**Basic Registers**

Sequential circuits that store multiple bits.

A picture containing text, shoji

Description automatically generatedDiagram

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At the time when clock signal goes from 0 to 1, it will conduct to value at the inputs to the outputs.

Lets say our inputs are 0110 (I3, I2, I1, I0 respectively). When clock signal becomes one, our outputs become 0110 (Q3, Q2, Q1, Q0 respectively).

Example Using Registers: Temperature Display

Temperature history display

* Sensor outputs temperature as 5-bit binary number
* Timer pulses C every hour
  + At every hour, registers have to be updated
* Record temperature on each pulse, display last 3 recorded values

Timeline

Description automatically generated with low confidence

Currently temperature is 18:  
Timeline

Description automatically generated

1 hour later timer is going to create another pulse:  
Timeline

Description automatically generated

1 hour later:  
Graphical user interface, application

Description automatically generated

USE THREE 5-BIT REGISTERS:

Diagram

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Output of the registers, initially 0

Diagram

Description automatically generated

Outputs of Ra and Rb were initially 0 so at the first clock signal, 0 will be stored at the Rb and Rc.

Diagram, schematic

Description automatically generated

18 is going to be at Rb because the output of the Ra (input of the Rb) was 18 at the previous cycle.  
0 is going to be at Rc because the output of the Rb (input of the Rc) was 0 at the previous cycle.

Diagram, schematic

Description automatically generated

Diagram, schematic

Description automatically generated

*Clock signal geldiğinde registerlar inputlarını dışarı veriyor.*