ELC 2137 Lab 02: Transistor Logic Gates

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Summary

The purpose of this lab was to learn how to build logic gates using transistors. The transistors act like switches that control the voltage. After completing this lab I found that the final gate is an AND gate. This shows that we can use transistors and resistors to turn one logic gate into another (i.e Nor gate into an AND gate).

Q&A

1) Which Logic Operation does the final gate implement?

The final gate implements the AND operator, therefore it is an AND gate.

Code

Listing 1: Code Written for Tables and Figures label

```
\begin{table}[h]\centering
   \caption{Final Gate Truth table}
   \begin{tabular}{cc|c}
      \toprule
      A & B & AND \\
      \midrule
      0 & 0 & 0 \\
      0 & 1 & 0 \\
      1 & 0 & 0 \\
      1 & 1 & 1 \\
      \bottomrule
   \end{tabular}
\end{table}
\begin{figure}[ht]\centering
   \includegraphics[width = 5in,trim = 1in 6.5in 0in 4in,clip]{demo page
      1}

   \includegraphics[width = 5in,trim = 1in 1in 0in 3.2in,clip]{demo page
      2}
```

Results

Table 1: Final Gate Truth table

A	B	AND
0	0	0
0	1	0
1	0	0
1	1	1

Circuit Demonstration Page

Student names: Kyra Rose

Instructor Initials

Pushbutton "Or Gate" KSB

Transistor Not gate KSB

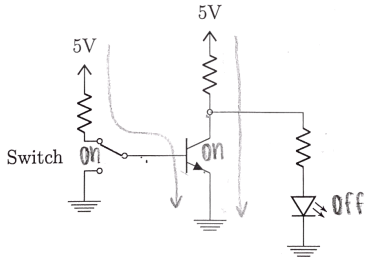
Transistor Nor gate KSB

Transistor unknown gate KSB

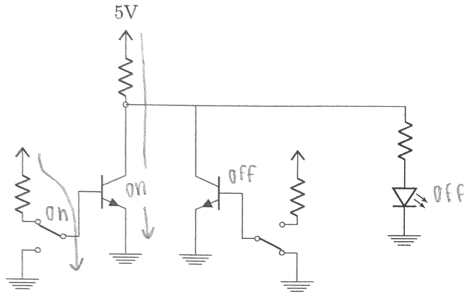
Diagrams

On each of the circuits below, draw the current paths and note whether each switch, transistor, and LED is ON or OFF.

Inverter:



NOR:



Final gate: