Utkarsh tripathi
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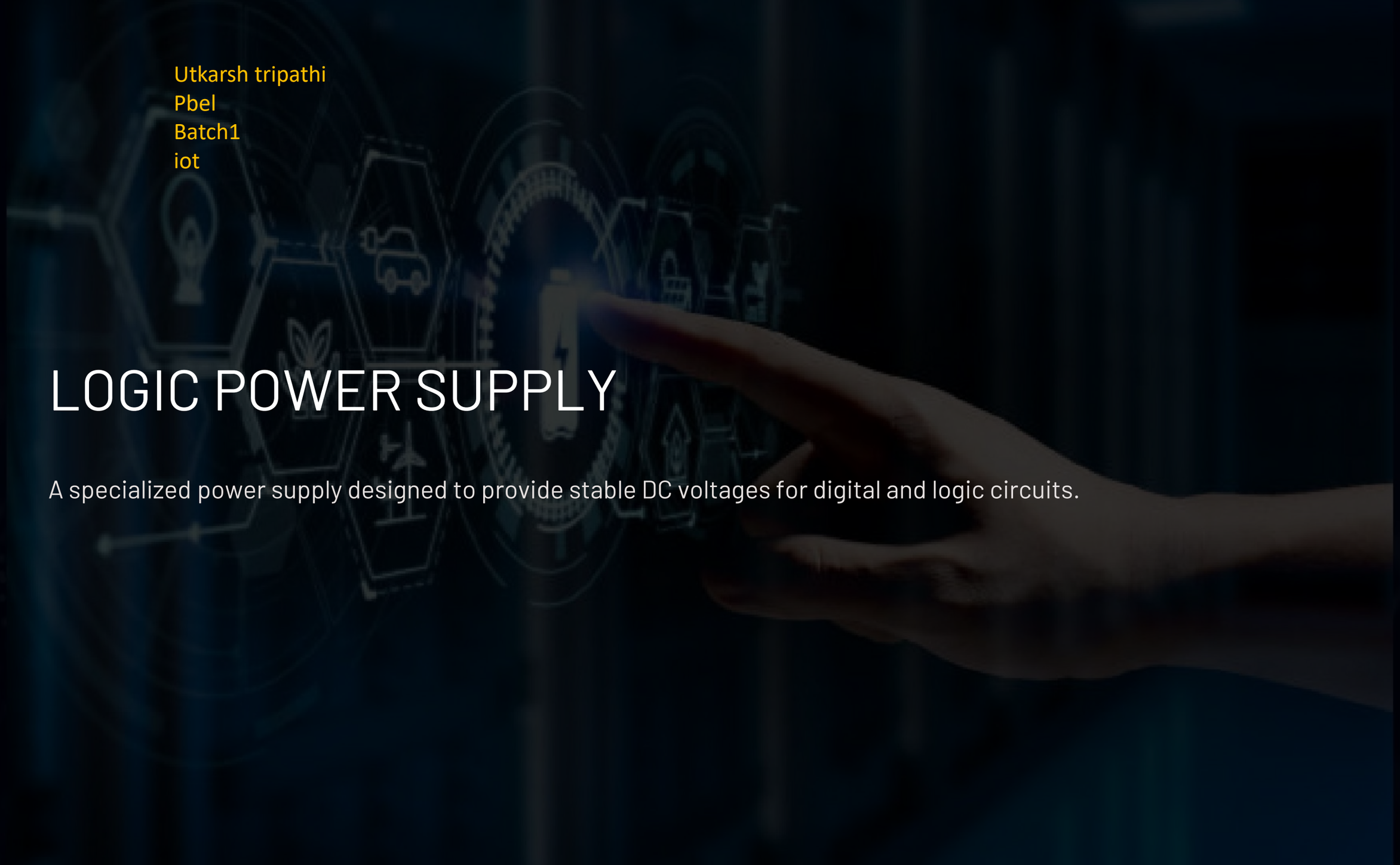


LOGIC POWER SUPPLY

A specialized power supply designed to provide stable DC voltages for digital and logic circuits.

INTRODUCTION

- A Logic Power Supply provides DC voltages to logic circuits (like microcontroller, ICs)
- Most commonly used voltages 5V, 3.3V.
- Used in digital electronics, Arduino, etc.

COMPONENTS OF LOGIC POWER SUPPLY

Transformer

Steps down AC voltage

Rectifier (Diodes)

Converts AC to DC

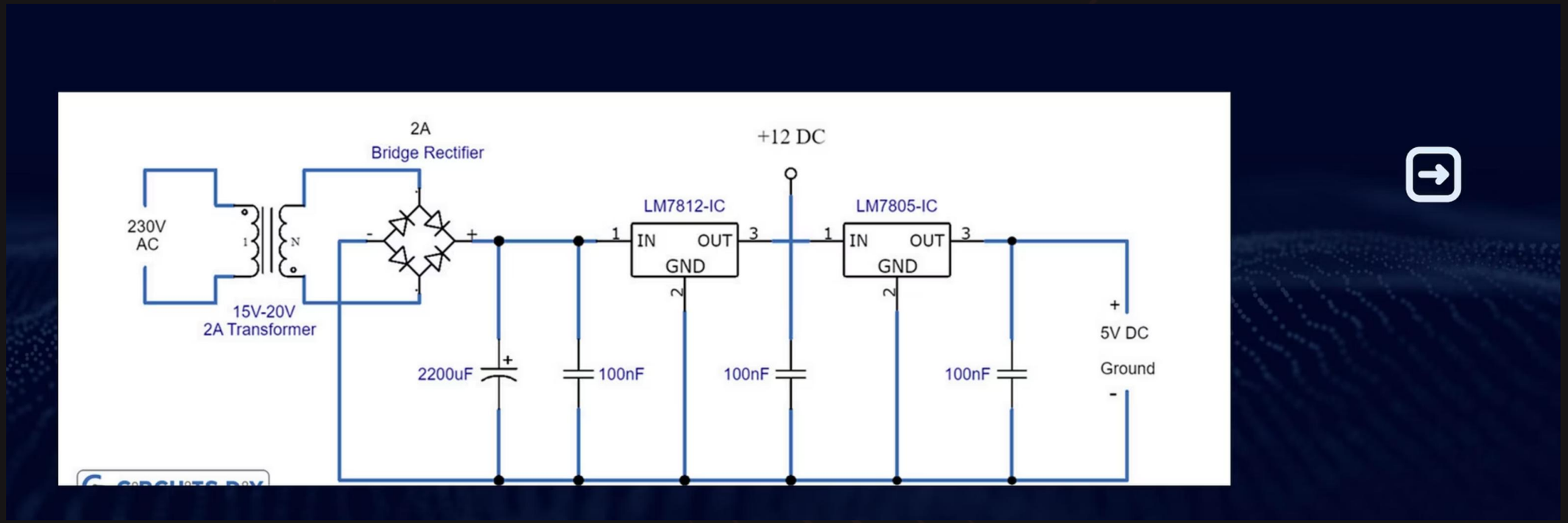
Filter (Capacitor)

Smoothens voltage

Voltage Regulator (eg. 7805)

Provides constant voltage output (eg. 5V)

BLOCK DIAGRAM



1. AC Input

   Household power supply (110V/220V AC)

2. Transformer

   Steps down voltage to lower AC level

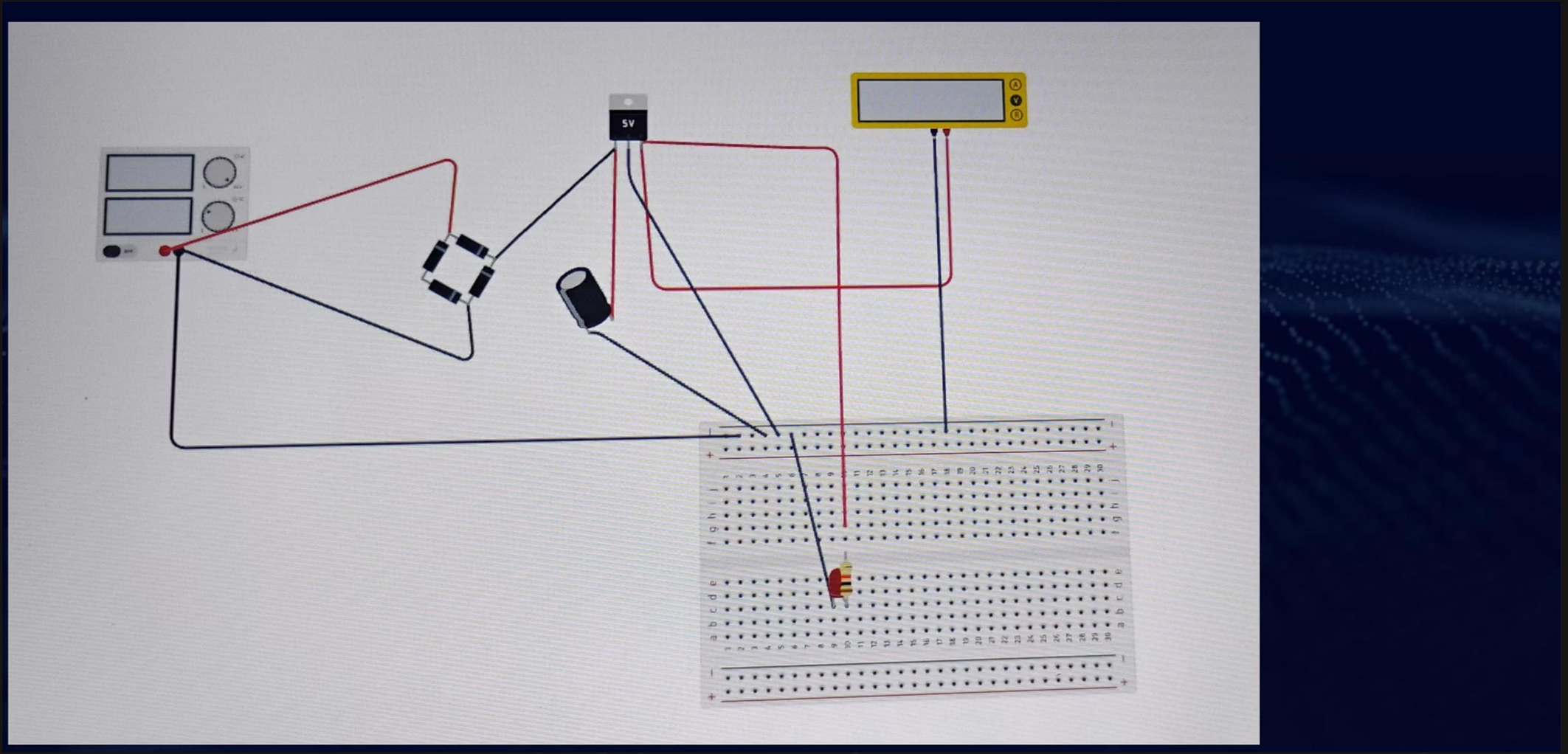
3. Rectifier

   Converts AC to pulsating DC

4. Filter

   Smooths pulsating DC

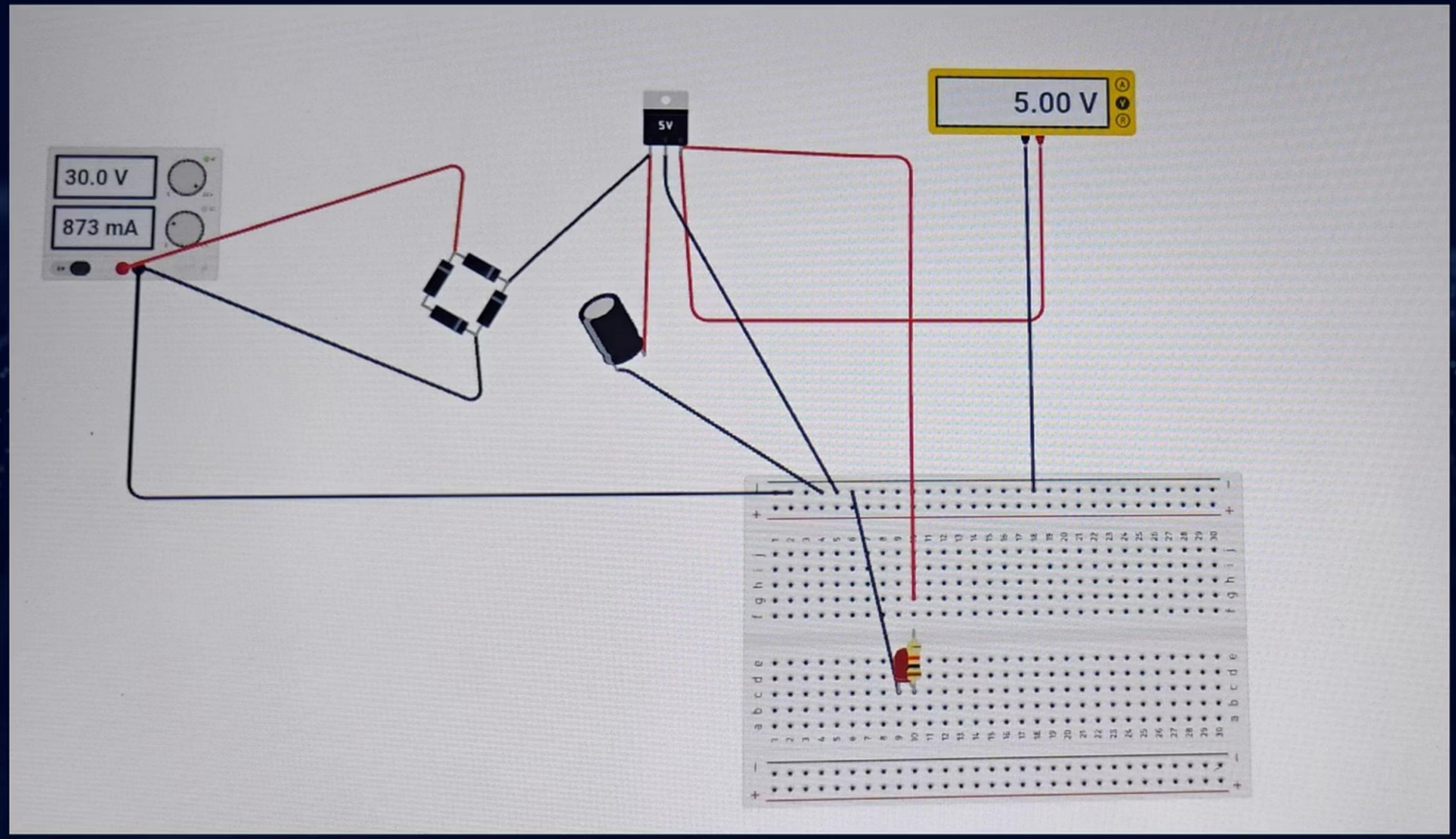
BEFORE SIMULATION



The circuit diagram shows the components before simulation:

- AC power source connected to transformer
- Bridge rectifier made of four diodes

AFTER SIMULATION



The simulation results show the voltage waveforms at different stages of the power supply:

AC Input 1

Sinusoidal waveform from mains supply

APPLICATIONS

Microcontroller power supply

Arduino, ATmega

Logic ICs and Sensors

Digital integrated circuits requiring stable voltage

Digital clocks, Calculators

Consumer electronic devices

Electronic projects

DIY and hobbyist applications