9. Design of PCB for audio amplifier

Course: ECE1008 – Electronic Hardware Troubleshooting LAB

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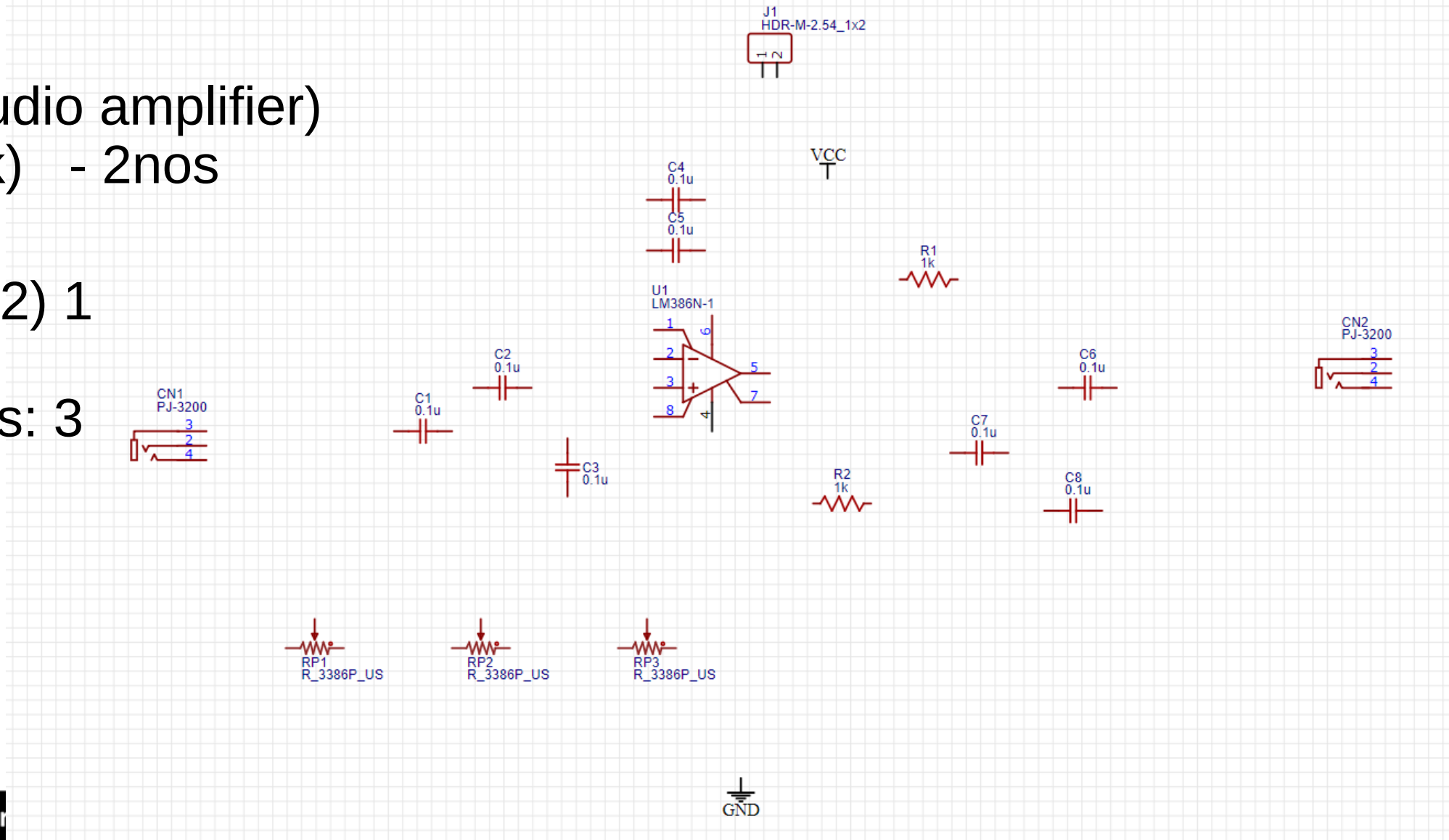
CHENNAI

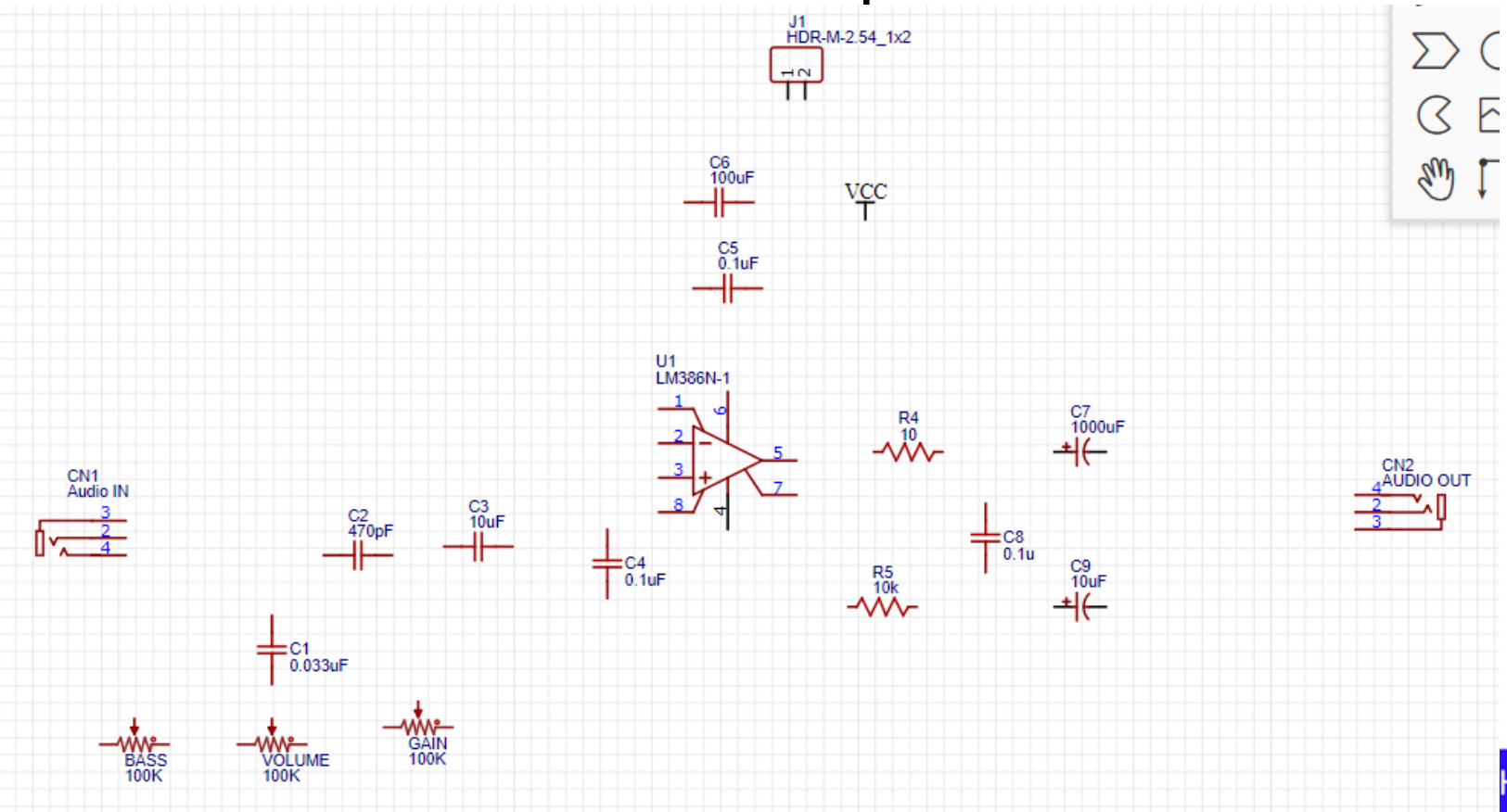
1. Place all the components from EELib or Library

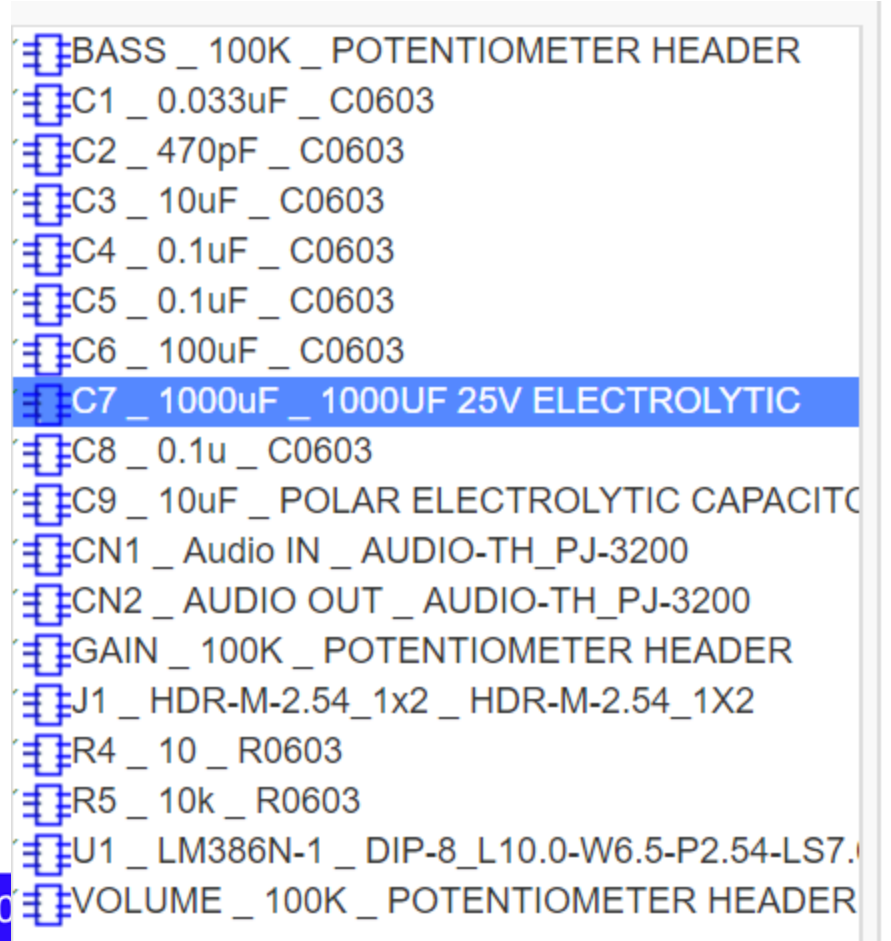
- Library:
  LM386N-1 (Audio amplifier)
  PJ-3200 (Jack) - 2nos
- EElib:
  Connector (1x2) 1
  Capacitors: 8
  Potentiometers: 3
  Resistors: 2
  VCC
  GND



2. List of components selected for PCB

- First is Name
  Then either component name
  or Value and then component name





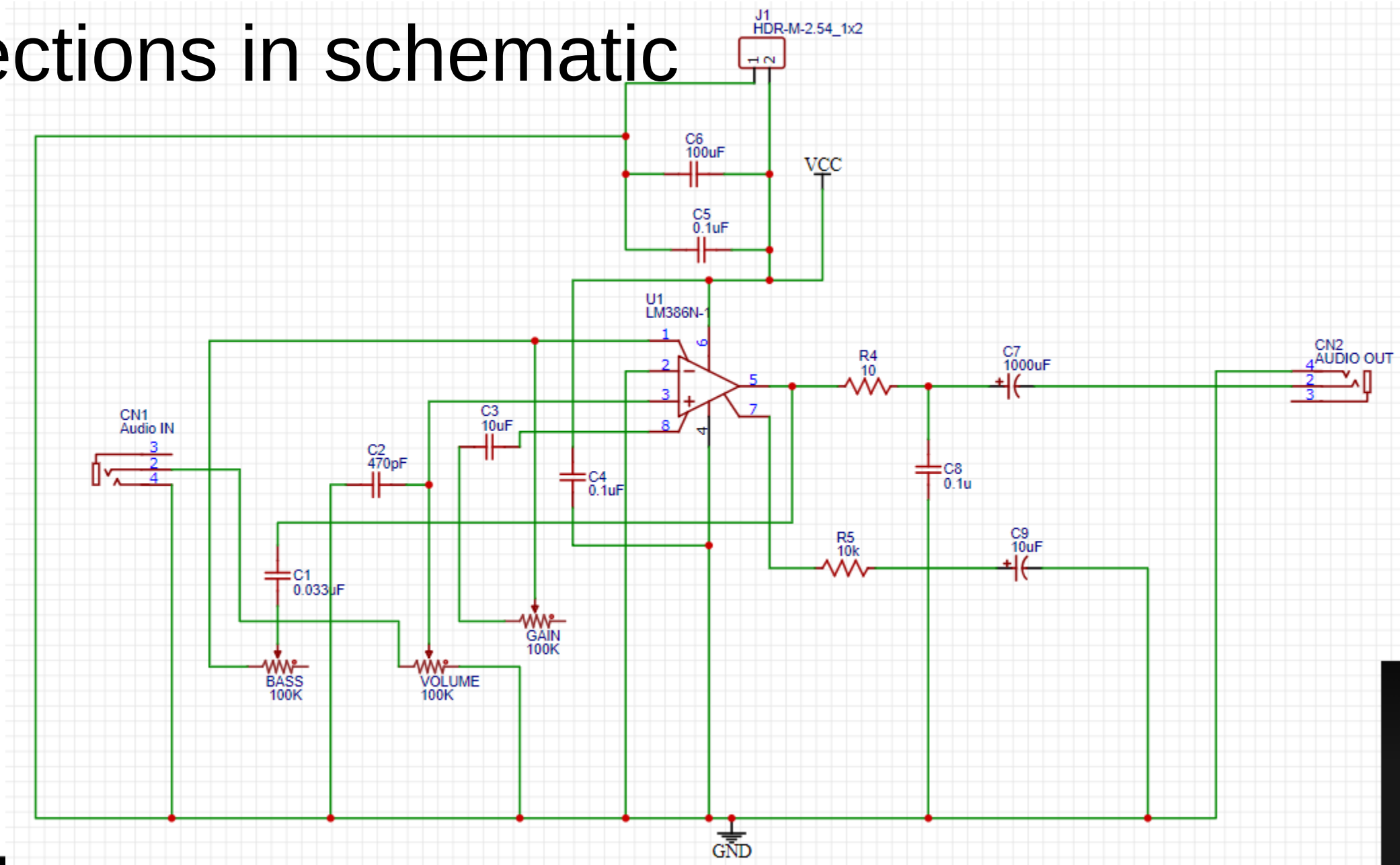
3. Connections in schematic

- IC's 1 goes to center of Gain and left of Bass
- 2 is grounded
- 3: Center of Volume and right of C2(470pF)
  left of C2 (470pF) to ground
- 4: Ground and bottom of C4(0.1uF)
- 6: to top of C4(0.1uF); VCC; Port J1's 2
- 5: Left of R4 (10) and to top of C1 (0.033uF)
  bottom of C1 (0.033uF) to center of BASS
  Right of R4 to left of C7(1000uF)
  Right of C7(1000uF) to 2 of Audio Out.
  Right of R4 to top of C8 (0.1uF)
  bottom of C8(0.1uF) to ground.

3. Connections in schematic

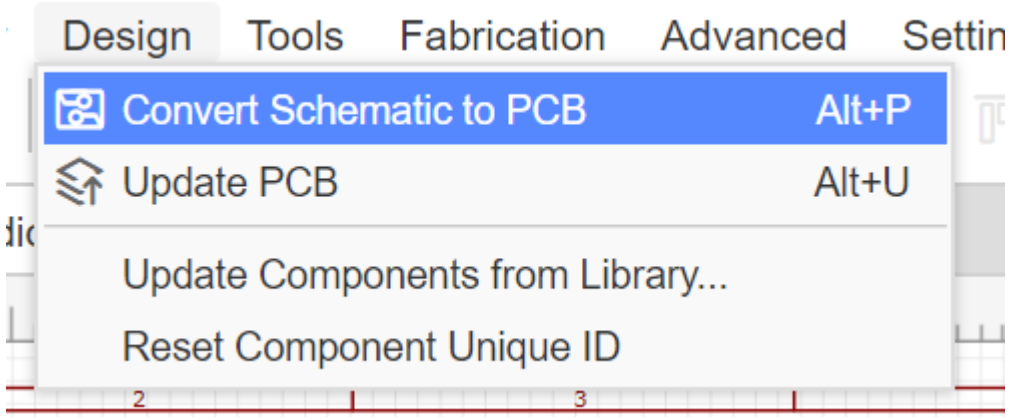
- 7: left of R5 (10K)
  Right of R5(10K) to left of C9(10uF)
  Right of C9(10uF) to ground
- 8: Right of C3(10uF)
  Left of C3(10uF) to Left of GAIN
- Right of Volume to Ground
  Left of Volume to Center(2) of AUDIO IN.
  4 of AUDIO IN to ground.
- 4 of AUDIO OUT to Ground
- Right of both C5(0.1uF) and C8(100uF) to VCC
  Left of both C5(0.1uF) and C8(100uF) to Port J1's 1 and Ground

3. Connections in schematic

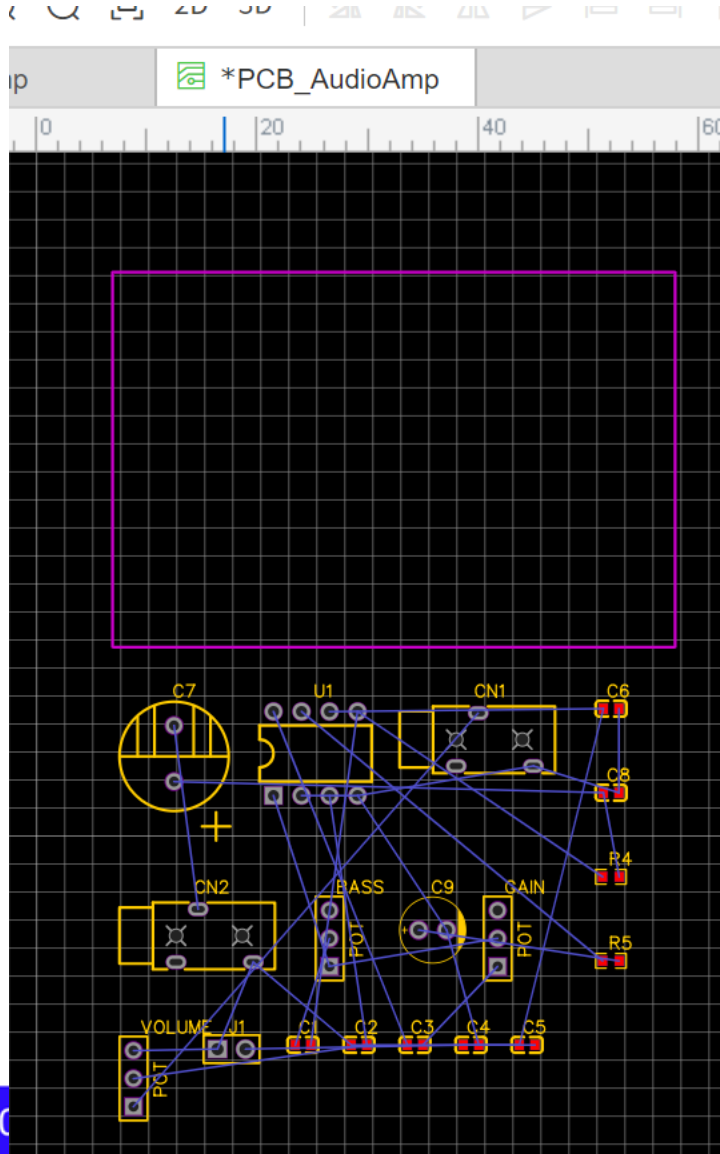


4. Conversion to PCB

- Click convert schematic to PCB and click No keep going and apply

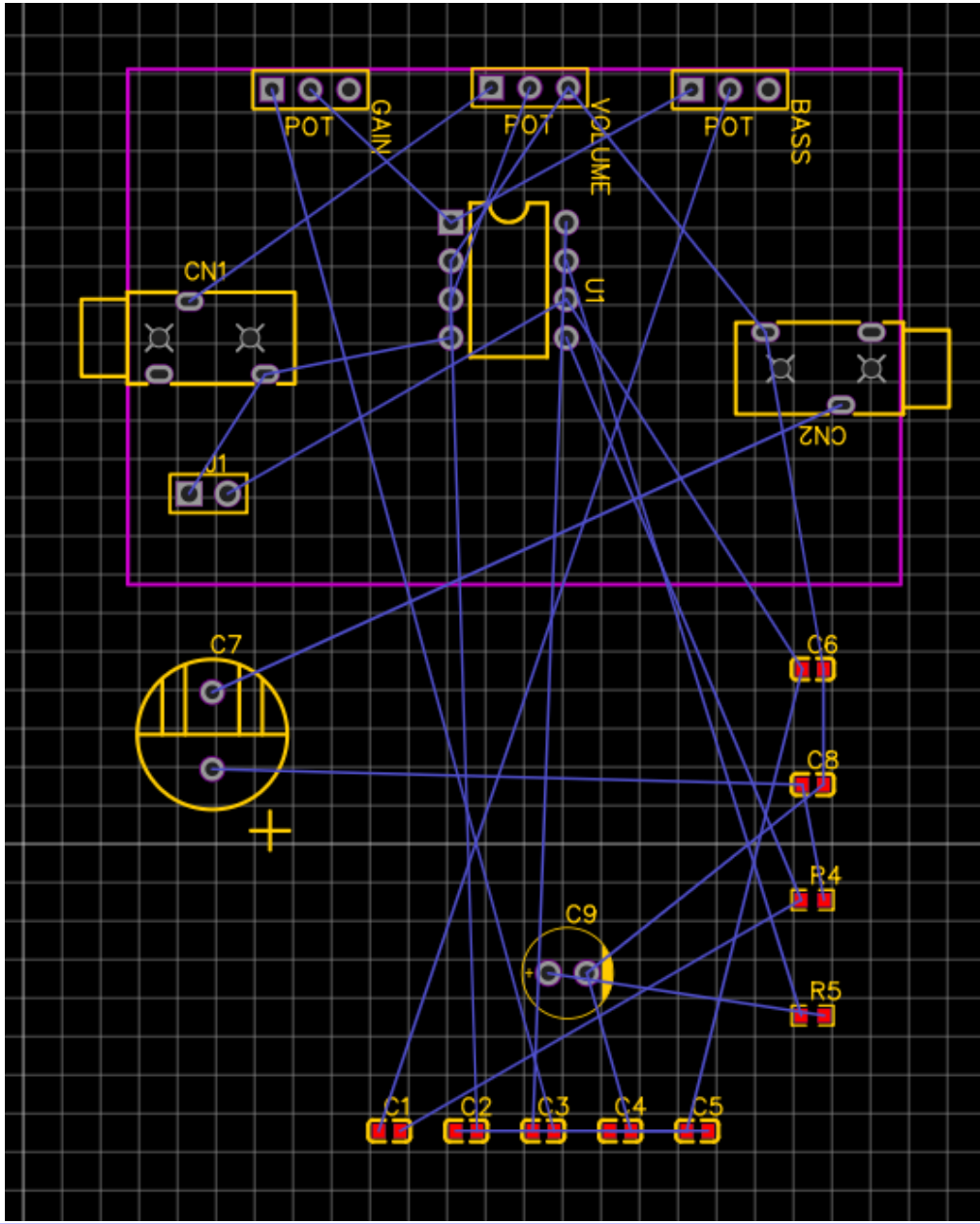


- All footprints are transferred to PCB with virtual wires for connections
- Need to move components to PCB



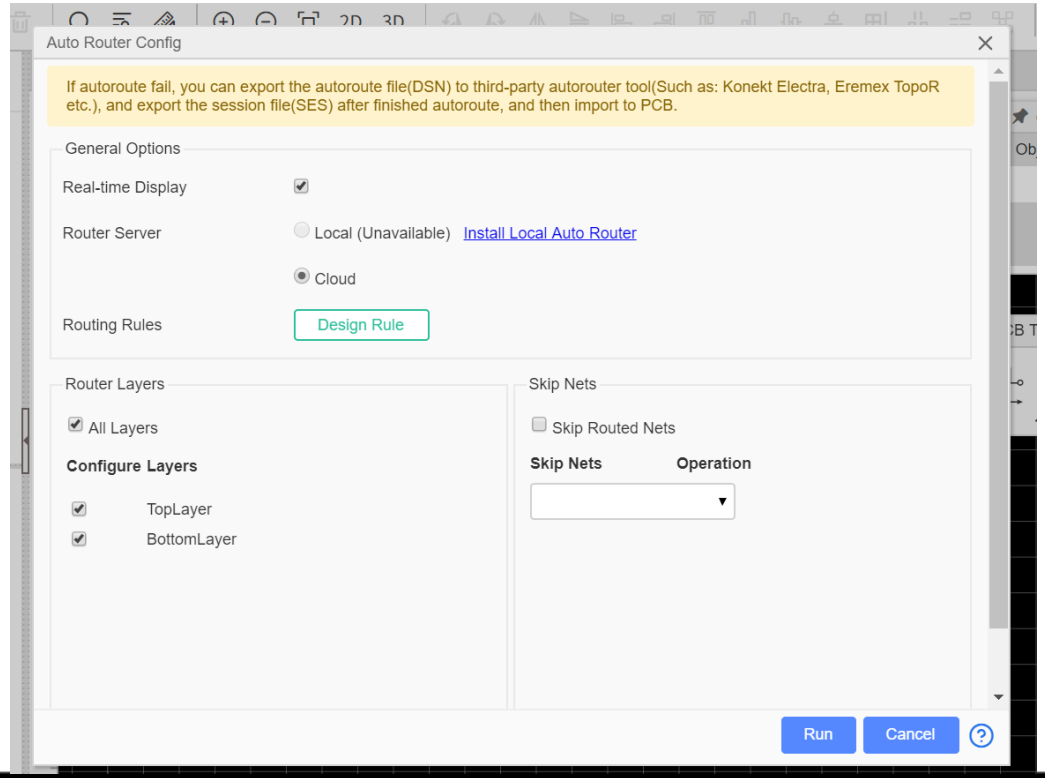
5. Arrange in PCB

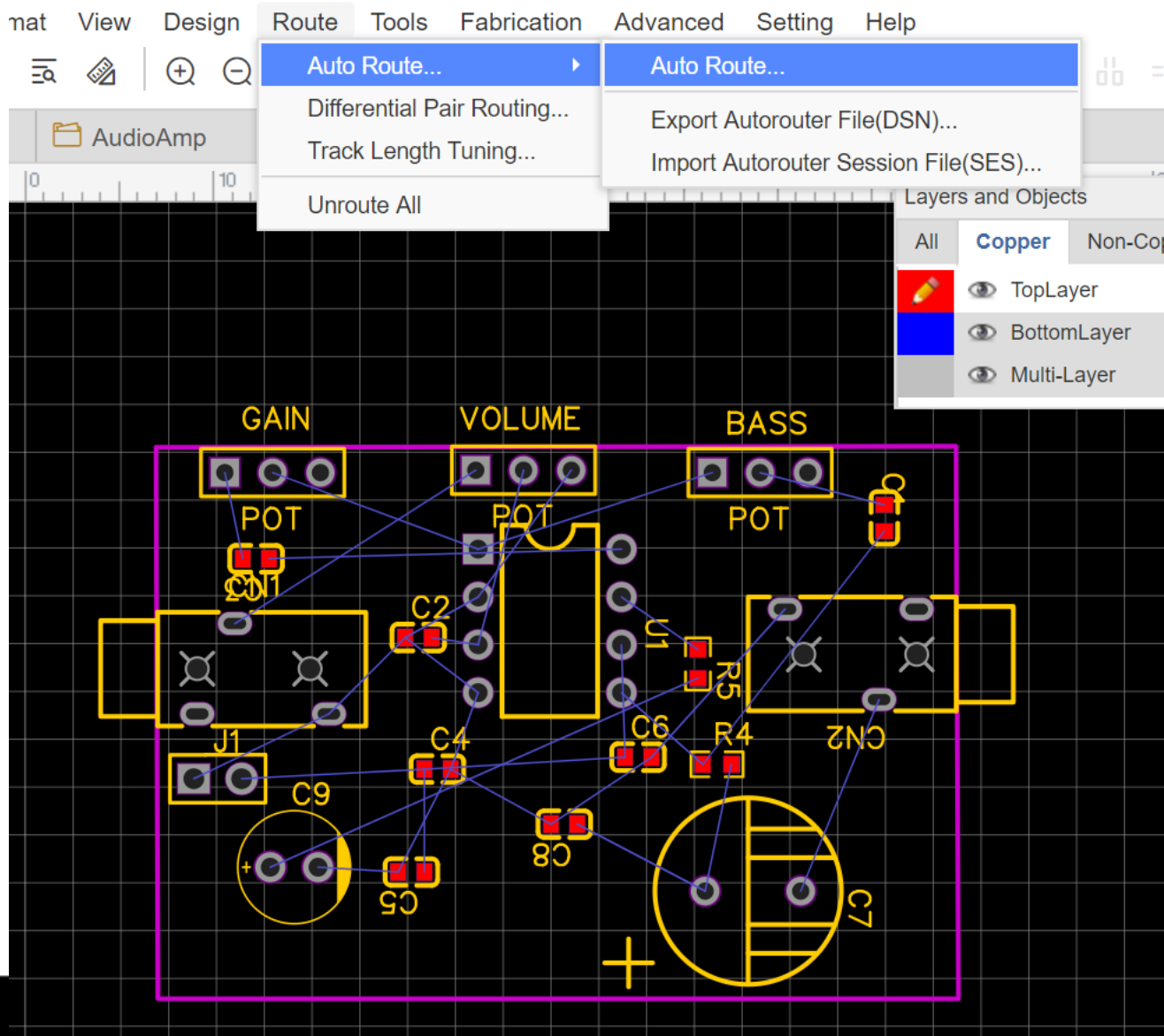
- Try to arrange properly without zig-zag paths
- Try for Star configuration with supply From supply to all components
- Place all components in close proximity, to reduce the radiation from the connection lines.



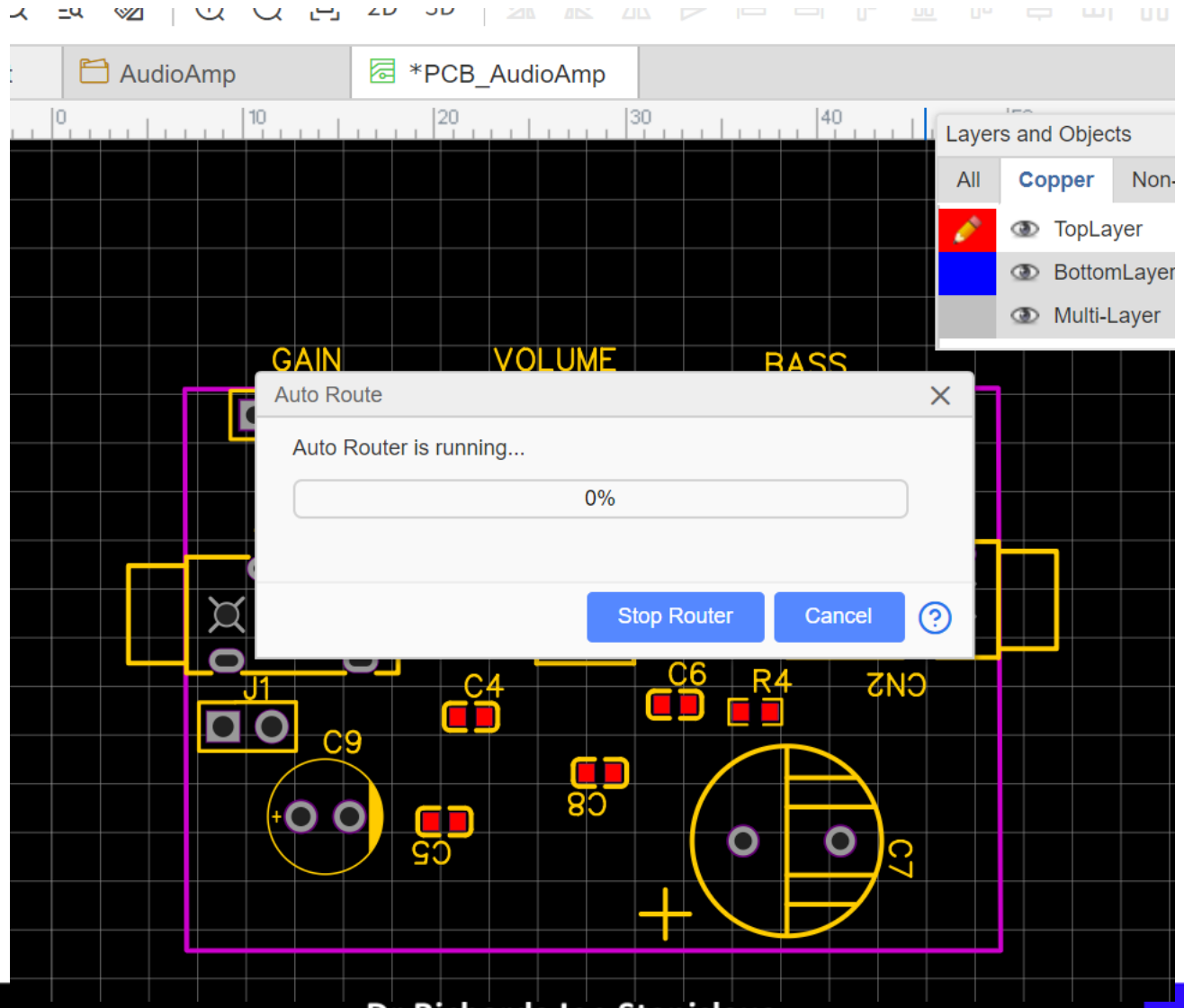
5. Arrange in PCB

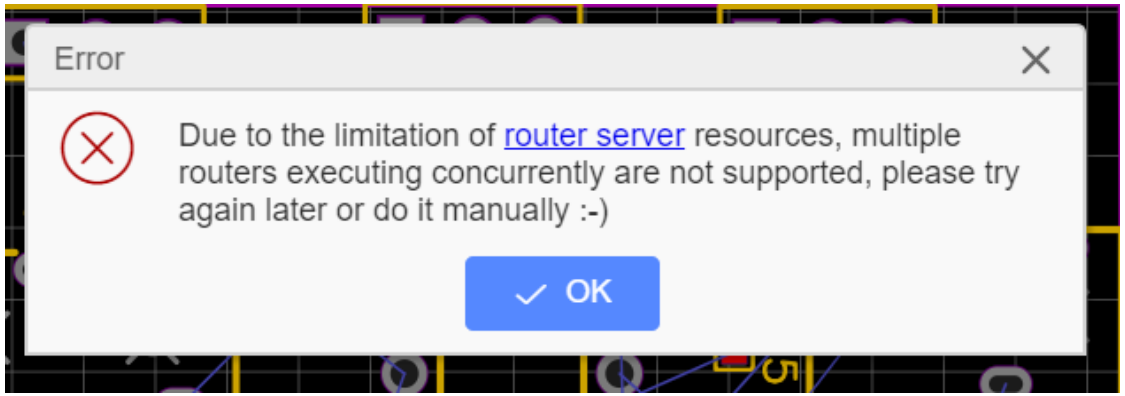
- Save the circuit
- After arranging components, Route-> Auto Route -> Auto Route… Click run



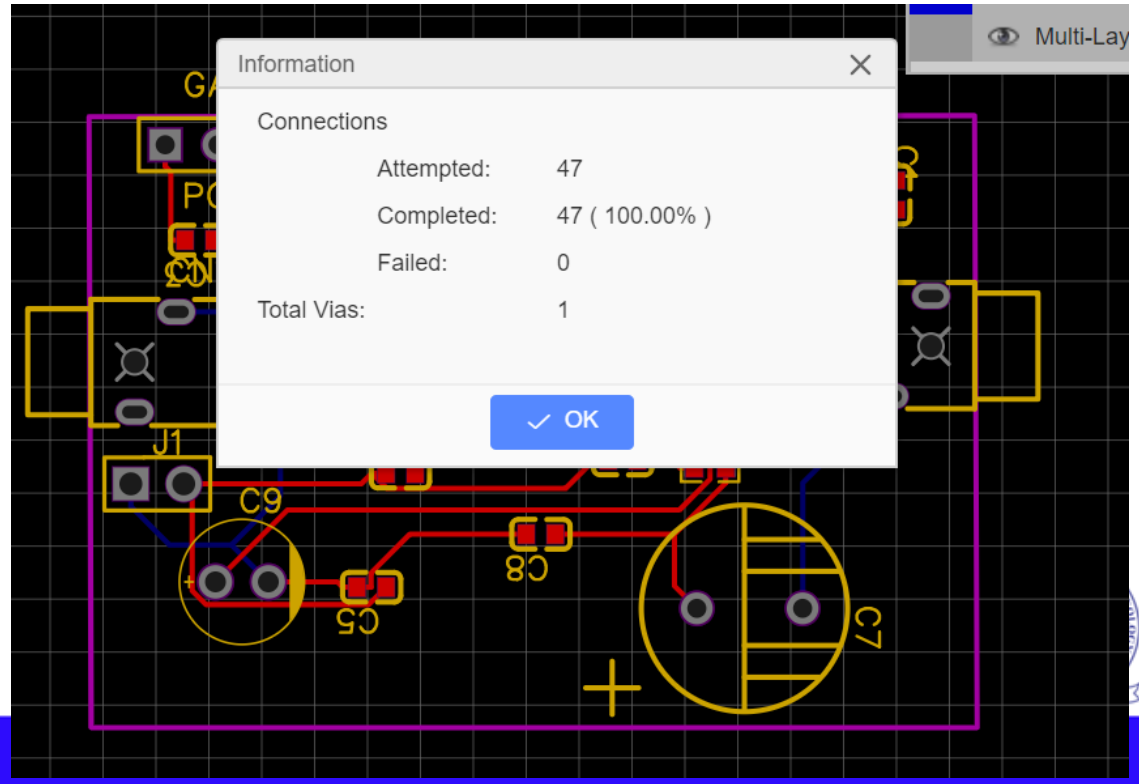


5. Arrange in PCB

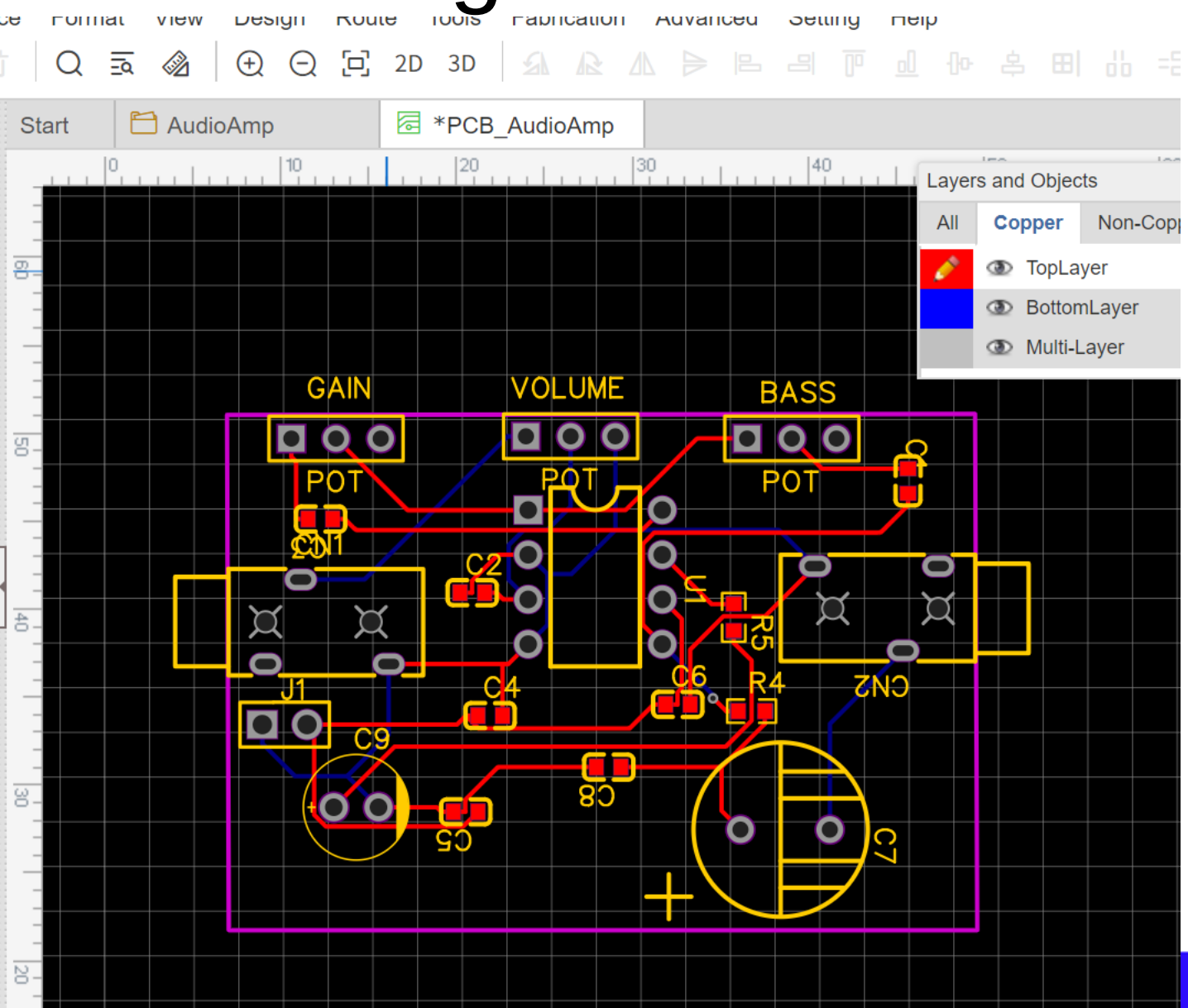




If error comes, then repeat until:

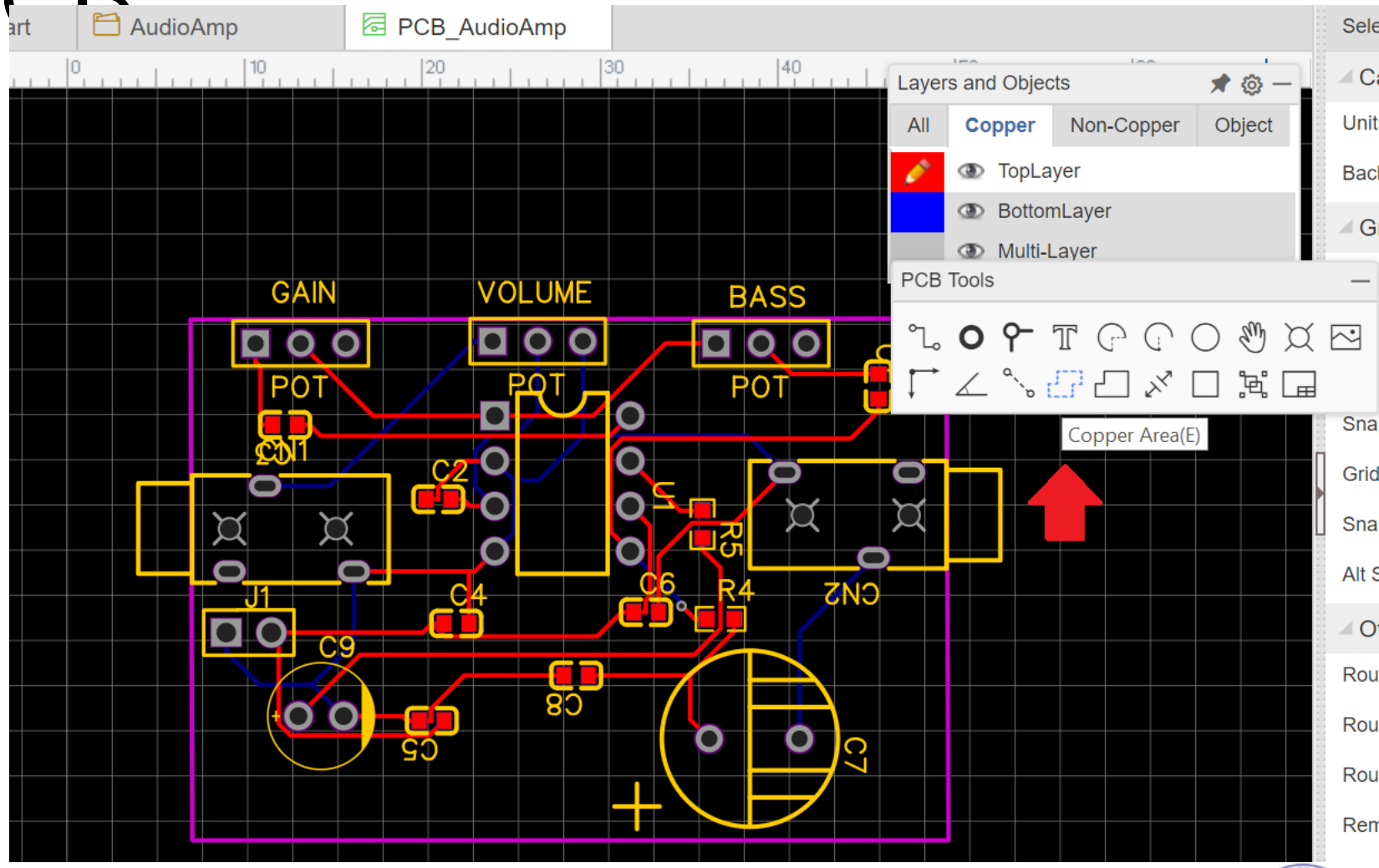


5. Arrange in PCB

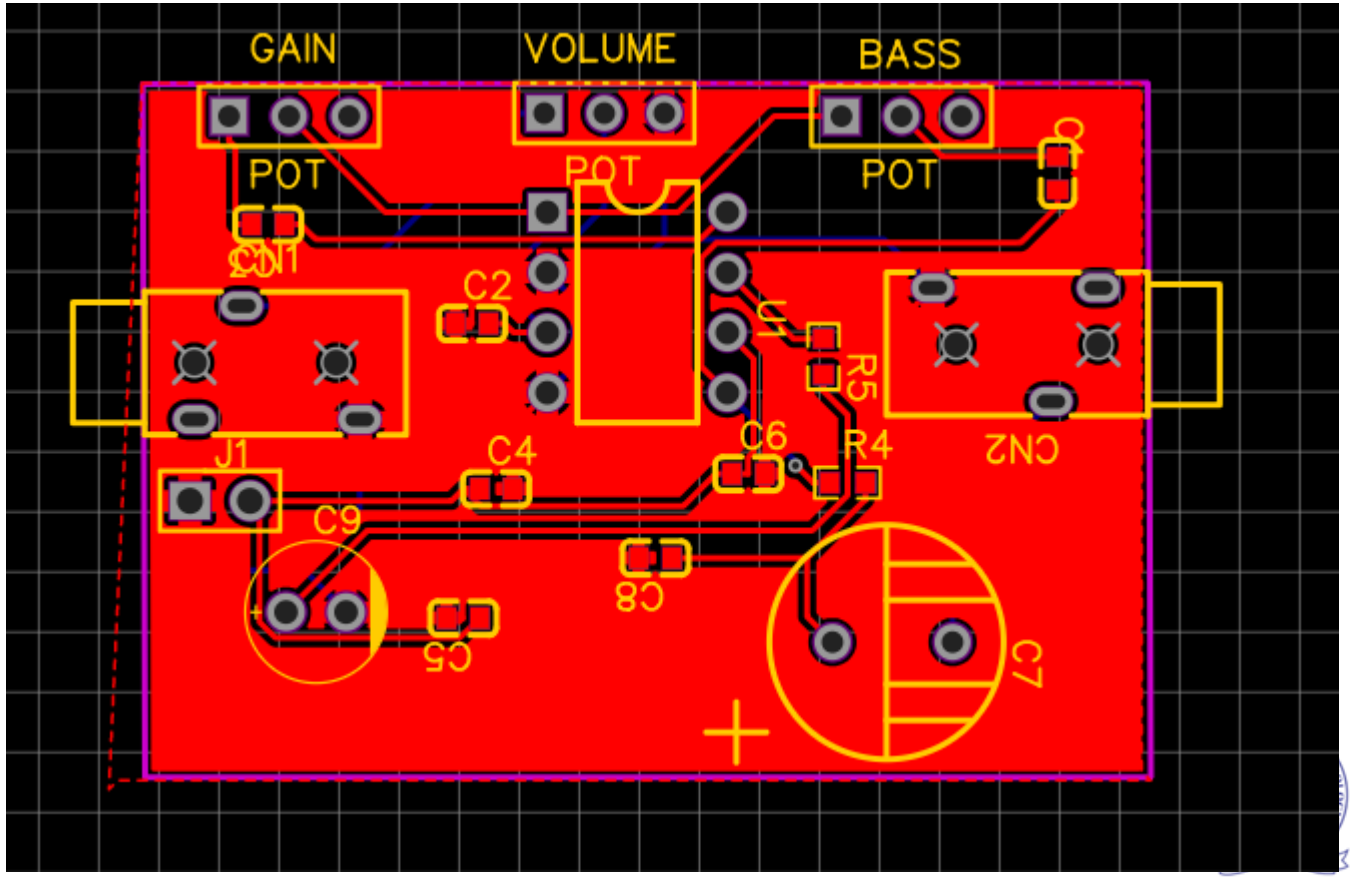


5. Arrange in PCB

- Select copper area
  Select all four corners
  and
  complete the ground



5. Arrange in PCB



Important NOTE

- Enter your **registration number** and **Full Name** next to

all your circuits, PCB and the output plots.

LAB record instructions:

For the lab experiment,

- Write the **Aim**.
- Complete the **Software/Hardware components used**.
- **Obtain the expression for the outputs.**
- Place the respective **circuits in EasyEDA**.
- Connect the inputs and outputs. Name them and **write the same in the lab copy(inputs and outputs section)**.
- Use probe in LT spice to plot all possible combinations.
- Write a **concluding statement for each circuit**.
- **Submit** the document's soft copy **on time** in lms.vit.ac.in when available.