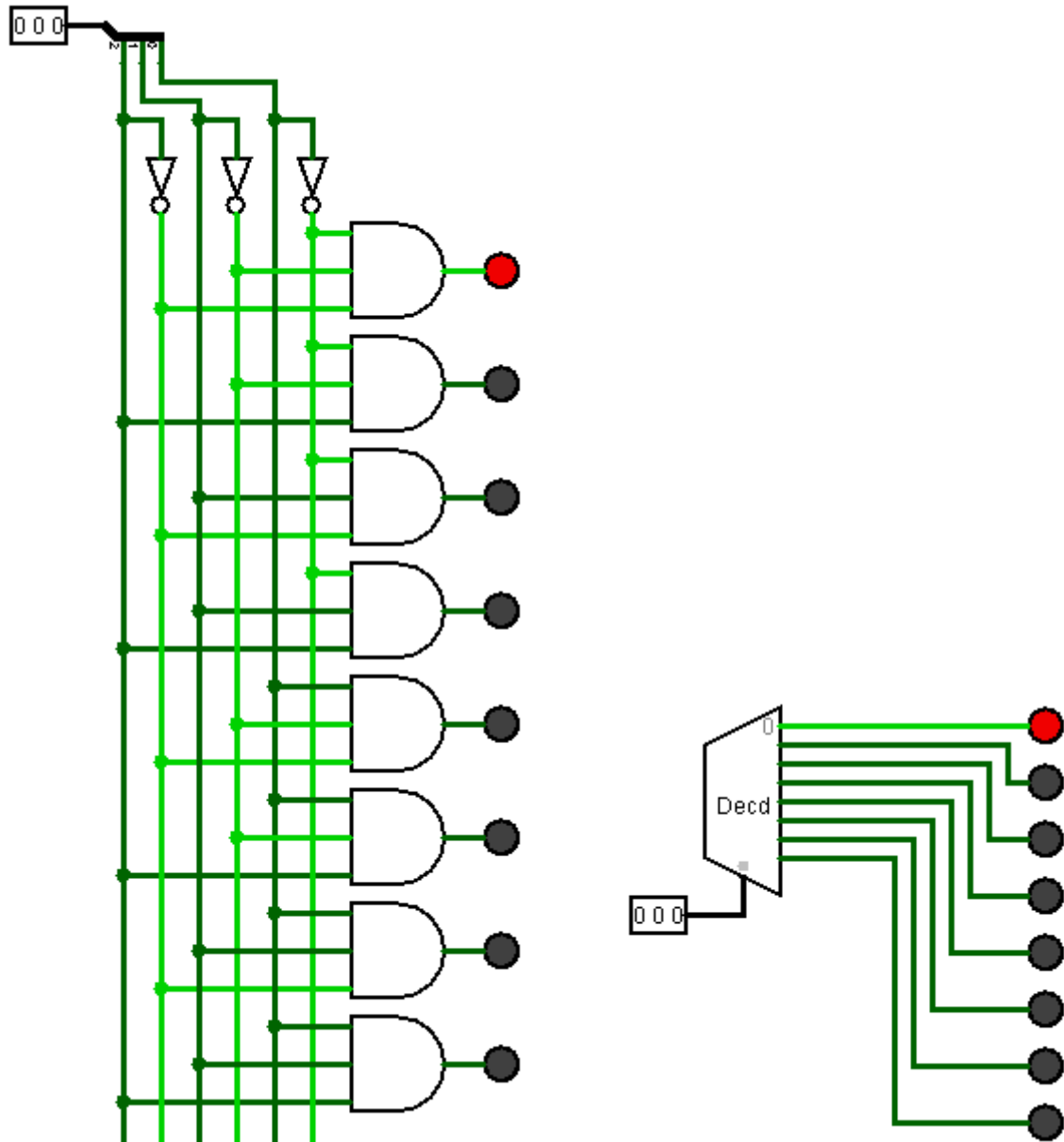
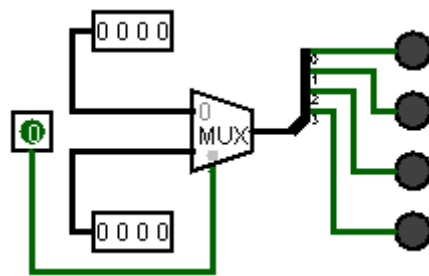
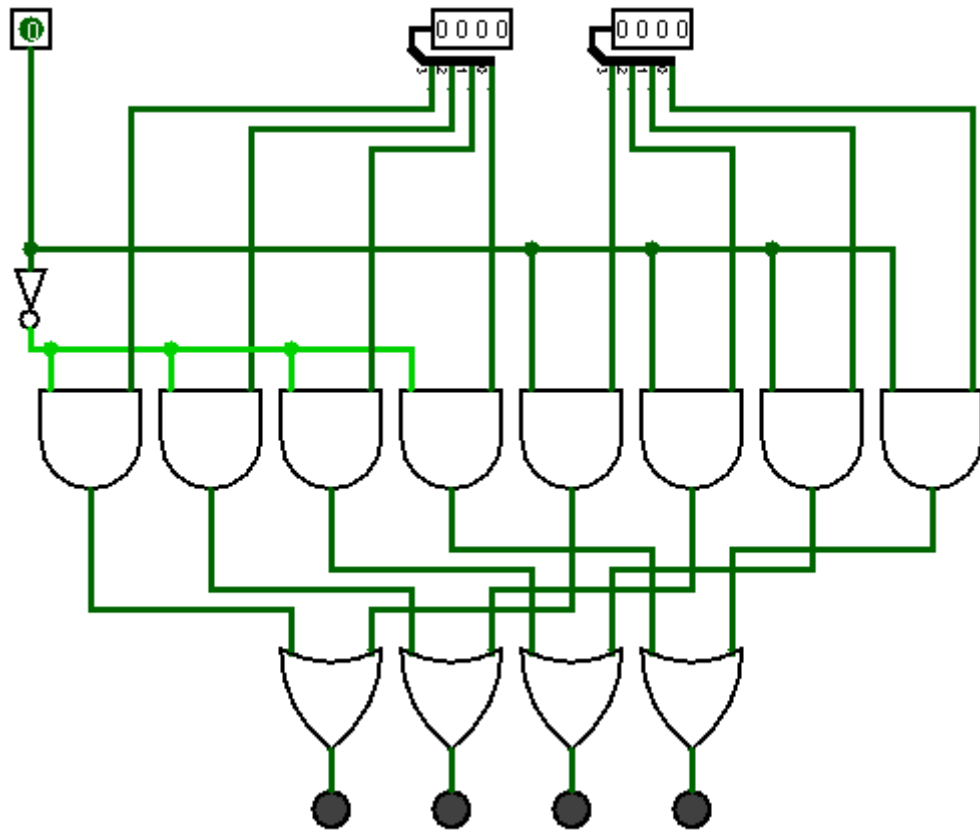


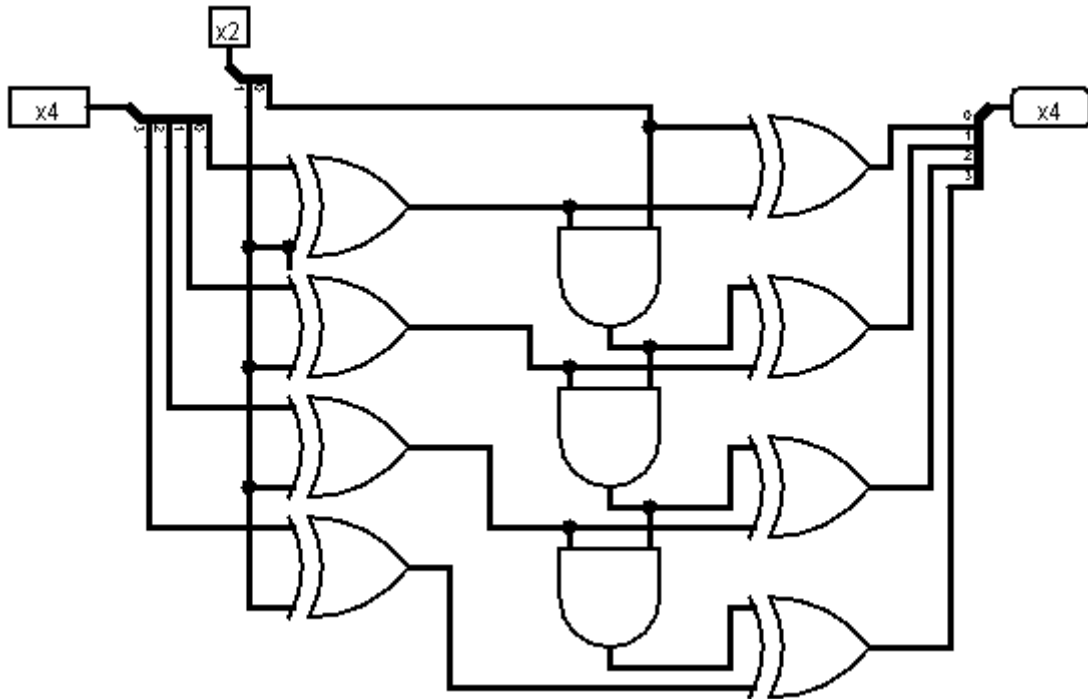
## Decoders



## Multiplexers



## Tiny Alu Circuit



| Input A | Input A | Input A | Input A | Control A | Control B | Output |
|---------|---------|---------|---------|-----------|-----------|--------|
| 0       | 0       | 0       | 0       | 0         | 0         | 0000   |
| 0       | 0       | 0       | 0       | 0         | 1         | 0001   |
| 0       | 0       | 0       | 0       | 1         | 0         | 1111   |
| 0       | 0       | 0       | 0       | 1         | 1         | 0000   |
| 0       | 0       | 0       | 1       | 0         | 0         | 0001   |
| 0       | 0       | 0       | 1       | 0         | 1         | 0010   |
| 0       | 0       | 0       | 1       | 1         | 0         | 1110   |
| 0       | 0       | 0       | 1       | 1         | 1         | 1111   |
| 0       | 0       | 1       | 0       | 0         | 0         | 0010   |
| 0       | 0       | 1       | 0       | 0         | 1         | 0011   |
| 0       | 0       | 1       | 0       | 1         | 0         | 1101   |
| 0       | 0       | 1       | 0       | 1         | 1         | 1110   |
| 0       | 0       | 1       | 1       | 0         | 0         | 0011   |
| 0       | 0       | 1       | 1       | 0         | 1         | 0100   |
| 0       | 0       | 1       | 1       | 1         | 0         | 1100   |
| 0       | 0       | 1       | 1       | 1         | 1         | 1101   |
| 0       | 1       | 0       | 0       | 0         | 0         | 0100   |

|   |   |   |   |   |   |      |
|---|---|---|---|---|---|------|
| 0 | 1 | 0 | 0 | 0 | 1 | 0101 |
| 0 | 1 | 0 | 0 | 1 | 0 | 1011 |
| 0 | 1 | 0 | 0 | 1 | 1 | 1100 |
| 0 | 1 | 0 | 1 | 0 | 0 | 0101 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0110 |
| 0 | 1 | 0 | 1 | 1 | 0 | 1010 |
| 0 | 1 | 0 | 1 | 1 | 1 | 1011 |
| 0 | 1 | 1 | 0 | 0 | 0 | 0110 |
| 0 | 1 | 1 | 0 | 0 | 1 | 0111 |
| 0 | 1 | 1 | 0 | 1 | 0 | 1001 |
| 0 | 1 | 1 | 0 | 1 | 1 | 1010 |
| 0 | 1 | 1 | 1 | 0 | 0 | 0111 |
| 0 | 1 | 1 | 1 | 0 | 1 | 1000 |
| 0 | 1 | 1 | 1 | 1 | 0 | 1000 |
| 0 | 1 | 1 | 1 | 1 | 1 | 1001 |
| 1 | 0 | 0 | 0 | 0 | 0 | 1000 |
| 1 | 0 | 0 | 0 | 0 | 1 | 1001 |
| 1 | 0 | 0 | 0 | 1 | 0 | 0111 |
| 1 | 0 | 0 | 0 | 1 | 1 | 1000 |
| 1 | 0 | 0 | 1 | 0 | 0 | 1001 |
| 1 | 0 | 0 | 1 | 0 | 1 | 1010 |
| 1 | 0 | 0 | 1 | 1 | 0 | 0110 |
| 1 | 0 | 0 | 1 | 1 | 1 | 0111 |
| 1 | 0 | 1 | 0 | 0 | 0 | 1010 |
| 1 | 0 | 1 | 0 | 0 | 1 | 1011 |
| 1 | 0 | 1 | 0 | 1 | 0 | 0101 |
| 1 | 0 | 1 | 0 | 1 | 1 | 0110 |
| 1 | 0 | 1 | 1 | 0 | 0 | 1011 |
| 1 | 0 | 1 | 1 | 0 | 1 | 1100 |
| 1 | 0 | 1 | 1 | 1 | 0 | 0100 |
| 1 | 0 | 1 | 1 | 1 | 1 | 0101 |
| 1 | 1 | 0 | 0 | 0 | 0 | 1100 |
| 1 | 1 | 0 | 0 | 0 | 1 | 1101 |
| 1 | 1 | 0 | 0 | 1 | 0 | 0011 |
| 1 | 1 | 0 | 0 | 1 | 1 | 0100 |
| 1 | 1 | 0 | 1 | 0 | 0 | 1101 |
| 1 | 1 | 0 | 1 | 0 | 1 | 1110 |
| 1 | 1 | 0 | 1 | 1 | 0 | 0010 |
| 1 | 1 | 0 | 1 | 1 | 1 | 0011 |

|   |   |   |   |   |   |      |
|---|---|---|---|---|---|------|
| 1 | 1 | 1 | 0 | 0 | 0 | 1110 |
| 1 | 1 | 1 | 0 | 0 | 1 | 1111 |
| 1 | 1 | 1 | 0 | 1 | 0 | 0001 |
| 1 | 1 | 1 | 0 | 1 | 1 | 0010 |
| 1 | 1 | 1 | 1 | 0 | 0 | 1111 |
| 1 | 1 | 1 | 1 | 0 | 1 | 0000 |
| 1 | 1 | 1 | 1 | 1 | 0 | 0000 |
| 1 | 1 | 1 | 1 | 1 | 1 | 0001 |