

INSTITUTO POLITÉCNICO NACIONAL

ESCUELA SUPERIOR DE COMPUTO

DISEÑO DE SISTEMAS DIGITALES

Actividad 5

**PROFESOR:**

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**GRUPO:**

2CV18

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Actividad 5

Diseñar un contador binario síncrono Mod 5 usando FF T, J-K y D.

|  |  |
| --- | --- |
| Decimal | Binario |
| 0 | 000 |
| 1 | 001 |
| 2 | 010 |
| 3 | 011 |
| 4 | 100 |

Flujo de estados

Tablas de verdad de los Flip-Flop a utilizar

|  |  |  |  |
| --- | --- | --- | --- |
| Q | Q+1 | J | K |
| 0 | 0 | 0 | X |
| 0 | 1 | 1 | X |
| 1 | 0 | X | 1 |
| 1 | 1 | X | 0 |

|  |  |  |
| --- | --- | --- |
| Q | Q+1 | T |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

|  |  |  |
| --- | --- | --- |
| Q | Q+1 | D |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

Tabla de transición

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Q | | | Q+1 | | | D | J | K | T |
| A | B | C | A’ | B’ | C’ |  |  |  |  |
| 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | X | 1 |
| 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | X | 1 |
| 0 | 1 | 0 | 0 | 1 | 1 | 0 | X | 0 | ¡ |
| 0 | 1 | 1 | 1 | 0 | 0 | 1 | X | 1 | 1 |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | X | 0 |

Ecuaciones

**Flip Flop D** **Flip Flop T**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BA |  |  |  |  |
| C \ | 00 | 01 | 11 | 10 |
| 0 |  |  | 1 |  |
| 1 |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BA |  |  |  |  |
| C \ | 00 | 01 | 11 | 10 |
| 0 | 1 | 1 | 1 | 1 |
| 1 |  |  |  |  |

Ec.D = ABC’ Ec.T= C’

**Flip Flop JK**

**Flip Flop J** **Flip Flop K**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC |  |  |  |  |
| A \ | 00 | 01 | 11 | 10 |
| 0 |  | 1 | X | X |
| 1 |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC |  |  |  |  |
| A \ | 00 | 01 | 11 | 10 |
| 0 | X | X | 1 |  |
| 1 | X |  |  |  |

Ec.D = AC’ Ec.T= AC’

Circuito

<https://tinyurl.com/yjy22vot>

