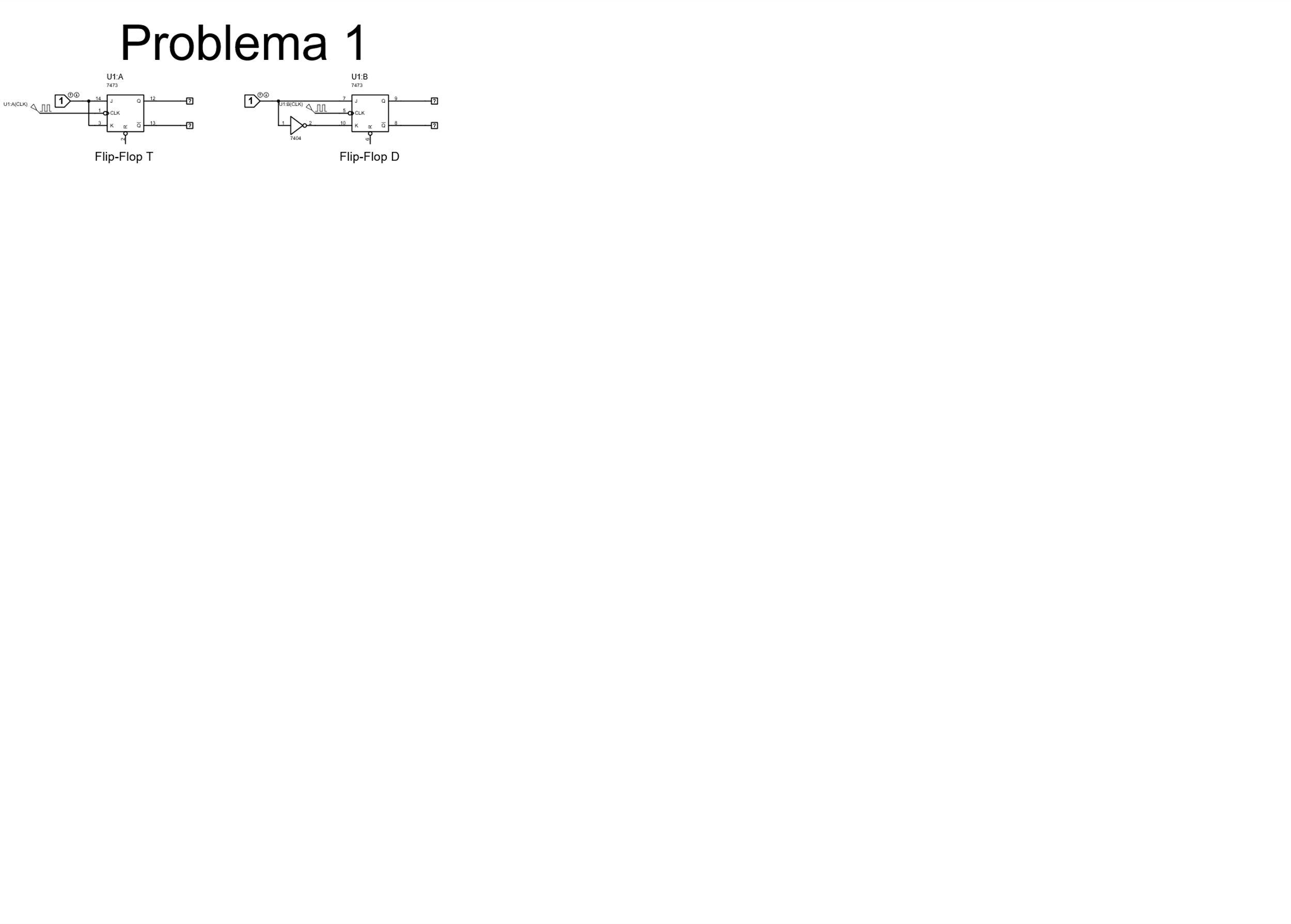
# PROBLEMA 1

## Diagrama Digital



# PROBLEMA 3

## Black-Box

X

Y

Pullsos

QA

QB

Contador Ascendente cíclico de tres bits

## Diagrama de estados

## Descendente [3-0]

Imagen que contiene viendo, amarillo, cerca, tabla

Descripción generada automáticamente

## Orden [2,0,1,3]

Imagen que contiene dibujo, medidor, cd

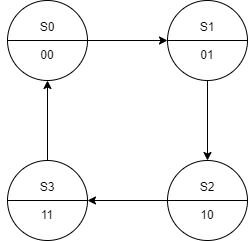
Descripción generada automáticamente

## Orden [3,1,2,0]

Imagen que contiene dibujo, cd

Descripción generada automáticamente

## Ascendente [0-3]



## No. Y tipo de Flip-Flops

## Asignación de valores a los estados

|  |  |  |
| --- | --- | --- |
| Estado | QB | QA |
| S0 | 0 | 0 |
| S1 | 0 | 1 |
| S2 | 1 | 0 |
| S3 | 1 | 1 |

## Tabla de excitación

## Descendente [3-0]

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Estado presente | | Estado siguiente | | B | | A | |
| J | **QB** | **QA** | **QB+1** | **QA+1** | **JB** | **KB** | **JA** | **KA** |
| 0 | 0 | 0 | 1 | 1 | 1 | X | 1 | X |
| 1 | 0 | 1 | 0 | 0 | 0 | X | X | 1 |
| 2 | 1 | 0 | 0 | 1 | X | 1 | 1 | X |
| 3 | 1 | 1 | 1 | 0 | X | 0 | X | 1 |

## Orden [2,0,1,3]

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Estado presente | | Estado siguiente | | B | | A | |
| J | **QB** | **QA** | **QB+1** | **QA+1** | **JB** | **KB** | **JA** | **KA** |
| 0 | 0 | 0 | 0 | 1 | 0 | X | 1 | X |
| 1 | 0 | 1 | 1 | 1 | 1 | X | X | 0 |
| 2 | 1 | 0 | 0 | 0 | X | 1 | 0 | X |
| 3 | 1 | 1 | 1 | 0 | X | 0 | X | 1 |

## Orden [3,1,2,0]

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Estado presente | | Estado siguiente | | B | | A | |
| J | **QB** | **QA** | **QB+1** | **QA+1** | **JB** | **KB** | **JA** | **KA** |
| 0 | 0 | 0 | 1 | 1 | 1 | X | 1 | X |
| 1 | 0 | 1 | 1 | 0 | 1 | X | X | 1 |
| 2 | 1 | 0 | 0 | 0 | X | 1 | 0 | X |
| 3 | 1 | 1 | 0 | 1 | X | 1 | X | 0 |

## Ascendente [0-3]

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Estado presente | | Estado siguiente | | B | | A | |
| J | **QB** | **QA** | **QB+1** | **QA+1** | **JB** | **KB** | **JA** | **KA** |
| 0 | 0 | 0 | 0 | 1 | 0 | X | 1 | X |
| 1 | 0 | 1 | 1 | 0 | 1 | X | X | 1 |
| 2 | 1 | 0 | 1 | 1 | X | 0 | 1 | X |
| 3 | 1 | 1 | 0 | 0 | X | 1 | X | 1 |

## Articulación Algebraica

## Descendente [3-0]

* JB = ¬QA

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | 1 | 0 |
| 1 | X | X |

* KB = ¬QA

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | X | X |
| 1 | 1 | 0 |

* JA = 1

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | 1 | X |
| 1 | 1 | X |

* KA = 1

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | X | 1 |
| 1 | X | 1 |

## Orden [2,0,1,3]

* JB = QA

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | 0 | 1 |
| 1 | X | X |

* KB = ¬QA

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | X | X |
| 1 | 1 | 0 |

* JA = ¬QB

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | 1 | X |
| 1 | 0 | X |

* KA = QB

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | X | 0 |
| 1 | X | 1 |

## Orden [3,1,2,0]

* JB = 1

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | 1 | 1 |
| 1 | X | X |

* KB = 1

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | X | X |
| 1 | 1 | 1 |

* JA = ¬QB

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | 1 | X |
| 1 | 0 | X |

* KA = ¬QB

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | X | 1 |
| 1 | X | 0 |

## Ascendente [0-3]

* JB = QA

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | 0 | 1 |
| 1 | X | X |

* KB = QA

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | X | X |
| 1 | 0 | 1 |

* JA = 1

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | 1 | X |
| 1 | 1 | X |

* KA = 1

|  |  |  |
| --- | --- | --- |
| QB\QA | 0 | 1 |
| 0 | X | 1 |
| 1 | X | 1 |

## Diagrama Digital

