Lab 4 – Lecture 3b Slide 3

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The purpose of this lab is to:

Learn more about describing Logic Circuits algebraically.

Select three 10kohm resistors.

Measure and record the resistance of each resistor.

Equipment needed:

1 – Digital Multimeter

3 – 10Kohm

1 – 4 position dip switch

1 – 74LS08

1 – 74LS32

Using Multisim simulate Figure 1 for each voltage level and record in Table 1. Then build, test and measure each voltage level and record in Table 1



Figure 1- Lab 4 Schematic

|  |  |  |
| --- | --- | --- |
|  | Simulated | Test |
|  | Open | Closed | Open | Closed |
| S1 |   |   |   |   |
| S2 |   |   |   |   |
| S3 |   |   |   |   |

Table 1 (Simulation vs Test)

Using Multisim simulate Figure 2 for each voltage level and record in Table 2. Then build, test and measure each voltage level and record in Table 2



Figure 2 - Lab 4 Schematic

|  |  |  |
| --- | --- | --- |
|  | Simulated | Test |
|  | Open | Closed | Open | Closed |
| S1 |  0V |  5V |  .0081V |  5.0523V |
| S2 |  0V |  5V |  .0081V |  5.0523V |
| S3 |  0V |  5V |  .0081V |  5.0523V |

Table 2 (Simulation vs Test)

Observations:\_In this lab we built a circuit with three switches and three resistors. The first two resistors went into a AND gate and the output went into an OR gate along with the third resistor. Our results were when all switches were closed we got 5 volts output. When all were open we got .0081V. For the second part of the lab we switched the gates, so the OR was first with the first two resistors and the AND gate was second with the output of the OR gate and the third resistors. We got the same results with all switches open we got 0V and closed around 5V.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_