DC Power Supply

Under the supervision of Dr.Sherif Hekal
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Our Team
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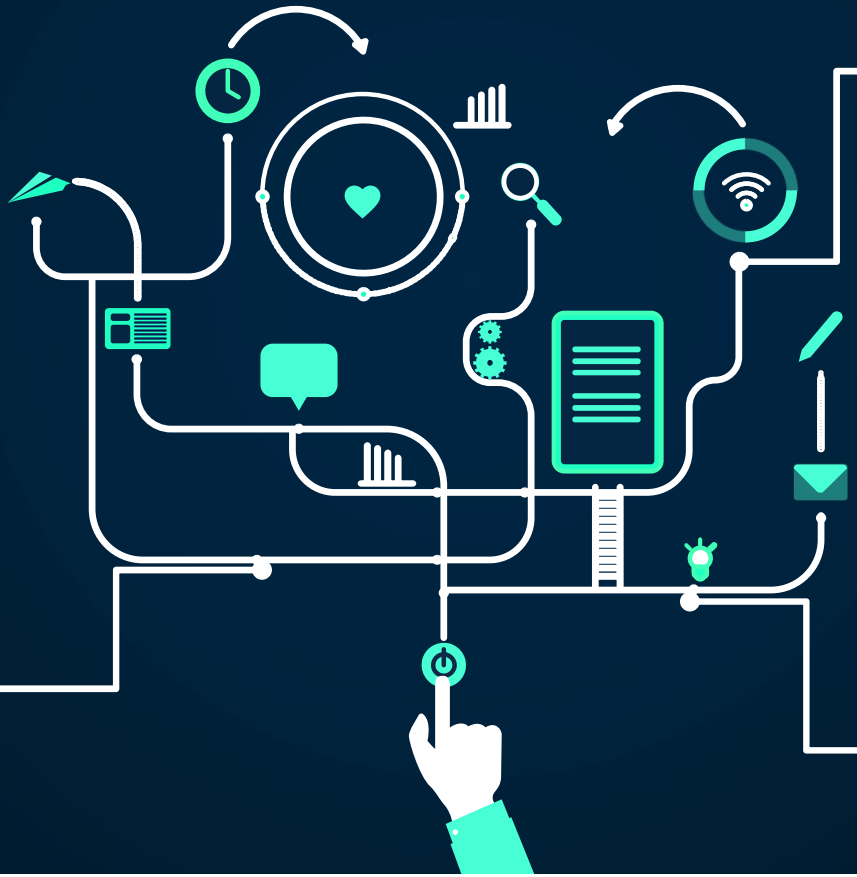
AIM OF THE PROJECT

It is to construct an adjustable regulated power supply that can provide DC voltage ranging from 1.2-30V. As the electric circuit consists of an AC Transformer followed by a rectifier bridge then smoothing capacitor and an adjustable voltage regulator integrated circuit.

PROJECT STAGES



STEP 1

Design the project by select the components and choose suitable values for them.

STEP 2

Put our circuit on one of the simulator programs which is proteus to check it.

STEP 3

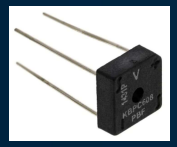
Then we start the practical process.

TABLE OF COMPONENTS

Bridge Rectifier

It's value and number used in the project: 100V-3A , 1 Bridge

01



Adjustable Voltage Regulator

It's value and number used in the project: 1.2V-37V , 1 LM317

02

Transformer

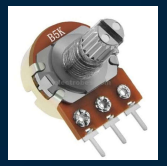
It's value and number used in the project: 24V-3A , 1 Transformer

03

04

Resistor

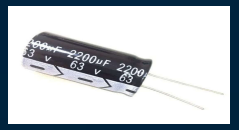
It's value and number used in the project: 18K,220 with 5% , 2 Resistors



05

Potentiometer

It's value and number used in the project: 5K , 1 Potentiometer



06

Capacitor

It's value and number used in the project: 2200micro-farad , 0.1micro-farad , 1micro-farad , 40V , 3 Capacitors

TABLE OF COMPONENTS

Diode
It's value and number used in the project: 400V,1A , 1 Diode

07

Switch
It's type: ON/OFF Rocker Switch

08

Connectors

09

10

Plug
Its type: 2 Wire plug & Cord

11

Wires

12

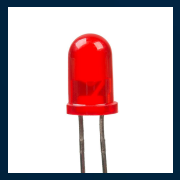
Banana Plug Connectors
It's color: Red and Black

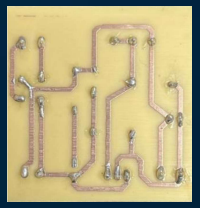
TABLE OF COMPONENTS

Soldering Iron 13

15 **Fuse**

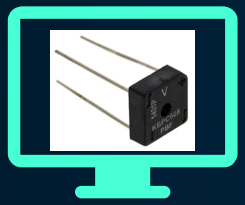
LED
It's color: Red 14





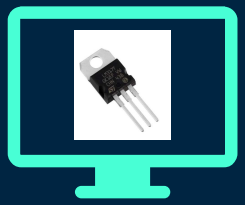
16 **PCB Board**

SMALL HINT ON EACH COMPONENT



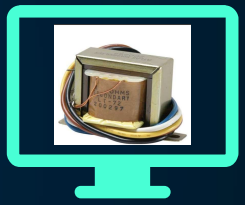
Bridge Rectifier

It is a convertor that convert the Alternating Current (AC) to Direct Current (DC).



Adjustable Voltage Regulator

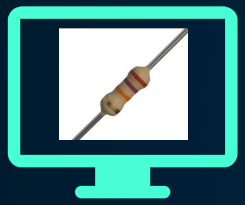
It is a regulator that can output adjustable voltages from anywhere in the range that the voltage regulator is designed to output.



Transformer

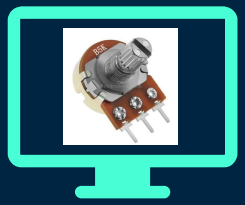
It is basically a voltage control device that's used widely in the distribution and transmission of alternating current power.

SMALL HINT ON EACH COMPONENT



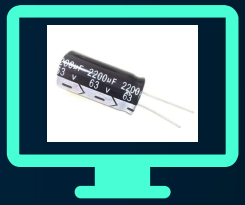
Resistor

A passive electrical component with two-terminals that are used for limiting the flow of electric current in electrical circuits.



Potentiometer

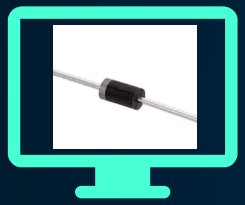
A passive electrical component with three-terminal resistor with a rotating contact that forms an adjustable voltage divider.



Capacitor

It is passive electronic component and has the capacity to store energy in the form of an electrical charge.

SMALL HINT ON EACH COMPONENT

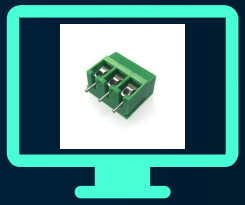


Diode

It is a semiconductor device that essentially acts as a one-way switch for current which allows current to flow easily in one direction.

Switch

A device that opens and closes an electric circuit.



Connector

A connector is a device that joins two pieces of equipment, wire, or piping together

SMALL HINT ON EACH COMPONENT

Plug

It connects electric equipment to the alternating current (AC) power supply in buildings and on other sites.

Wires

A power cord is an electrical component used for connecting appliances to an electrical utility or power supply.

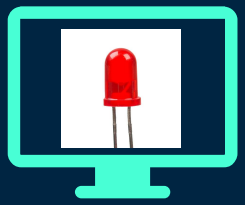
Banana Plug Connector

They are electrical connectors that are used to join single-conductor wires to each other or to pieces of equipment.

SMALL HINT ON EACH COMPONENT

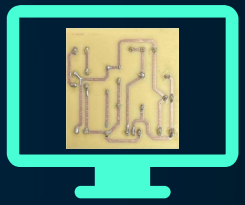
Soldering Iron

It is a hand tool used in soldering. It supplies heat to melt solder so that it can flow into the joint between two workpieces.



LED

It is a semiconductor device that emits light when current flows through it.



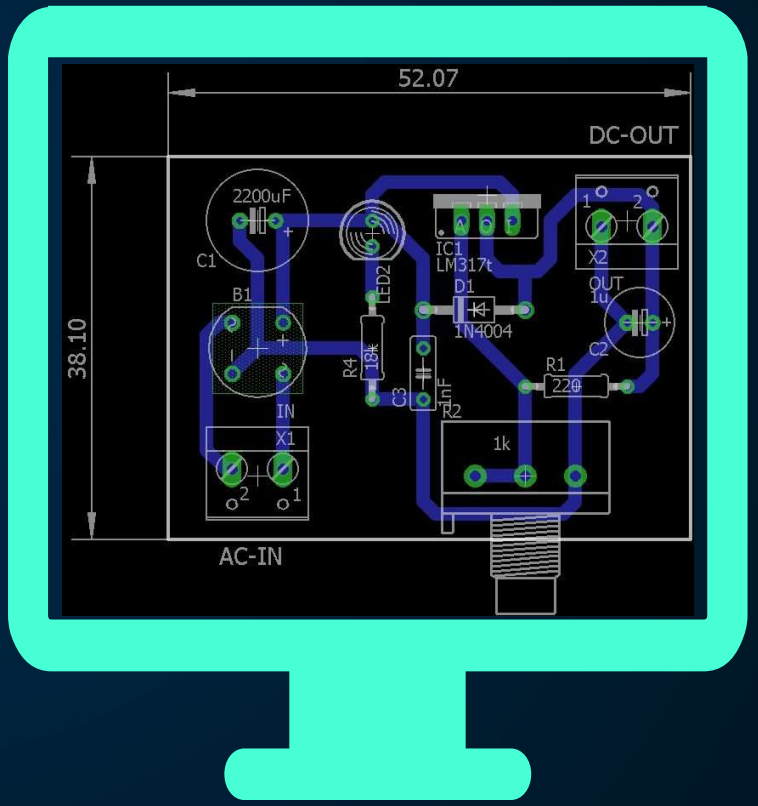
PCB

It is a medium used in electrical and electronic engineering to connect electronic components to one another in a controlled manner.

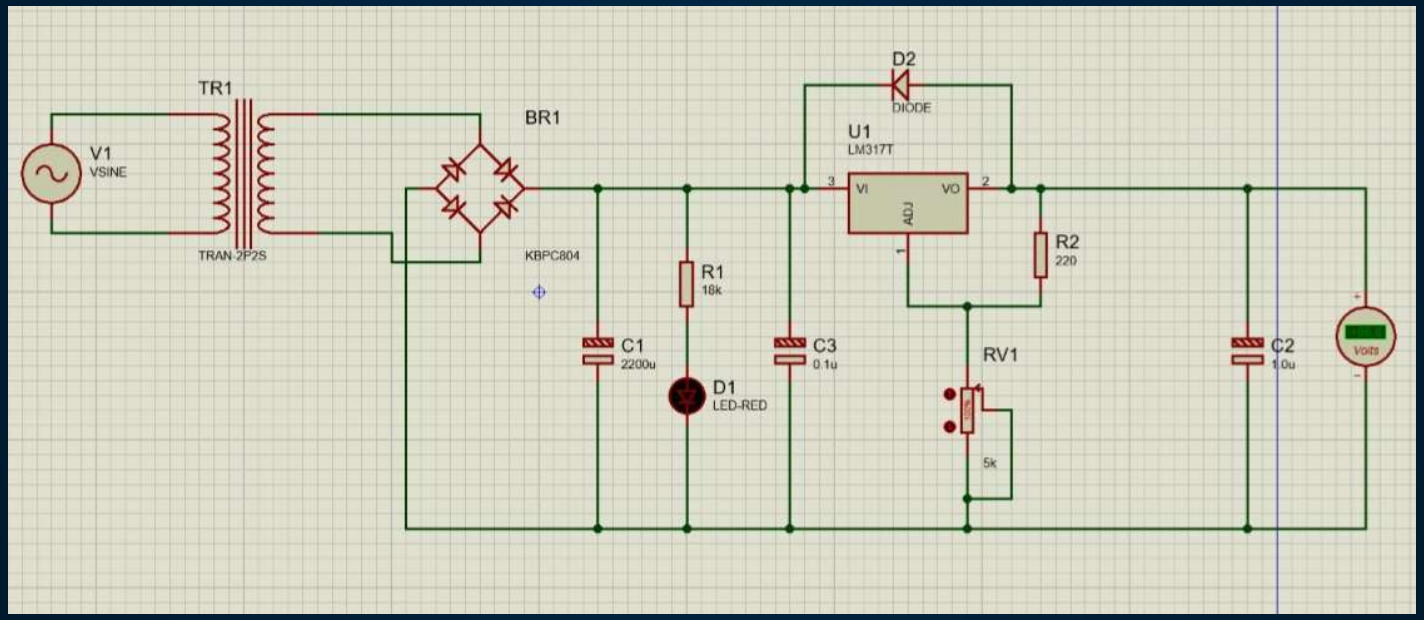
THE DESIGN ON PCB

After we designed the circuit, and put it on the simulator program (proteus) it gave us voltage ranging from 1.25V to 29.9V.

So, we went on and printed our design on the PCB.



THE DESIGN ON PROTEUS



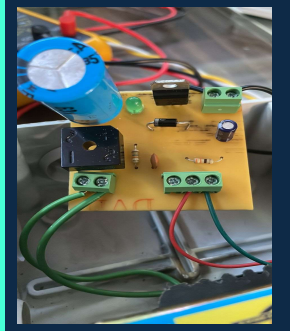
AFTER THAT

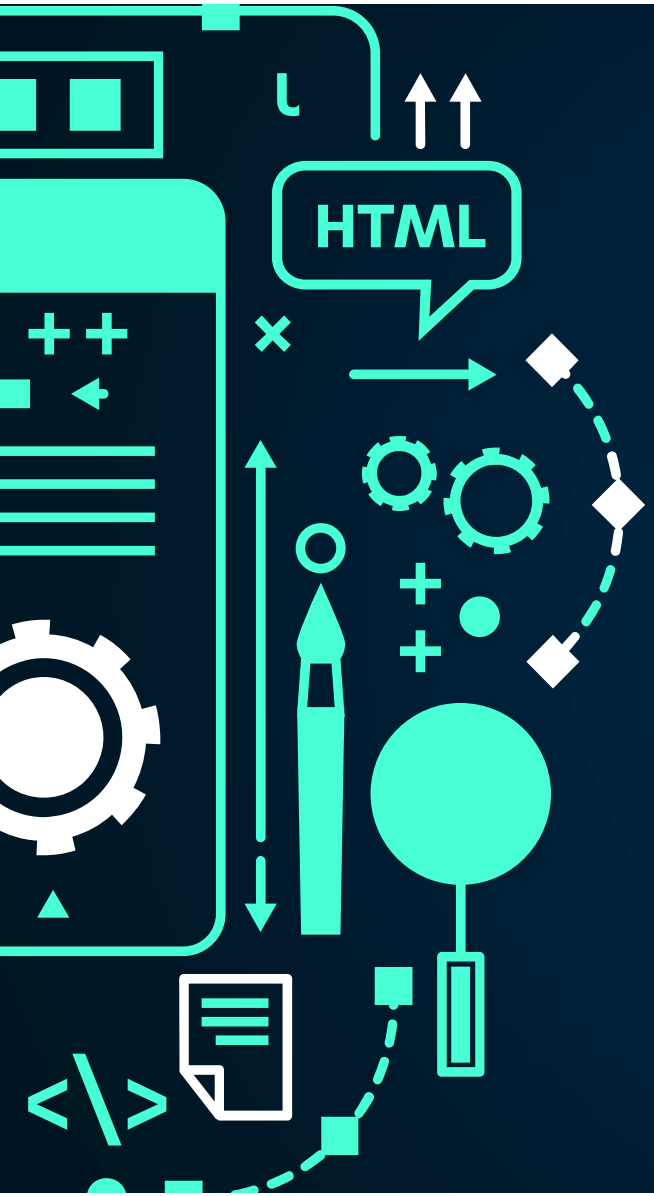
We went on and buy our components.

Then we joined the components together on the PCB using soldering iron.

Then plugged it in the plug to a power source, opened the switch.

We checked the voltage using digital multimeter (AVO) it gave us a voltage ranging from 1.2V to 31.5 V.





THANK YOU!