



**MEHRAN UNIVERSITY**  
OF ENGINEERING & TECHNOLOGY  
JAMSHORO, PAKISTAN

## Project Report

Name of The Project:	<b>An Audio Amplifier Using LM386</b>
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Department:	B Electronics
Section:	(A)
Subject:	Electrical Circuits Design
Submitted To:	Dr. Khalid Rehman
Date of Submission:	23-4-2024

1. Title of the Experiment:

## An Audio Amplifier Using LM386

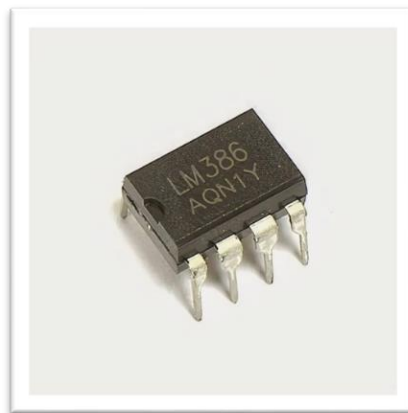
1.1. Abstract: The LM386 integrated circuit is used in this report's design and analysis of an audio amplifier circuit. The report provides a thorough explanation of each component in the circuit, their individual roles, and the amplifier's operational dynamics.

1.2. Introduction: Building an audio amplifier is made simple and effective by the LM386 integrated circuit. The complexities of creating and examining such a circuit are covered in detail in this report. We aim to develop an amplifier that can improve audio signals with little distortion by utilizing the LM386.

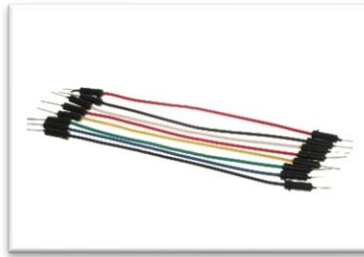
This project is in line with the amplifier's adaptability, which makes it appropriate for a range of uses, including small-scale music sets and portable radios.

1.3. Apparatus:

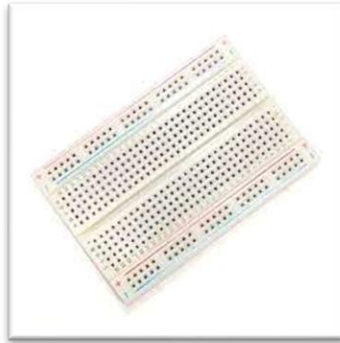
1.3.1. LM386 IC



### 1.3.2. Connecting wire



### 1.3.3. Bread Board



### 1.3.4. Resistors

#### 1. 1.2k Resistor



#### 2. 10k Variable Resistor



#### 3. 10R Resistor



### 1.3.5. DC Source



### 1.3.6 Capacitors:

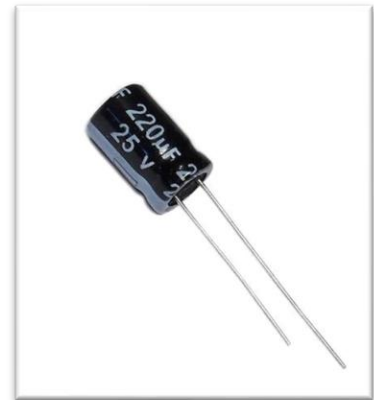
**104  $\mu\text{F}$**



**10  $\mu\text{F}$  (electrolytic),**



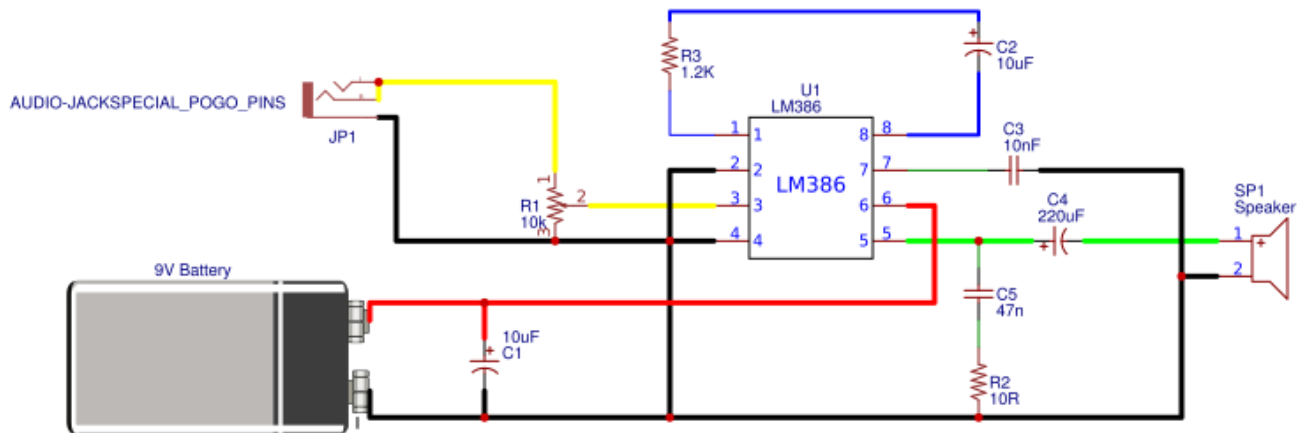
**220  $\mu\text{F}$  (electrolytic)**



### 1.3.7 Speaker



## 1.4. Circuit Diagram



## 2. Theory and Methodology:

### 2.1 LM386 IC:

A low voltage audio power amplifier capable of delivering up to 1 watt of output power into an 8-ohm load. It amplifies the audio signal fed into its input pin and outputs it through the speaker.

### 2.2 Capacitors:

Used for filtering, coupling, and bypassing. C1 (104pF) blocks DC offset, C2 (10  $\mu$ F) decouples power supply noise, and C3 (220  $\mu$ F) stabilizes internal biasing.

### 2.3 Resistors:

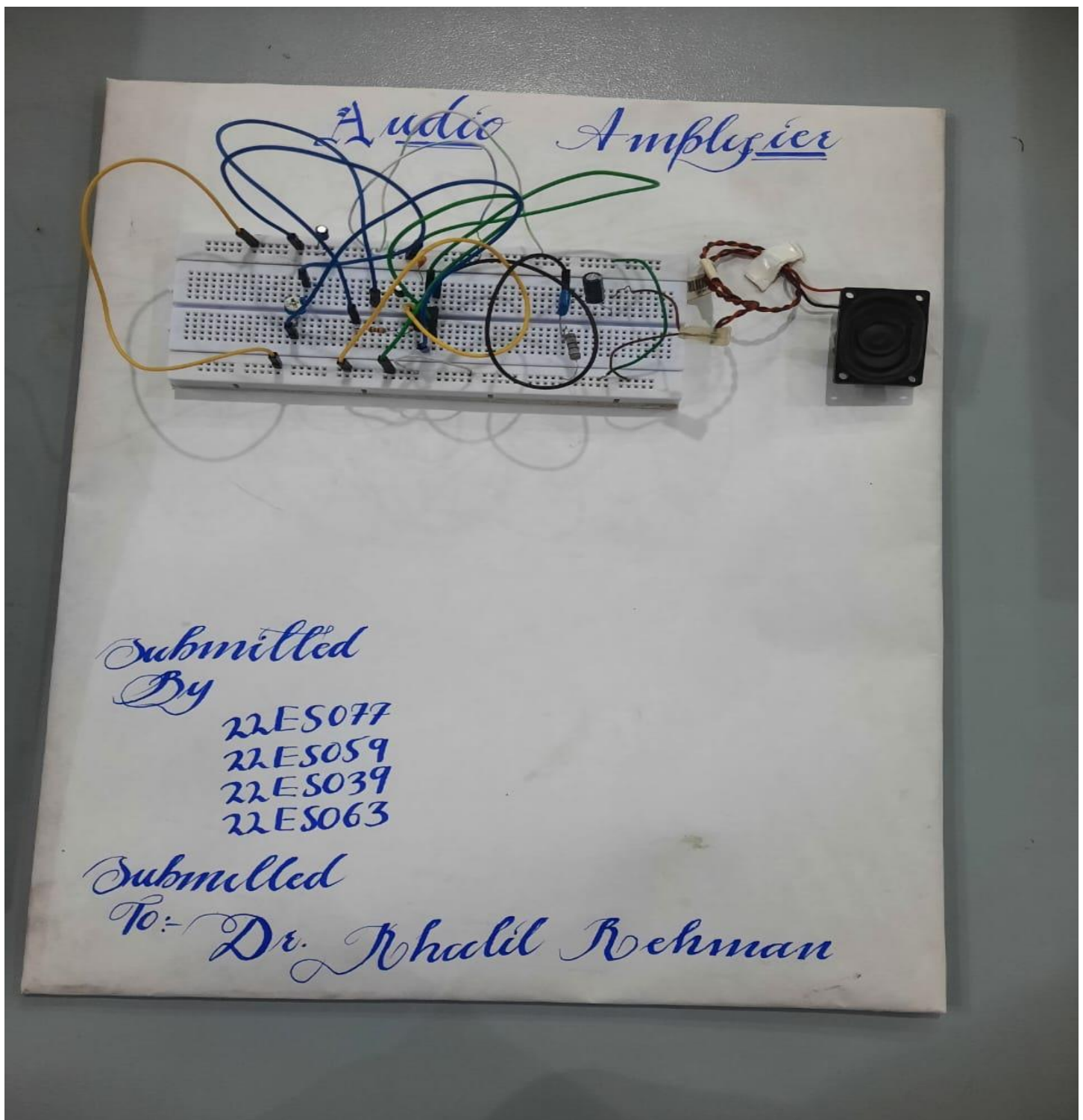
Set gain and biasing. R1 (1.2k ohms) and R2 (10k ohms) and R2 (10R ohms) determines the gain of the amplifier.

### 2.4 Speaker (8 ohms):

Converts electrical signals into sound waves.

### 3. Operation:

- 3.1 **Input Stage:** Audio signals are introduced into the LM386 via pin 3, facilitated by coupling capacitor C1, which blocks any DC bias.
- 3.2 **Amplification Stage:** The LM386 amplifies the input signal, with the gain determined by resistors R1, R2, and R3.
- 3.3 **Output Stage:** Amplified signals are directed to the speaker via pin 5, modulated by the potentiometer's resistance to adjust volume.
- 3.4 **Functional Overview:** Capacitors C2 and C3 play critical roles in stabilizing the amplifier's operation, ensuring efficient power supply decoupling and bias stabilization.



#### 4 Conclusion:

All things considered, the LM386 audio amplifier circuit offers a workable way to enhance audio signals with the least amount of distortion. Its efficacy combined

with its simplicity makes it a flexible option for a range of applications. Users can leverage its capabilities in a variety of circumstances, from compact audio systems to portable radios, by comprehending its components and operational dynamics.