Test Cases

// construction of the latches will start with a default of clkIn:false, dataIn:false, which causes Q off (QBar on)

{

{false, false, false, true}, // clkIn staying false should cause no change

{false, true, false, true}, // clkIn staying false should cause no change, regardless of data change

{true, true, true, false}, // clkIn going to true, with dataIn, causes Q on (QBar off)

{true, false, true, false}, // clkIn staying true should cause no change, regardless of data change

{false, false, true, false}, // clkIn going to false should cause no change

{false, true, true, false}, // clkIn staying false should cause no change, regardless of data change

{true, false, false, true}, // clkIn going to true, with no dataIn, causes Q off (QBar on)

{true, true, false, true}, // clkIn staying true should cause no change, regardless of data change

}

[After New]

|  |  |
| --- | --- |
| clkIn: false  dataIn: false  Left\_R\_AND: false  Left\_S\_AND: true  Left\_RS\_Q: true  Left\_RS\_QBar: false  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

Stage 1: Switching from [clkIn (false) dataIn (false)] to [clkIn (false) dataIn (false)]

[After Data "Change"]

|  |  |
| --- | --- |
| clkIn: false  dataIn: false  Left\_R\_AND: false  Left\_S\_AND: true  Left\_RS\_Q: true  Left\_RS\_QBar: false  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

[After Clock "Change"]

|  |  |
| --- | --- |
| clkIn: false  dataIn: false  Left\_R\_AND: false  Left\_S\_AND: true  Left\_RS\_Q: true  Left\_RS\_QBar: false  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

Stage 2: Switching from [clkIn (false) dataIn (false)] to [clkIn (false) dataIn (true)]

[After Data "Change"]

|  |  |
| --- | --- |
| clkIn: false  dataIn: true  Left\_R\_AND: true  Left\_S\_AND: false  Left\_RS\_Q: false  Left\_RS\_QBar: true  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

[After Clock "Change"]

|  |  |
| --- | --- |
| clkIn: false  dataIn: true  Left\_R\_AND: true  Left\_S\_AND: false  Left\_RS\_Q: false  Left\_RS\_QBar: true  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

Stage 3: Switching from [clkIn (false) dataIn (true)] to [clkIn (true) dataIn (true)]

[After Data "Change"]

|  |  |
| --- | --- |
| clkIn: false  dataIn: true  Left\_R\_AND: true  Left\_S\_AND: false  Left\_RS\_Q: false  Left\_RS\_QBar: true  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

[After Clock "Change"]

|  |  |
| --- | --- |
| clkIn: true  dataIn: true  Left\_R\_AND: false  Left\_S\_AND: false  Left\_RS\_Q: false  Left\_RS\_QBar: true  Right\_R\_AND: false  Right\_S\_AND: true  Right\_RS\_Q: true  Right\_RS\_QBar: false | Image result for edge triggered flip flop |

Stage 4: Switching from [clkIn (true) dataIn (true)] to [clkIn (true) dataIn (false)]

[After Data "Change"]

|  |  |
| --- | --- |
| clkIn: true  dataIn: false  Left\_R\_AND: false  Left\_S\_AND: false  Left\_RS\_Q: false  Left\_RS\_QBar: true  Right\_R\_AND: false  Right\_S\_AND: true  Right\_RS\_Q: true  Right\_RS\_QBar: false | Image result for edge triggered flip flop |

[After Clock "Change"]

|  |  |
| --- | --- |
| clkIn: true  dataIn: false  Left\_R\_AND: false  Left\_S\_AND: false  Left\_RS\_Q: false  Left\_RS\_QBar: true  Right\_R\_AND: false  Right\_S\_AND: true  Right\_RS\_Q: true  Right\_RS\_QBar: false | Image result for edge triggered flip flop |

Stage 5: Switching from [clkIn (true) dataIn (false)] to [clkIn (false) dataIn (false)]

[After Data "Change"]

|  |  |
| --- | --- |
| clkIn: true  dataIn: false  Left\_R\_AND: false  Left\_S\_AND: false  Left\_RS\_Q: false  Left\_RS\_QBar: true  Right\_R\_AND: false  Right\_S\_AND: true  Right\_RS\_Q: true  Right\_RS\_QBar: false | Image result for edge triggered flip flop |

[After Clock "Change"]

|  |  |
| --- | --- |
| clkIn: false  dataIn: false  Left\_R\_AND: false  Left\_S\_AND: true  Left\_RS\_Q: true  Left\_RS\_QBar: false  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

circuit\_test.go:2013: Wanted power of true at Q, but got false.

circuit\_test.go:2017: Wanted power of false at QBar, but got true.

Stage 6: Switching from [clkIn (false) dataIn (false)] to [clkIn (false) dataIn (true)]

[After Data "Change"]

|  |  |
| --- | --- |
| clkIn: false  dataIn: true  Left\_R\_AND: true  Left\_S\_AND: false  Left\_RS\_Q: false  Left\_RS\_QBar: true  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

[After Clock "Change"]

|  |  |
| --- | --- |
| clkIn: false  dataIn: true  Left\_R\_AND: true  Left\_S\_AND: false  Left\_RS\_Q: false  Left\_RS\_QBar: true  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

circuit\_test.go:2013: Wanted power of true at Q, but got false.

circuit\_test.go:2017: Wanted power of false at QBar, but got true.

Stage 7: Switching from [clkIn (false) dataIn (true)] to [clkIn (true) dataIn (false)]

[After Data "Change"]

|  |  |
| --- | --- |
| clkIn: false  dataIn: false  Left\_R\_AND: false  Left\_S\_AND: true  Left\_RS\_Q: true  Left\_RS\_QBar: false  Right\_R\_AND: false  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

[After Clock "Change"]

|  |  |
| --- | --- |
| clkIn: true  dataIn: false  Left\_R\_AND: false  Left\_S\_AND: false  Left\_RS\_Q: true  Left\_RS\_QBar: false  Right\_R\_AND: true  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

Stage 8: Switching from [clkIn (true) dataIn (false)] to [clkIn (true) dataIn (true)]

[After Data "Change"]

|  |  |
| --- | --- |
| clkIn: true  dataIn: true  Left\_R\_AND: false  Left\_S\_AND: false  Left\_RS\_Q: true  Left\_RS\_QBar: false  Right\_R\_AND: true  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |

[After Clock "Change"]

|  |  |
| --- | --- |
| clkIn: true  dataIn: true  Left\_R\_AND: false  Left\_S\_AND: false  Left\_RS\_Q: true  Left\_RS\_QBar: false  Right\_R\_AND: true  Right\_S\_AND: false  Right\_RS\_Q: false  Right\_RS\_QBar: true | Image result for edge triggered flip flop |