|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Present state** | | **Input** | **Next State** | | **Output** | **Flip-flop input functions** | |
| **A** | **B** | **X** | **A** | **B** | **Y** | **DA** | **DB** |
| 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | X | X | X | X | X |
| 1 | 1 | 1 | X | X | X | X | X |

**State Table for circuit using D Flip-Flops**

**K-Maps:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B’X’ | B’X | BX | BX’ |
| A’ | 0 | 1 | 1 | 0 |
| A | 1 | 0 | X | X |

DA = A’X + AX’

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B’X’ | B’X | BX | BX’ |
| A’ | 1 | 0 | 0 | 1 |
| A | 0 | 0 | X | X |

DB = A’X’

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B’X’ | B’X | BX | BX’ |
| A’ | 0 | 1 | 1 | 0 |
| A | 0 | 0 | X | X |

Y = A’X