LIFI BASED TWO WAY DATA AND AUDIO COMMUNICATION

AIM:

Design and development of LIFI based two way data and audio communication.

PURPOSE:

LIFI is an advanced technology and can stream data and audio through light. LIFI nothing but light fidelity. It can transmit light waves with more speed which are in Giga bytes. We can transmit both data and audio through single LIFI module. Also we can do two way data communication. Here the projects title is LIFI based two way data and audio communication using Arduino.

DESCRIPTION:

LIFI module interface with Arduino UART port. LIFI and Arduino communicate with each other through RS232 communication. LIFI module has both solar panel and LED array. Also it has amplifier to play audio data.

WORKING:

In this project we are using two sections. Each section acting as transceiver, means can receive and transmit data and audio. LIFI module has mode selection switch to select data mode and audio mode. Two sections connected with laptop or pc through serial cable. By entering data in serial terminal data will be transmitted and displayed on LCD at other side. Same thing happen in both the sides. Like this audio will be transmitted through LIFI and play on receiver side speaker. Both data and audio communication happen through both the sides.

TECHNICAL SPECIFICATIONS:

HARDWARE:

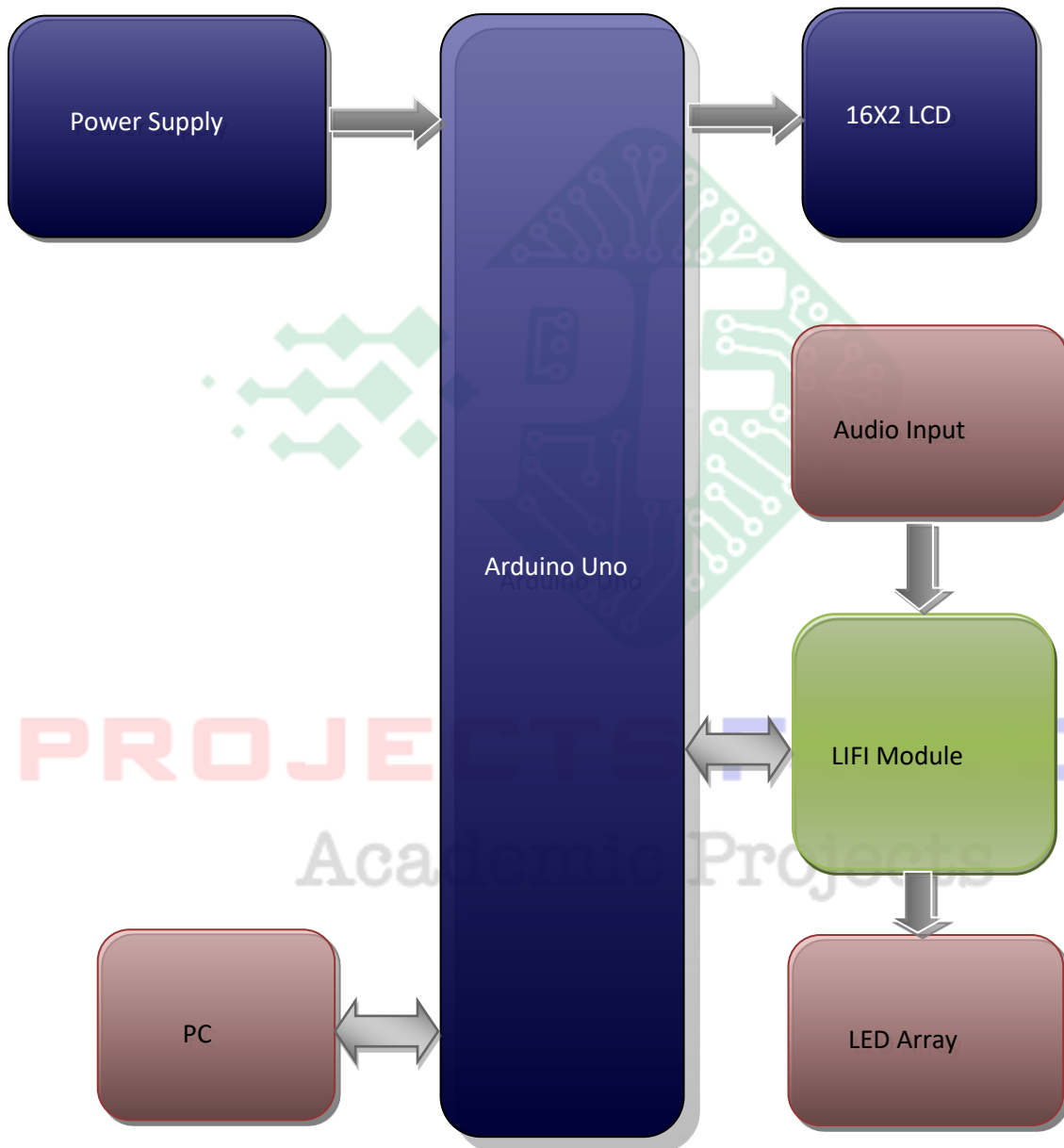|		
Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
LIFI Module	:	UART based LIFI module
Audio Amplifier	:	LM386 built-in LIFI module
Speaker	:	6 ohms
Power Source	:	12v 1 amp DC battery

SOFTWARE:

Arduino IDE

Proteus based circuit diagram
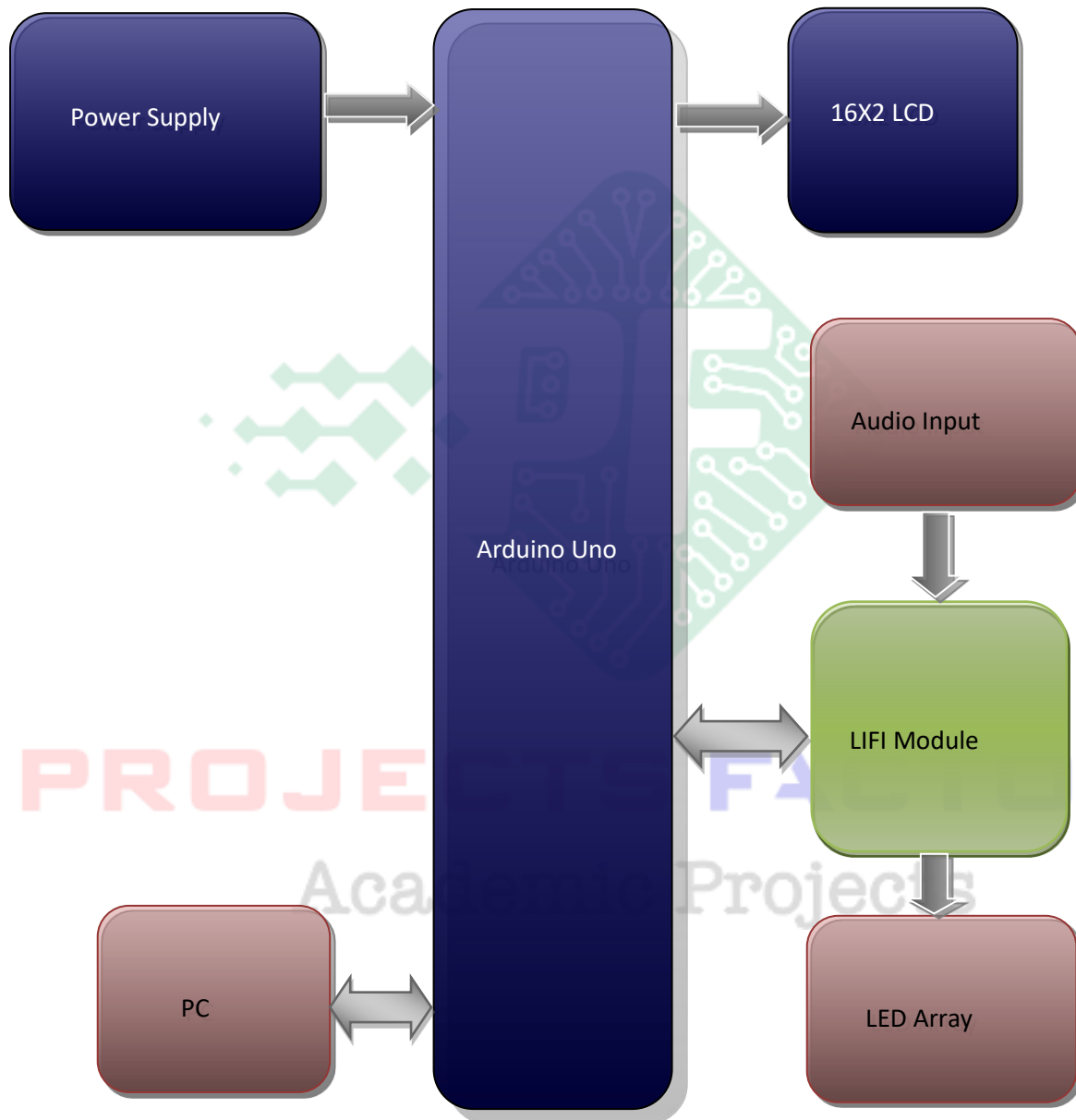
APPLICATIONS:

- ➢ LIFI Data communication
- ➢ LIFI Audio communication
- ➢ LIFI Two way communication
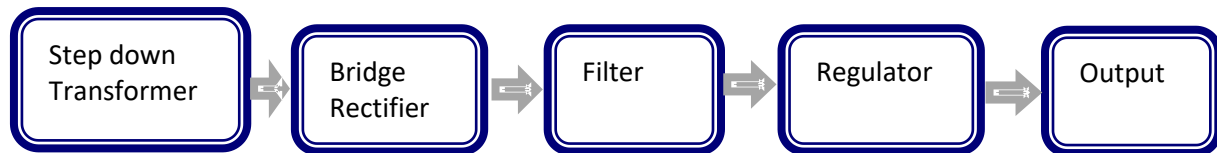- ➢ LIFI Duplex communication

BLOCK DIAGRAM:

Transceiver Section:

Transceiver Section:

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┌──────────────┐         ┌────────────┐         ┌──────────────┐
│              │         │            │  ───▶   │              │
│ Power Supply │  ───▶   │            │         │   16X2 LCD   │
│              │         │            │         │              │
└──────────────┘         │            │         └──────────────┘
                         │            │
                         │            │         ┌──────────────┐
                         │            │         │              │
                         │ Arduino Uno│         │ Audio Input  │
                         │            │         │              │
                         │            │         └──────┬───────┘
                         │            │                │
                         │            │         ┌──────▼───────┐
                         │            │  ◀───▶  │              │
                         │            │         │ LIFI Module  │
                         │            │         │              │
                         │            │         └──────┬───────┘
┌──────────────┐         │            │                │
│              │  ◀───▶  │            │         ┌──────▼───────┐
│      PC      │         │            │         │              │
│              │         │            │         │  LED Array   │
└──────────────┘         └────────────┘         └──────────────┘
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POWER SUPPLY BLOCKDIAGRAM:

Step down Transformer	→	Bridge Rectifier	→	Filter	→	Regulator	→	Output

INTERFACES COVERD:

- We have covered LIFI module interfacing
- LIFI Data and Audio communication interface