# Data Communication Through Laser Pulses

## EP -315 (Microprocessor Lab)

## (Nov-2012)
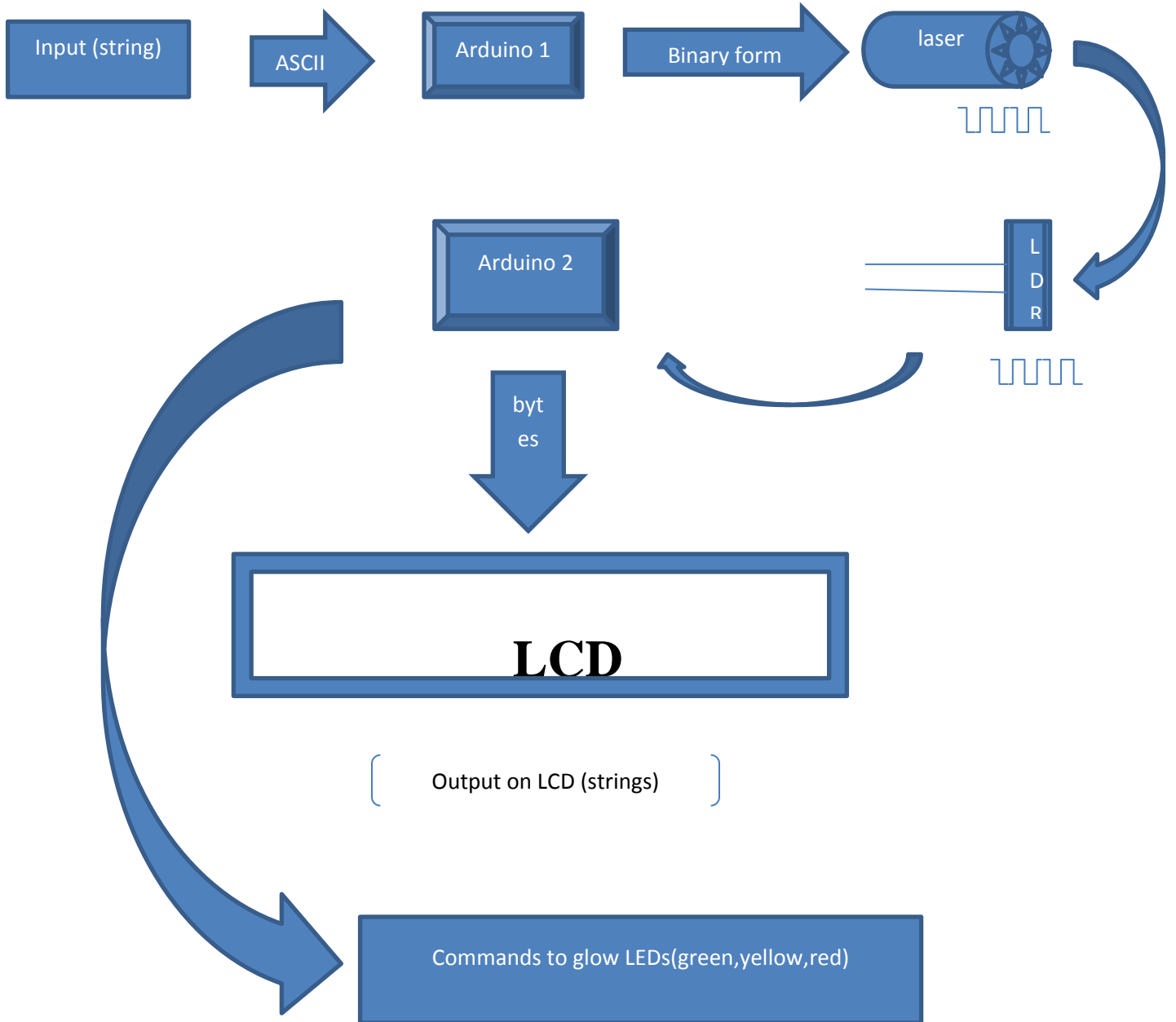
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Guide : Prof. Pradeep Sarin

# Flow Chart :

Input (string) → ASCII → Arduino 1 → Binary form → laser

laser → L D R

Arduino 2 → bytes → LCD

Output on LCD (strings)

Commands to glow LEDs(green,yellow,red)

# Hardware  & Software Requirements  :

1) Two arduino uno- board
2) LDR Sensor
3) Laser pointer
4) Leds
5) LCD
6) Resistor (180Ω ,220 Ω,18 k Ω)
7) Arduino-0022 IDE installed computer

# Procedure :

1) Sender user will give input through serial monitor. Sender Arduino takes a string from a computer, converts it into bits in ASCII format.
2) These bits will be sent as Laser pulses . We will use laser  pointer which will be easily available in market.
3) On receiver side will use LDR . Depending on power of laser we will decide the distance between sender and receiver up to 1-2m.
4) The receiver interprets the bits, up-converts them and displays them to the LCD screen.
5) Every time the bit string ends, the receiver checks to see if the string matches a list of commands we designed ,such as setting LEDS On /Off.

# Problems Faced :

1) At receiving end LDR sensor gave large variation in analog values by changing location or surrounding light slightly.

   **Solution :**  we covered the LDR with black tube like shape so the variation would be minimum.

2) Response time of LDR is high 40ms rising time and falling time 30ms. We tried to use photo diode but we didn't get certain level of stable input analog signals which were necessary.

# Total Cost of Project :

1) Laser pointer :  Rs. 80
2) Medium size  LDR: Rs 10

# Result :

Our Sender and Receiver programme worked properly. Commands given by sender user at sender side executed perfectly at the receiver side.

# Things We Learned :

1) Working of the basic communication system works. Got an overview of (TDMI) Time Division Multiplexing Interface .
2) Learned various function in string , bit-wise operators and Liquid Crystal Library.

# Work Division:

1) Abstract : Rupesh.
2) Components and Circuit Assembly : Amit , Suman.
3) Sender Code : Suman, Amit.
4) Receiver Code  : Rupesh.
5) Overall Code debugging : Rupesh.
6) Report : Rupesh ,Suman.