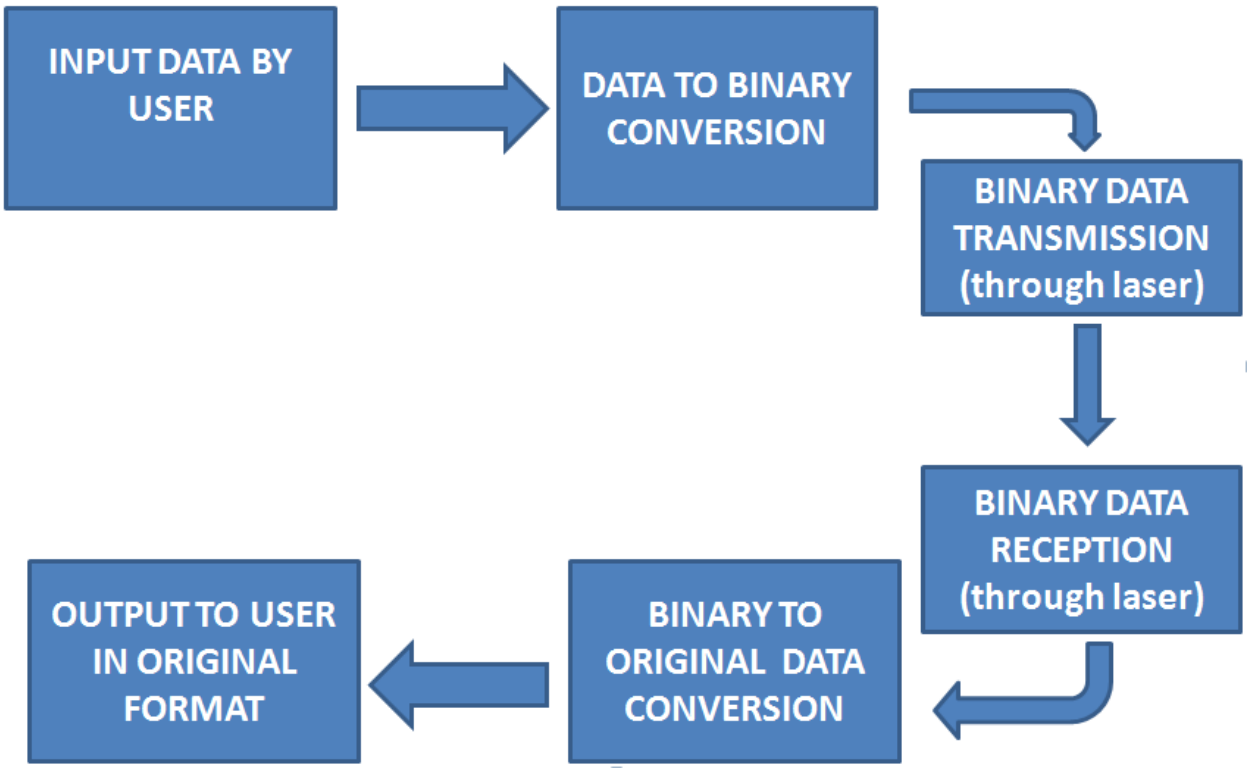
1RE30 TECHNORIDERS

Data Transmission through Laser

1. Briefly provide a Project Description including the reforms made by your seniors and mentors?

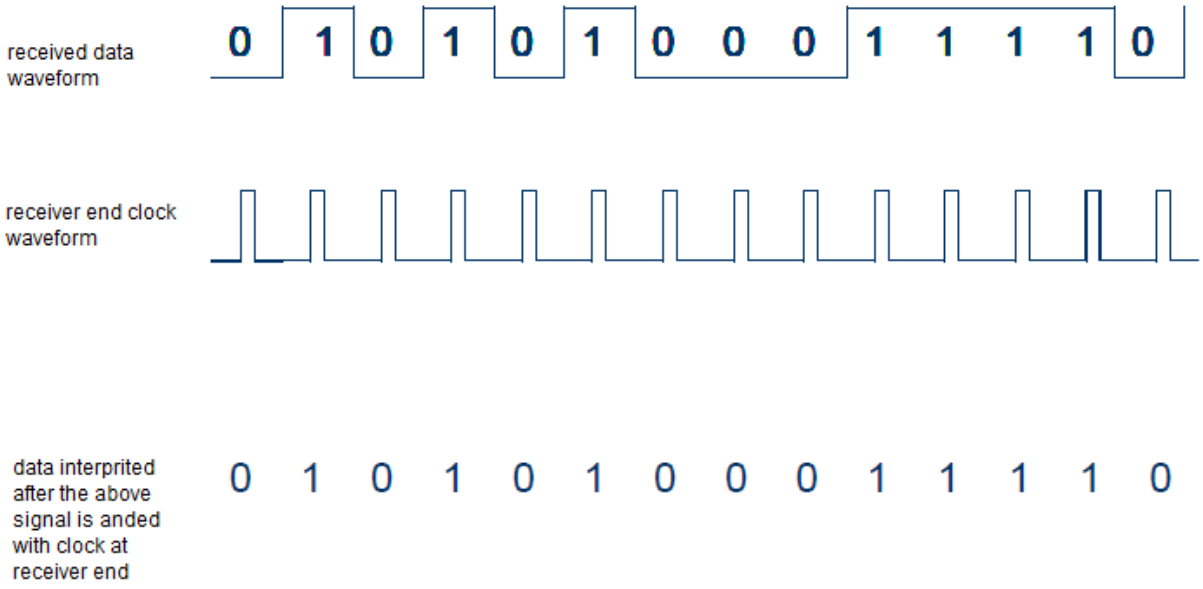
   We are trying to transmit data via the medium of laser. Basically the data to be transmitted is obtained in digital format then the voltage is varied (high or low) with certain frequency across the laser diode according to 1 or 0(low for 0 and high for 1). A photo diode is used to sense the high and low on the receiver side along with a clock of the same frequency. This is free space, line of sight, serial data transmission method.



For example:

If the data to be transmitted is 01010100011110 in binary.
The input waveform is

The data is transmitte by blinking laser and received using photo diode at receiver.The received data is sampled along with a clock which has the same frequency as the sent data.



Thus the data is received at the receiver end.

2. What work was planned to be completed till 11th May and what work was actually completed?
   - work planned
     - Finding suitable components and buying it.
     - Designing of transmitter circuit.
     - Designing the receiver circuit.
     - Checking both the circuits on bread board and deciding the values of resistance to be used.
   - Work done
     - Ever thing was done as planned along with the trip to lamington road to buy components required.

3. Give an estimate budget of the project (Budget should be made keeping in mind all the components required), divide it in categories. What purchases were made till 11th May?
   - Expenses expected-
     - We don't expect the expenses to go beyond 3000.
     - Expenses till may 11-Rs. 340.
   - Purchases till 11 may-
     - Red led.
     - 2N5777 photo transistor.
     - Laser diode (red coloured).
     - SFH 203 FH photo diode.

4. What problems did you face with respect to project work in this time? Did you find a solution to them or are they still pending? What was the solution to these problems?

   - Problems
     - We couldn't find a photo diode which has a low on-off delay.
     - We couldn't decide which resistors to be used in the circuit.
     - Couldn't find the photo diode in lamington road which we wanted.
     - Transmitter circuit is not so fast to achieve fast data transmission, due to high switching time of laser diode.
   - Solutions
     - Mentor helped in finding the photo diode which was suitable.
     - After meeting the mentor he advised to try different values of resistors and use one with the best output.
     - Found a suitable substitute with the help from the vendor there (actually better than we wanted).
     - No solution till now for transmitter circuit.

5. Contribution made by each team member?
   Till now work load was not much. We were doing things sitting in groups. There was equal contribution by all team members in all work. From now onwards we are going to divide our work for fast completion of project.
6. What was discussed in the 1st and last meeting before 11th May with your mentor?
   - First meet.
     - We had planned to make the receiver and transmitter assembly first but the mentors advised to make the circuit first.
     - Some general instructions were given.
   - Last meet
     - Last meet was planned to discuss the circuit which we had made on paper.
     - The mentor advised to add an amplifier because the output will be very low and a Schmitt trigger for clear swing of voltages which can be recorded easily.

7. What is the work-plan for the next week?
   - We will try and finish the final design of circuit (will do slight changes later for increasing transfer rate).
   - We will start the coding part of project.

8. Project Pictures- Upload these pictures on the facebook group (ITSP 2012) also.