# CMPE 240 Experiment 2 Preliminary Work

## Truth Table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **X4** | **X3** | **X2** | **X1** | **X0** | **F** |
| **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **1** | 0 | 0 | 0 | 0 | 1 | 0 |
| **2** | 0 | 0 | 0 | 1 | 0 | 1 |
| **3** | 0 | 0 | 0 | 1 | 1 | 1 |
| **4** | 0 | 0 | 1 | 0 | 0 | 0 |
| **5** | 0 | 0 | 1 | 0 | 1 | 1 |
| **6** | 0 | 0 | 1 | 1 | 0 | 0 |
| **7** | 0 | 0 | 1 | 1 | 1 | 1 |
| **8** | 0 | 1 | 0 | 0 | 0 | 1 |
| **9** | 0 | 1 | 0 | 0 | 1 | 0 |
| **10** | 0 | 1 | 0 | 1 | 0 | 1 |
| **11** | 0 | 1 | 0 | 1 | 1 | 0 |
| **12** | 0 | 1 | 1 | 0 | 0 | 1 |
| **13** | 0 | 1 | 1 | 0 | 1 | 0 |
| **14** | 0 | 1 | 1 | 1 | 0 | 1 |
| **15** | 0 | 1 | 1 | 1 | 1 | 0 |
| **16** | 1 | 0 | 0 | 0 | 0 | 0 |
| **17** | 1 | 0 | 0 | 0 | 1 | 0 |
| **18** | 1 | 0 | 0 | 1 | 0 | 0 |
| **19** | 1 | 0 | 0 | 1 | 1 | 1 |
| **20** | 1 | 0 | 1 | 0 | 0 | 0 |
| **21** | 1 | 0 | 1 | 0 | 1 | 1 |
| **22** | 1 | 0 | 1 | 1 | 0 | 1 |
| **23** | 1 | 0 | 1 | 1 | 1 | 1 |
| **24** | 1 | 1 | 0 | 0 | 0 | 1 |
| **25** | 1 | 1 | 0 | 0 | 1 | 0 |
| **26** | 1 | 1 | 0 | 1 | 0 | 0 |
| **27** | 1 | 1 | 0 | 1 | 1 | 0 |
| **28** | 1 | 1 | 1 | 0 | 0 | 0 |
| **29** | 1 | 1 | 1 | 0 | 1 | 0 |
| **30** | 1 | 1 | 1 | 1 | 0 | 0 |
| **31** | 1 | 1 | 1 | 1 | 1 | 1 |

## List of components used in the design:

1. Multiplexer (8x1)

2. Decoder (2x4)

3. 2 not gates

(p.s. we had to use a splitter since otherwise Logisim won’t allow us to use the bits of a 2-bit input separately, it’s actually not a part of the design)

## Circuit:

