

# PC to PC File Transfer using Li-Fi Technology

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**ABSTRACT:** This System has regulated the speed which human eye has not be perceived its blinking. At receiver by applying photosensitive detector, transmitted data can be received. This system can be demonstrated as bidirectional VLC system where both computers can act as transceiver. Using a processing software, Arduino software and Arduino hardware the transmission of files occurs between two computers where LED and LDR were in the same line of sight. It is observed that the system has worked better for white LED than the red LED and IR LED. So, VLC based text and file transfer system is implemented with white LED.

**Keywords—** Arduino; processing; Arduino software; LED; LDR; visible light communication; file transfer;

## INTRODUCTION:

In this era of wireless technology, wireless data rates and the number of devices accessing the Internet increased exponentially in the last decade. According to recent forecasts, by 2015 more than 6 wireless data network would be required per month, this has unfortunately led to an increase in network complexity, inadequate wireless radio frequency bands and increased risk of radio frequency interference. So, Li-Fi is the solution to this problem for radio frequency crisis. Instead of using Internet for the file transfer, a more flexible and very fastest mode of communication, Li-Fi can be used.[1] Li-Fi requires Line of Sight for communication. It is nearly 100 times faster than Wi-Fi. Recent experiments on Li-Fi shows the speed in the order of GBPS. The areas where the radio waves are restricted or causing harm, they can be replaced by Light waves which are not at all harmful and have unlimited bandwidth compared to the Wi-Fi.[2] They can be used in home automation, file transfer, monitoring the activities, Li-Fi hotspots, vehicular communication and ship to ship communication etc. In the next section, the requirements for the file transfer and its working is described. In 3<sup>rd</sup> section, the working of the system is described in detail. In 4<sup>th</sup> section the results and observations by using this system is shown pictorially. In 5<sup>th</sup> section the conclusion on this project is described. In the 6<sup>th</sup> section the future scope is described

## BLOCK DIAGRAM:

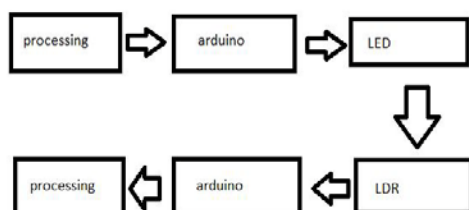


Fig. 1: Block Diagram

## Processing software:

This is used as the front end software, used to instruct the Arduino. Coding is written in the java language. The file present in the PC is read using this software and converted to the binary form and is sent to the Arduino via Serial port.

## Arduino software:

This software has its own syntaxes and formats used to blink the LED connected to one of its digital pins The code written in the Arduino software is compiled and uploaded to the Arduino using the serial port via cable. This cable connected to the PC also supplies power to the Arduino.

## Arduino UNO:

There are four classes of Arduino but in this system Arduino UNO is used. This Arduino UNO is enough for the file transfer from one PC to another PC. This Arduino class has 13 digital pins, 5 analog pins and power supplies such as 5volts and 3.3 volts. The LED is connected to one of the digital pins. The Arduino works according to the program dumped into the Arduino. The LED blinks according to the binary logic sent from the processing software.

## LED:

The logic sent by the processing is received by the Arduino. The LED is connected to the one of the digital pins of the Arduino and the corresponding TTL logic is obtained by the digital pins. The LED blinks according to the logic.

## LDR:

The Light Dependent Resistor offers infinite resistance in the darkness and offers very few ohms when there is light. The light from the LED is detected by using LDR and the data is sent to the Arduino.

## WORKING:

The processing is used as a front end software. There are many inbuilt functions present in the processing. The coding is done in java. This software is used to read a file present in the hard disk of the computer and to convert the file into corresponding binary logic. The binary data is sent to the Arduino UNO. The Arduino software is used for coding the Arduino UNO board. Each board have its own syntaxes and functions. The code written for the Arduino UNO is uploaded to the Arduino board through a cable. The code that is present in the Arduino instructs the LED when it has to be ON and when it has to be OFF. The receiver starts from the LDR. The LDR is used to detect the light variations that are present in the transmitting LED and shows the same logic that is transmitted. The LDR is connected to the analogue pins of the Arduino



transmission, home automation, monitoring activities and Li-Fi hotspots which can transmit the data in the order of GBPS.

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