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Digital logic circuit design & simulation

4EJ500

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# Acknowledgements

# Abstract

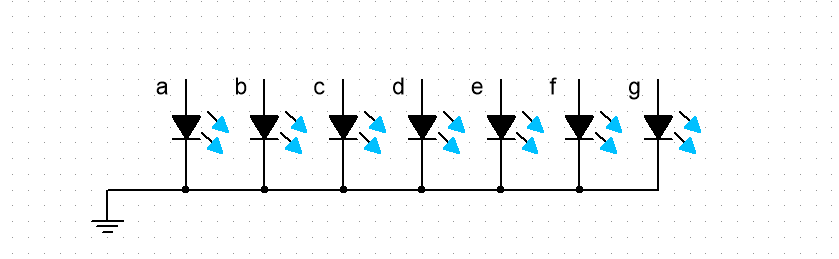
# Introduction

Talk about the truth table, segment e. mention p channel and n channel mosfets. Mention common cathode display (MENTION PURPOSE AND BLAH BLAH)

## Background

### MOSFETS

### The display





### K-maps

### NOR – the universal gate

## Truth table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A** | **B** | **C** | **D** | **e** |
| **0** | 0 | 0 | 0 | 0 | 1 |
| **1** | 0 | 0 | 0 | 1 | 0 |
| **2** | 0 | 0 | 1 | 0 | 1 |
| **3** | 0 | 0 | 1 | 1 | 0 |
| **4** | 0 | 1 | 0 | 0 | 0 |
| **5** | 0 | 1 | 0 | 1 | 0 |
| **6** | 0 | 1 | 1 | 0 | 1 |
| **7** | 0 | 1 | 1 | 1 | 0 |
| **8** | 1 | 0 | 0 | 0 | 1 |
| **9** | 1 | 0 | 0 | 1 | 0 |

# Sum of Products (SOP)

## Boolean Equation

### Simplification

### Simulation

## K-map

### Grouping

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CD\AB | 00 | 01 | 11 | 10 |
| 00 | 1 | 0 | X | 1 |
| 01 | 0 | 0 | X | 0 |
| 11 | 0 | 0 | X | X |
| 10 | 1 | 1 | X | X |

**(if x = 1)**

### Simulation

## NOR implementation

### Equation

### Simulation

## Analysis

# Product of Sums (POS)

## Boolean Equation

### Simplification

### Simulation

**Add in every pic from mutlsim**

## K-map

### Grouping

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CD\AB | 00 | 01 | 11 | 10 |
| 00 | 1 | 0 | X | 1 |
| 01 | 0 | 0 | X | 0 |
| 11 | 0 | 0 | X | X |
| 10 | 1 | 1 | X | X |

**(if x = 1)**

### Simulation

## NOR implementation

### Equation

### Simulation

## Analysis

# Conclusion

# References

# Appendix

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CD\AB | 00 | 01 | 11 | 10 |
| 00 | 1 | 0 | X | 1 |
| 01 | 0 | 1 | X | 1 |
| 11 | 1 | 1 | X | X |
| 10 | 1 | 1 | X | X |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CD\AB | 00 | 01 | 11 | 10 |
| 00 | 1 | 1 | X | 1 |
| 01 | 1 | 0 | X | 1 |
| 11 | 1 | 1 | X | X |
| 10 | 1 | 0 | X | X |

|  |  |  |  |  |
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|  |  |  |  |  |
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| 01 | 0 | 0 | X | 0 |
| 11 | 0 | 0 | X | X |
| 10 | 1 | 1 | X | X |

|  |  |  |  |  |
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| 10 | 0 | 1 | X | X |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CD\AB | 00 | 01 | 11 | 10 |
| 00 | 0 | 1 | X | 1 |
| 01 | 0 | 1 | X | 1 |
| 11 | 1 | 0 | X | X |
| 10 | 1 | 1 | X | X |