

Digital Electronics – Unit 2.1, Combinational Logic Circuit Design

Project 2.1.6: Majority Vote Project Requirements

Note: This project is a summative grade. Projects **MUST** be submitted in their entirety. Any missing components will result in point deductions that cannot be resubmitted later!

Project components – ***submit in this order!***

1. **Cover sheet** – include your name, class name, project name, date and period **(5 pts)**
2. **Truth table** and unsimplified logic expression **(10 pts)**
3. **Hand drawing** of unsimplified circuit **(10 pts)**
4. **MultiSim printout** of unsimplified circuit (one page, one side) **(10 pts)**
5. **Logic expression simplification** and hand-drawn simplified circuit **(10 pts)**
6. **MultiSim printout** of simplified circuit with gate pin numbers **(10 pts)**
7. **Writing prompt** explaining all steps of the project – including: **(15 pts)**
 - a) the word problem you started with,
 - b) how you constructed a truth table from the problem;
 - c) how you extracted the logic expression; then hand drew and MultiSim'ed the unsimplified circuit;
 - d) how you simplified the circuit (what process did you use to simplify?);
 - e) how you constructed the working circuit.
8. A **photo** of your breadboarded solution **(5 pts)**
9. **Your breadboarded solution** – after completing the circuit build, test your circuit completely by toggling through every possible input combination (starting with “0000” and ending with “1111”). Correct any errors, then show to your class teacher! **(25 pts)**