Prelab 4

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Diagram, schematic

Description automatically generated

**Figure 1.** Digital to Analog Converter Using Op-amp

**Figure 2.** Plot of Switch State vs Output Voltage

**Table 1.** Results for Simulation and Theoretical

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Input Table | | | | | Theoretical | Simulation | Experimental |
|  | VA | VB | VC | VD | VO(V) | VO(V) | VO(V) |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 1 | 0 | 0 | 0 | 1 | -0.3125 | -0.31 |  |
| 2 | 0 | 0 | 1 | 0 | -0.625 | -0.623 |  |
| 3 | 0 | 0 | 1 | 1 | -0.9375 | -0.935 |  |
| 4 | 0 | 1 | 0 | 0 | -1.25 | -1.25 |  |
| 5 | 0 | 1 | 0 | 1 | -1.5625 | -1.56 |  |
| 6 | 0 | 1 | 1 | 0 | -1.875 | -1.87 |  |
| 7 | 0 | 1 | 1 | 1 | -2.1875 | -2.19 |  |
| 8 | 1 | 0 | 0 | 0 | -2.5 | -2.50 |  |
| 9 | 1 | 0 | 0 | 1 | -2.8125 | -2.81 |  |
| 10 | 1 | 0 | 1 | 0 | -3.125 | -3.12 |  |
| 11 | 1 | 0 | 1 | 1 | -.34375 | -3.44 |  |
| 12 | 1 | 1 | 0 | 0 | -3.75 | -3.75 |  |
| 13 | 1 | 1 | 0 | 1 | -4.0625 | -4.06 |  |
| 14 | 1 | 1 | 1 | 0 | -4.375 | -4.37 |  |
| 15 | 1 | 1 | 1 | 1 | -4.6875 | -4.69 |  |