Audio signal from PC → 3.5 mm Audio TRS JACK → Class AB Amplifier circuit → Passive Low Pass Filter → Passive High pass Filter → Output (3.5 mm port)

↑ ESP32 MICRO CONTROLLER ↑ ↑

# Web server (Aditya)

```
#include <ESP8266WiFi.h>

WiFiClient client;
WiFiServer server(80);

void setup() {

    Serial.begin(9600);

    pinMode(D4, OUTPUT); // Set LED pin as OUTPUT

    WiFi.begin("Robify", "iot@robify");

    while(WiFi.status() != WL_CONNECTED) {
        Serial.print("..");
        delay(200);
    }
    Serial.println();
    Serial.println("NodeMCU is Connected!");
    Serial.println(WiFi.localIP());

    server.begin();

}
```

```
void loop() {

    client = server.available();
    if( client == 1 ){
        String request = client.readStringUntil('\n');
        Serial.println(request);
        request.trim();
        if(request == "GET /on HTTP/1.1"){
            digitalWrite(D4, HIGH);
        }
        else if(request == "GET /off HTTP/1.1"){
            digitalWrite(D4, LOW);
        }
    }

    client.println("HTTP/1.1 200 OK");
    client.println("Content-Type: text/html");
    client.println(""); // Important: this is the blank line that indicates the end of the headers
    client.println("<!DOCTYPE HTML>");
    client.println("<html>");
    client.println("<h1>Welcome to the Robify Webcontrol Page!</h1>");
    client.println("<h3>LED Controls</h3>");
    client.println("<br>");
    client.println("<a href=\"/on\"><button>LED ON</button></a>");
    client.println("<a href=\"/off\"><button>LED OFF</button></a><br/>");
    client.println("</html>");

}
```

example with ESP8266 using arduino IDE

# Amplifier circuit (KESHAV)

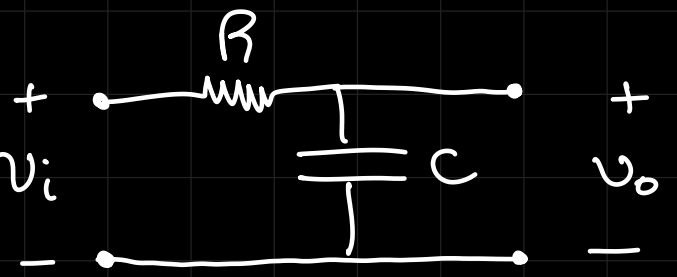
Class → AB
offers a midway between
distortion and power consumption

parameter tweaked → Volume / Gain (Lakshay)

# Filters (Aditya)

Passive cus ez and why not?

LPF → (treble)




C will be fixed because variable capacitors are expensive and we can change the filtering only with R as well

for resistance R → digital potentiometers

LPF → treble control → 2KHz → 20KHz

$$f_c = \frac{1}{2\pi RC}$$

10KΩ digipot → $C = \frac{1}{2\pi \times 10k \times 2k} = 7.95 \times 10^{-9} F$

$\simeq$ 8nF

$C = \frac{1}{2\pi \times 10k \times 20k} = 800pF$

So C: 800pF → 8nF any value because R: 0 → 10k

lets take a 1nF capacitor

for no filtering → let $f_c$ = 100KHz (outside audible range)

$$R = \frac{1}{2\pi \cdot 100k \cdot 10^{-9}} = \frac{10^4}{2\pi} = 1.591\ k\Omega$$

now, the lowest fc should be → 2kHz

$$R = \frac{1}{2\pi \times 2k \times 10^{-9}} = \frac{10^6}{4\pi} = 79.5k\Omega$$

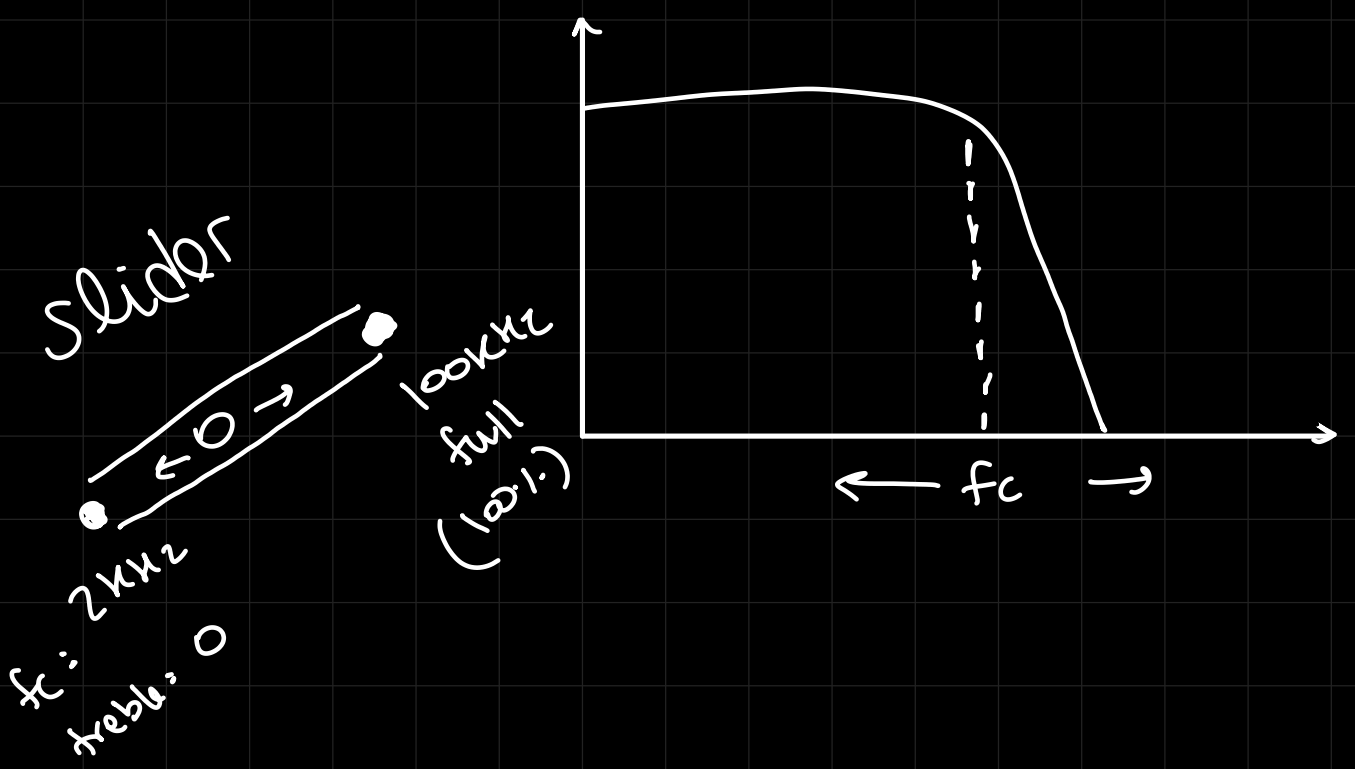
but our digipot is 10k rated

what if $\boxed{C = 10nF}$

$$R = \underline{7.957k\Omega} \checkmark$$

for $f_c = 100kHz \rightarrow$

$$R = \frac{1}{2\pi \times 100k \times 10^{-9}} = \frac{10^3}{2\pi} = \underline{159\Omega} \checkmark$$




if $f_c \rightarrow 100kHz$
↳ treble : full
else if $f_c \rightarrow 2kHz$
↳ treble : zero

I will be using this digipot for the LPF ckt

↳ MAX5402EUA?