

**National University of Computer and Emerging Sciences**  
**Karachi Campus**



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***Project Report***  
***Digital Logic Design***  
***Section: G***

**Group Members:**

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## Analog to Digital Converter

- **Project Overview:**

The principal aim of our project is to take Analog signals in the form of voltage and then convert them into Digital information. The circuit that we have designed is mainly based on a Single channel IC i.e. ADC0804. There's an inbuilt clock in the IC, so some circuit measurements are dependent on this clock source. Also, we have used a couple of LED's through which we can get the indication of output signals.

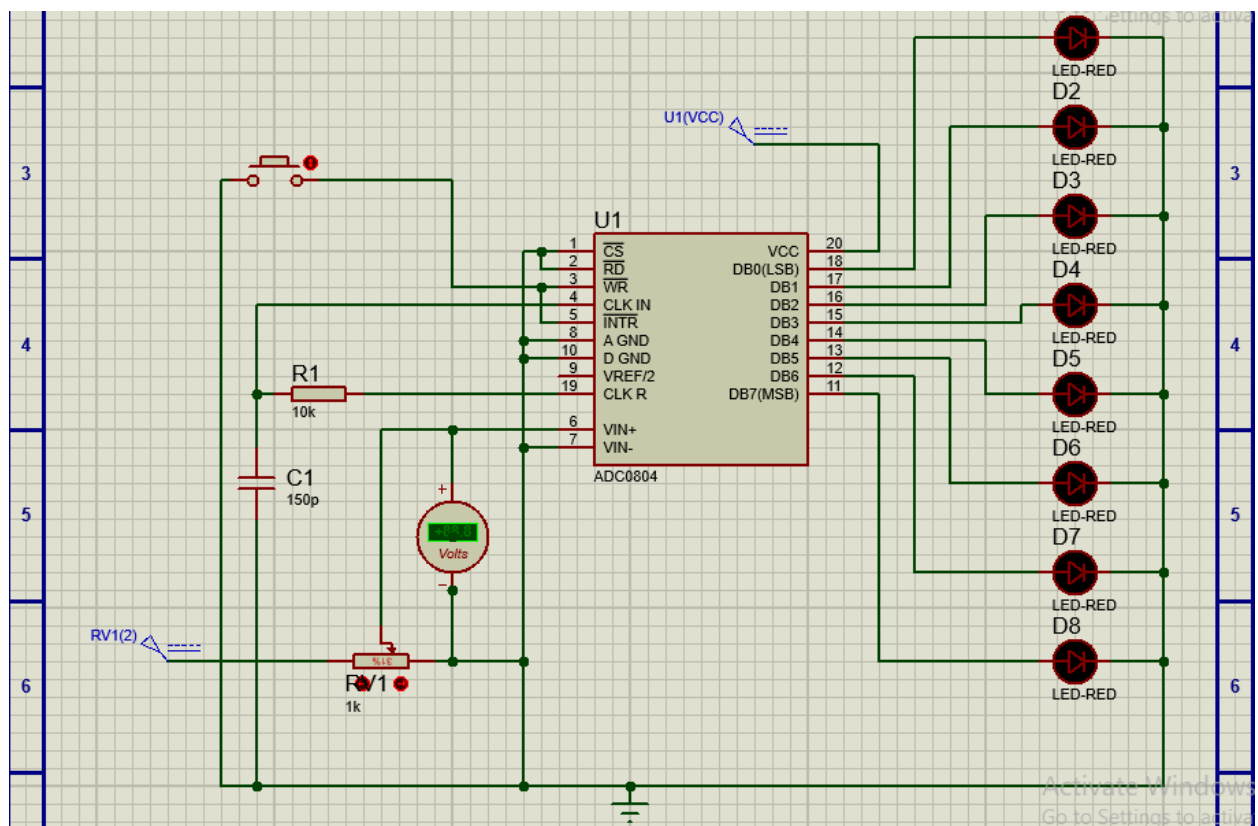
- **Methodology:**

We have designed our circuit on Proteus 8. The circuit consists of two Generators as the source providing VCC of 5V, an RC circuit having a Resistor of 10K resistance and a Capacitor of 150p capacitance which is used to trigger the inbuilt clock inside the IC, a Rheostat having 1K resistance to control the voltage, a Potentiometer to display volts, an IC (ADC0804) used mainly for direct conversion of signals, a button to complete the circuit & some LED's for output signals.

- **Project-Idea:**

The idea of this project was to make a circuit which can convert Analog signals to the Digital signals. This would help us in controlling the devices more precisely that work on voltage, as it would be easier to keep an eye on voltage level in digital form.

- Circuit Schematic Diagram:



- **Simulation of the Circuit:**

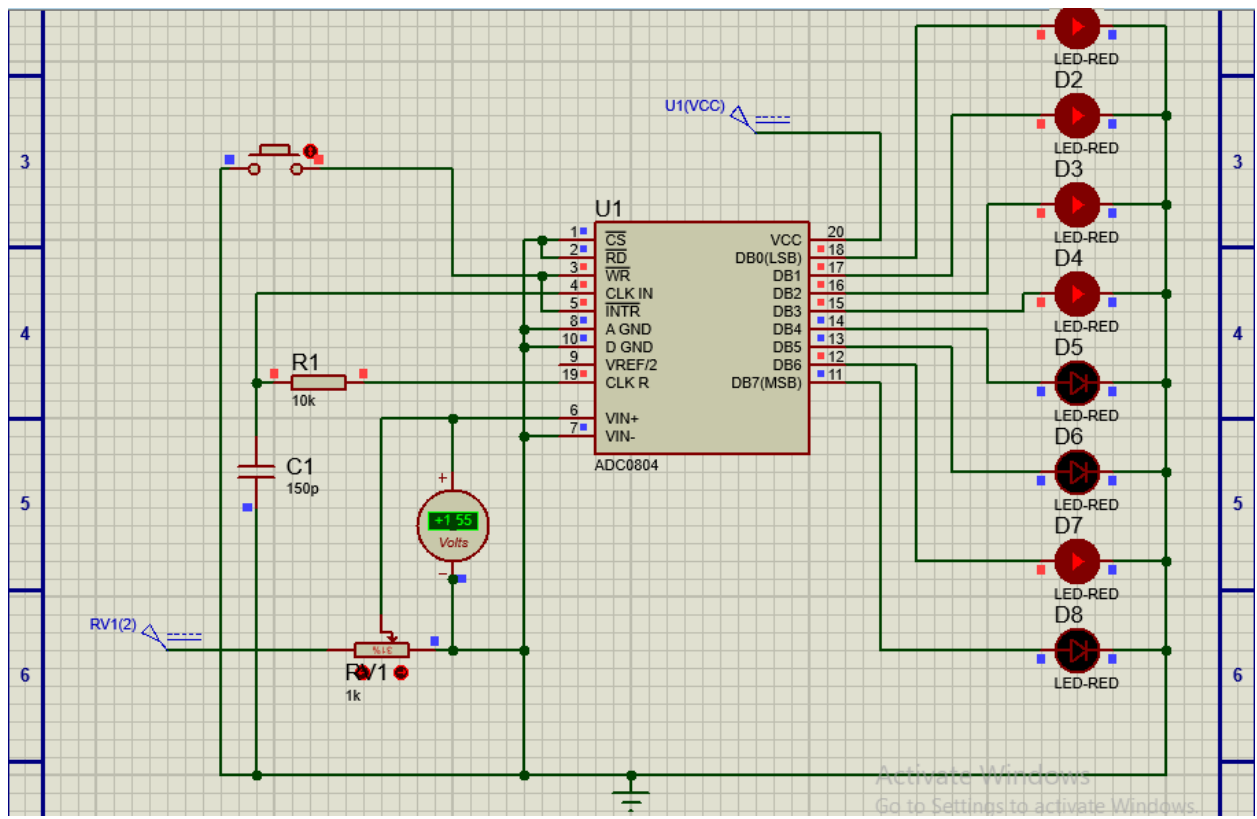


Figure 1

**Results shown by Figure 1:**

Digital Value = 01001111

Decimal-Equivalent = 79

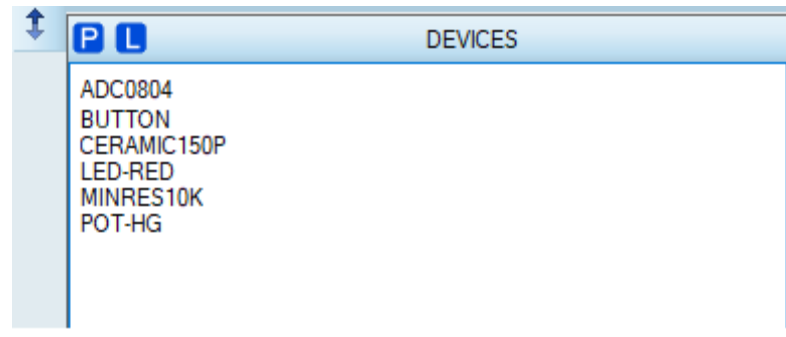
**Verification:**

*Formula:* Analog Voltage = (Decimal Value) x (Step Size)

$$= (79) \times (19.53\text{mV}) = 1.54\text{V}$$

Hence, the obtained value is 1.54V and the measured Voltage of Rheostat is 1.55V that is approximately equal. So this is how you use an ADC0804 IC.

- **Components used in the Circuit:**



- **Conclusion:**

The circuit design represents the working of the IC in the form of a perfect convertor which can convert analog signals into digital form by simply changing the input signals (Analog information) through Rheostat and then get the output on the respective LED's representing the output signals (Digital information). Moreover, we can see the importance of using clock in this circuit that how it repeats the cycle to ensure smooth running of the circuit.