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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A | B | C | Simulated | Test |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 0 | 0 |
| 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 1 | 1 |
| 1 | 1 | 0 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A | B | C | Simulated | Test |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 | 0 |
| 0 | 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 | 0 |
| 1 | 0 | 1 | 1 | 1 |
| 1 | 1 | 0 | 1 | 0 |
| 1 | 1 | 1 | 1 | 1 |

Observations: With the voltage being too low with the 10k resistor we started to use a 1k resistor to adjust the current. The real world voltage was about 4V rather than 5V.