**Question 1**

N =

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|  |  |  |  |  |  | 0 |  | 0 |  |
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|  |  |  |  |  |  | 0 |  | 1 |  |
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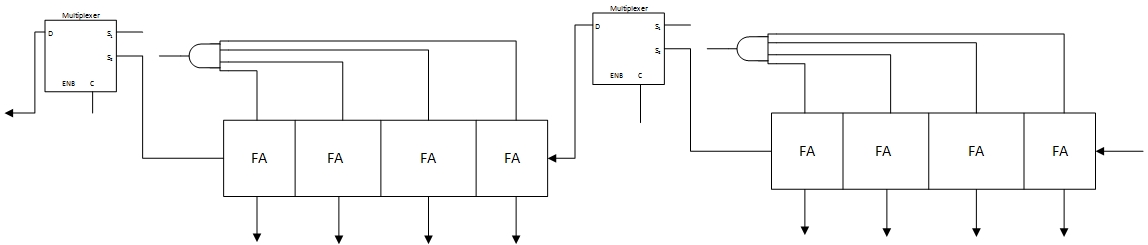
HA

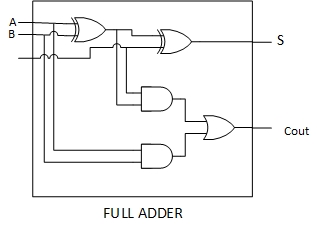
FA

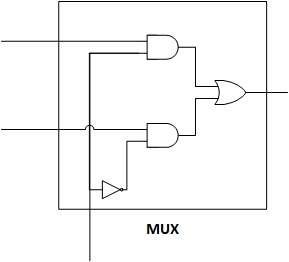
FA

**Question 2**

This implementation can be done in several ways, in terms of how to divide the 8-bit. Below we give implementation by using two 4-bit Carry Skip Adder.



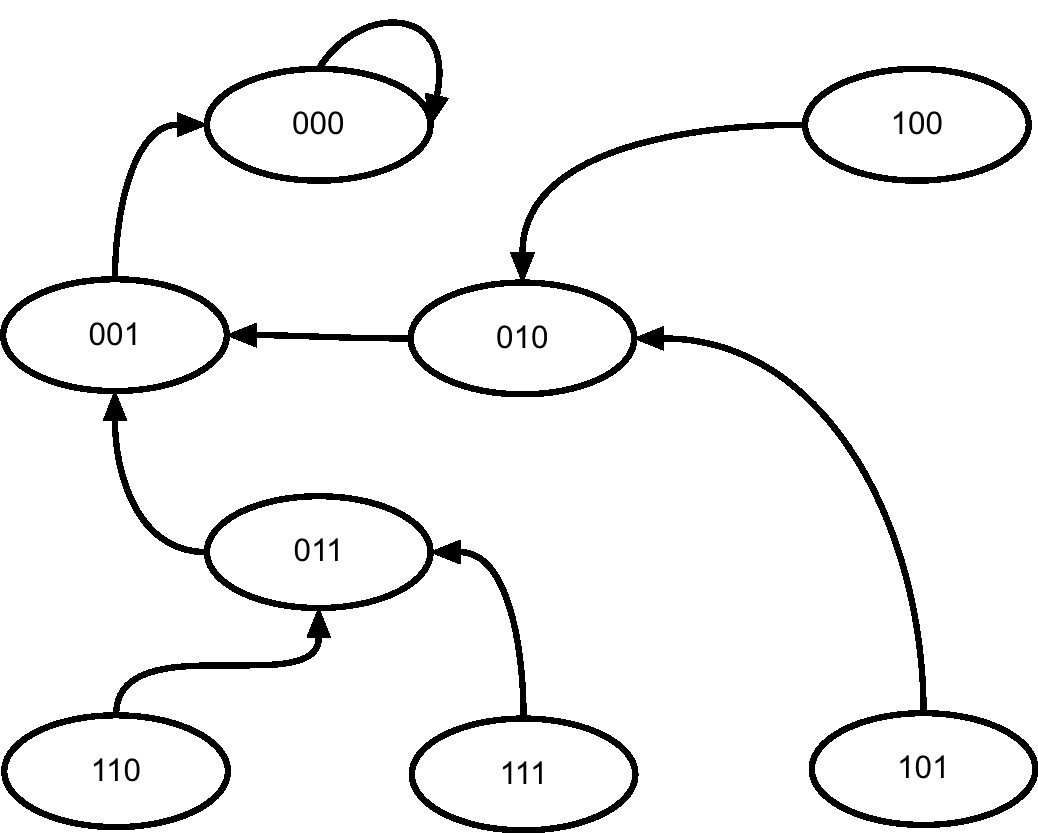




Neglect inverter

**Question 3**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Present State | | |  | Next State | | |
|  |  |  |  |  |  |  |
| 0 | 0 | 0 |  | 0 | 0 | 0 |
| 0 | 0 | 1 |  | 0 | 0 | 0 |
| 0 | 1 | 0 |  | 0 | 0 | 1 |
| 0 | 1 | 1 |  | 0 | 0 | 1 |
| 1 | 0 | 0 |  | 0 | 1 | 0 |
| 1 | 0 | 1 |  | 0 | 1 | 0 |
| 1 | 1 | 0 |  | 0 | 1 | 1 |
| 1 | 1 | 1 |  | 0 | 1 | 1 |



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 00 | 01 | 11 | 10 |
| 0 | 0 | 0 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 00 | 01 | 11 | 10 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 00 | 01 | 11 | 10 |
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 |

Using D Flip Flop:

CLK

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