

Experiment 9

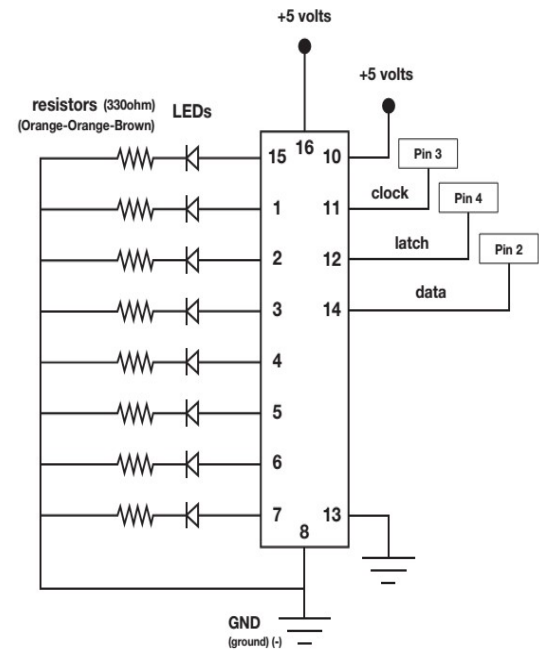
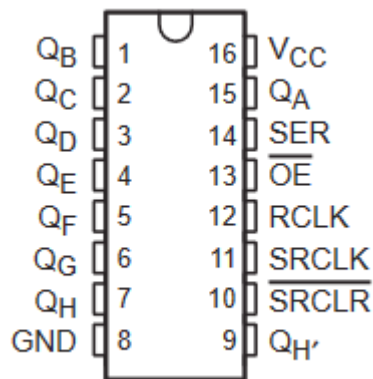
Shift Register

Outline

In this experiment, it is expected from you to,

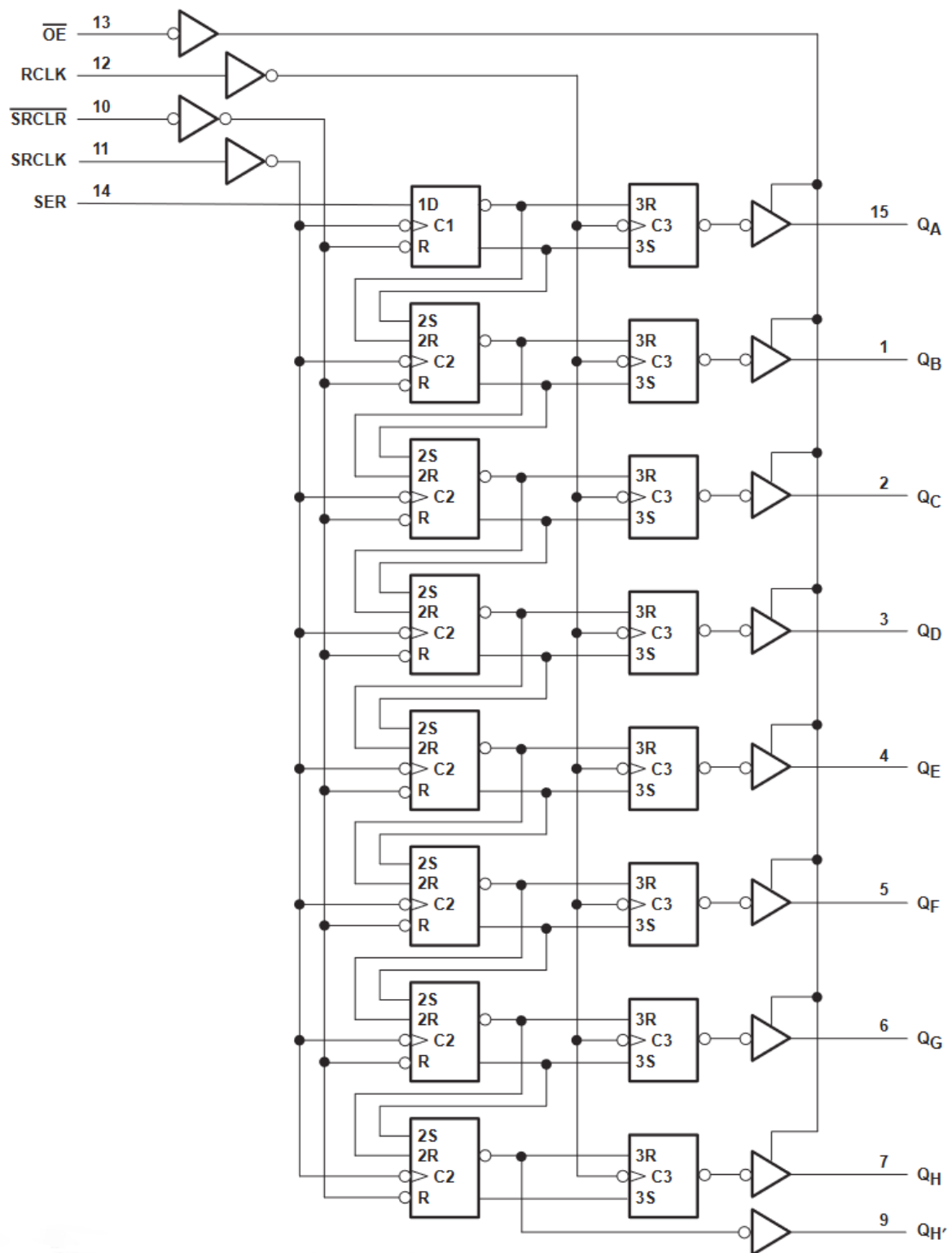
1. Learn the shift register structure and usage
2. Assemble and test the shift register circuit
3. Modification

1. Shift Register



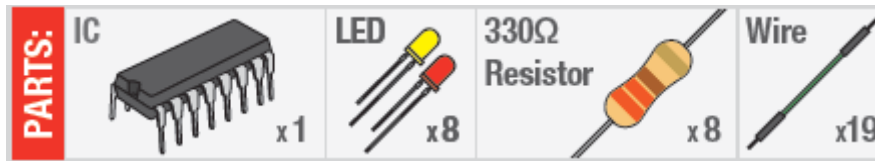
Structure of Shift Register

A shift register is a type of digital circuit using a cascade of flip-flops where the output of one flip-flop is connected to the input of the next. They share a single clock signal, which causes the data stored in the system to shift from one location to the next. By connecting the last flip-flop back to the first, the data can cycle within the shifters for extended periods, and in this form they were used as a form of computer memory.

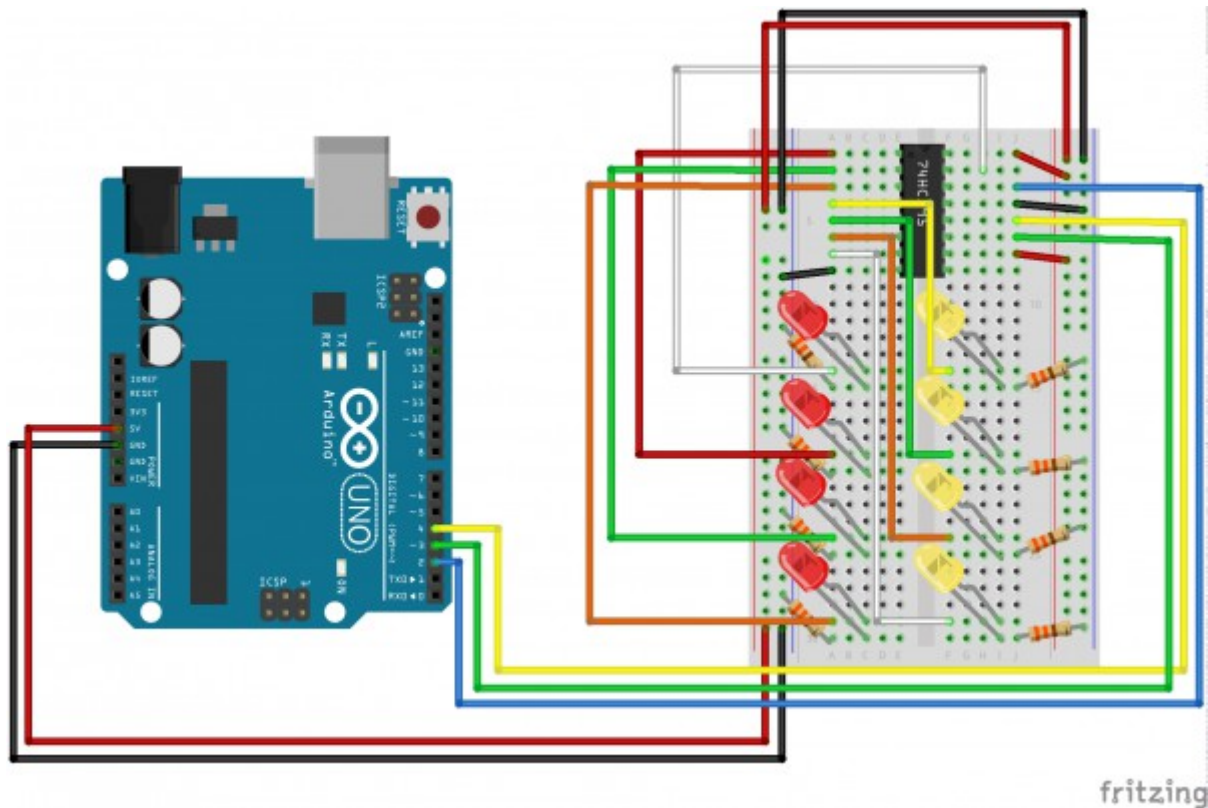


Logic Diagram of the Shift Register

2. Assembling the Shift Register Circuit



Required Parts



Fritzing Diagram of the Circuit

1. Select your resistors (330 Ω) by using the color code table
2. Connect your shift register and the LEDs as shown in the diagram
3. Verify and upload your code to the arduino board
4. Observe the result and compare it with the expected outcome

Expected Outcome: LEDs should turn on one after another then they should turn off in reverse order.

Modification

Use a shift register, 8 LEDs and the serial port as follows,

1. Serial port will be used to read the input
 - Input will be in type of integer value
 - Range of input is [0 255]
2. By using LEDs visualize the binary equivalent of the input value.
 - Turned on state means 1
 - Turned off state means 0