Advanced Logic Gates
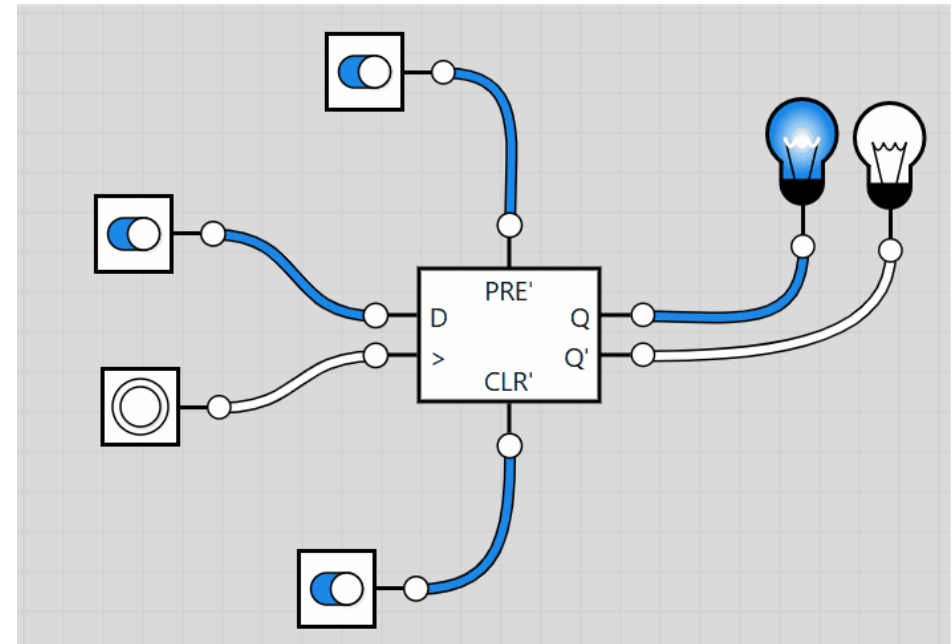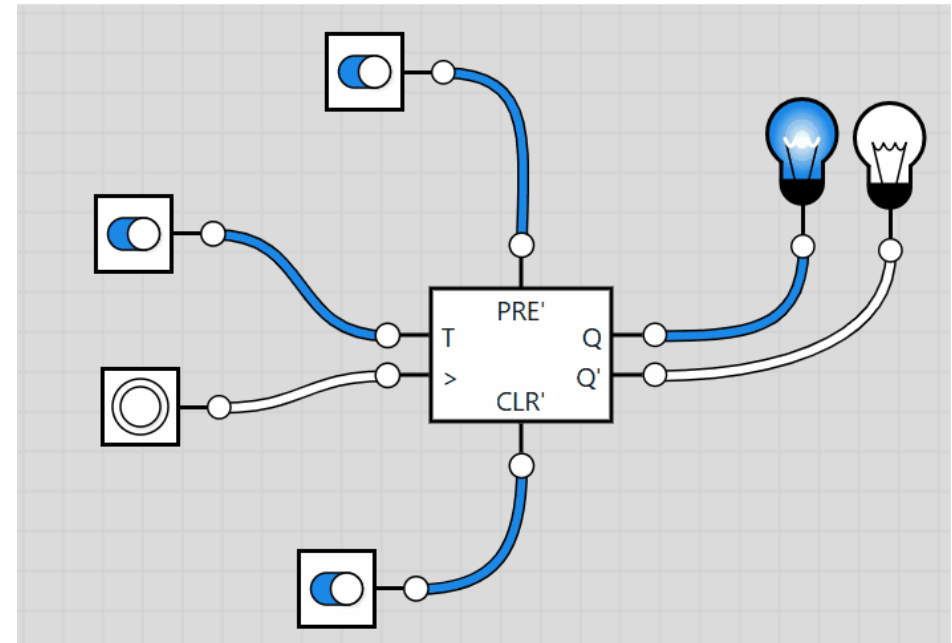
D (Delay) Flip Flop

- A D Flip Flop is a type of digital memory circuit that captures and stores a single bit of data

  - D is the input into the block
  - > or CLK is the control input, its what determines when the D input is captured
  - Q is the output of the store
  - Q' is the inverted output
  - PRE overwrites the output to be true
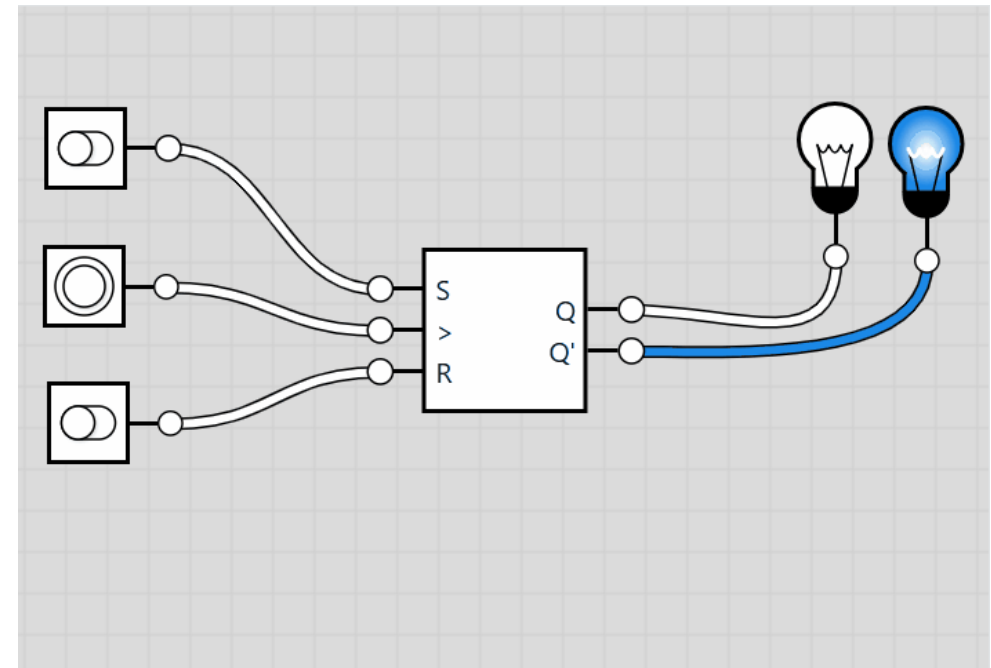 - CLR overwrites the output to be false

T (Toggle) Flip Flop

- A T Flip Flop is a type of digital memory circuit that captures and stores a single bit of data

  - T is the input of this block 1 means it changes on a clock whereas 0 means it doesn't
  - > or CLK is the control input, it determines when the output flips
  - Q is the output of the store
  - Q' is the inverted output
  - PRE overwrites the output to be true
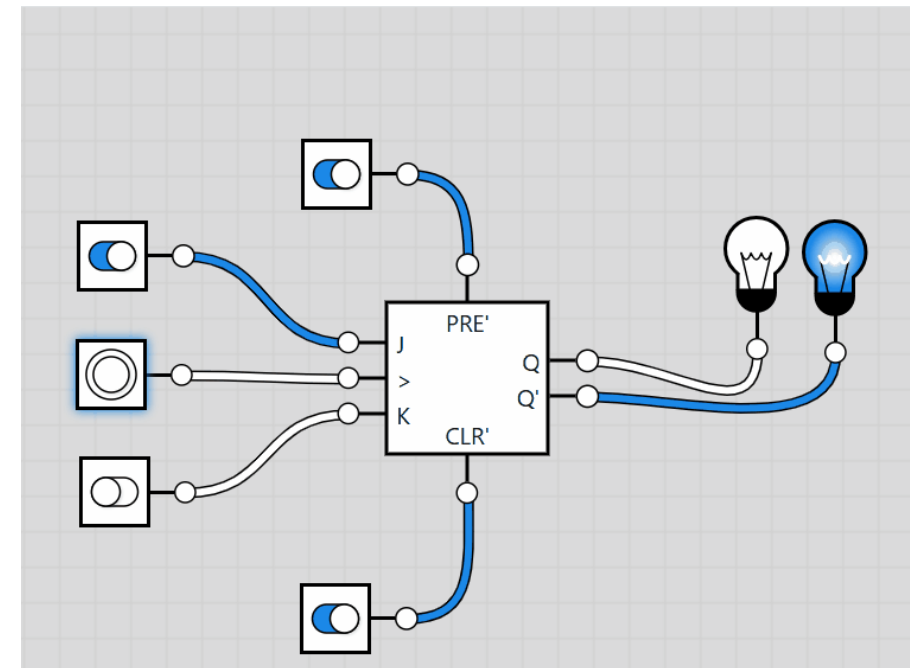 - CLR overwrites the output to be false

SR (Set-Reset) Flip Flop

- A SR Flip Flop is a type of digital memory circuit that captures and stores a single bit of data

  - S is the set input so if it's true then the output is true
  - > or CLK is the control input, it determines when the output is set
  - R is the reset input so if it's true then the output will be false
  - Q is the output of the store
  - Q' is the inverted output

- SR Flip Flops have a major disadvantage that when S & R are both true it gives an undefined state which can break circuits

JK Flip Flop

- A JK Flip Flop is a type of digital memory circuit that captures and stores a single bit of data, they work virtually the same as an SR Flip-Flop

  - J is the set input so if it's true then the output is true
  - > or CLK is the control input, it determines when the output is set
  - K is the reset input so if it's true then the output will be false
  - Q is the output of the store
  - Q' is the inverted output

- JK Flip Flops solve the problem of undefined states in an SR Flip Flop by making it so when both inputs are on it becomes a toggle

Binary Counter