
| Power supply circuit |  |
| Example timing diagram and state chart to verify the state machine simulation |  |
| Inputs of all circuits are defined and emulated with switches or voltage sources |  |
| Outputs of all circuits are defined and displayed using LEDs or scopes |  |
| Report and simulation files submitted |  |
| Ability to explain the simulations correctly |  |

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| --- | --- |
| **Marking Criteria on deliverable 3 electronic simulation of the system** | **Score** |
| Same as score 5, but team also (or alternatively) present a simulation in which all circuits  are integrated as a proof of functionality of the integrated system. The only inputs and outputs that are emulated/displayed are those coming from the Arduino subsystem. | **6** |
| All elements of the checklist were satisfactory, simulation could be opened and started.  The simulation appeared to function as per the project requirements. For the state machines all modes were functioning as per example timing diagrams and state chart. All inputs and outputs of each circuit are clearly defined in a logical manner and properly emulated/displayed. The team was able to demonstrate all possible scenarios and show that their system would cover (or recover from) all possible fault states that may arise due to faulty external switches and sensors. | **5** |
| All elements of the checklist were satisfactory, simulations could be opened and started.  The simulation appeared to function as per the project requirements. For the state machine, most modes were functioning as per example timing diagrams and state chart. All inputs and outputs of each circuit are clearly defined in a logical manner. | **4** |
| All elements of the checklist were satisfactory, simulation could be opened and started.  Most simulation appeared to function as per project requirements. | **3** |

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| --- | --- |
| All elements of the checklist were satisfactory; simulations could be opened but when  started nothing worked as expected. Schematics appears to be almost correct. | **2** |
| Report and simulator files submitted but simulation files are corrupted and cannot be  opened. The team has example timing diagram and state chart against which the simulator would have been checked. | **1** |
| Team does not turn up to submit files and demonstrate the simulation results. If here whole  team needs to see Mentor. | **0** |

**Complexity Factor**: the complexity factor will award 1 extra mark if the complexity is 4 (or above)

and the team score at least 4 (or above).

Name of Student(s) in team who were present at the Deliverable 3 demonstration: