

1. [20 points] In this lab, you will write assembly code to play notes corresponding to the frequencies given in Table 1. The musical notes can be generated as square wave-forms of specific frequencies. These can be generated and heard using the speaker with appropriate interfacing.

1. Use software delays to produce square wave-forms of appropriate frequency. Based on the inputs given through switches (P1.0 to P1.3), the square wave-form of required frequency must be written to P0.7. Verify the working using Keil I/O Port and Logic Analyser before going for interfacing.

Switches	Note	Frequency (Hz)
0001	Sa	255
0011	Re	290
0111	Ga	325
1111	Ma	345

Table 1: Frequencies of notes and their corresponding switch positions

Perform this part and make sure it is working before coming to the lab. Speaker and other required hardware will be provided during the lab hours, during which you need to do the interfacing.

2. Connect the speaker to the Pt-51 kit using the SL100 transistor and interfacing circuit shown in Figure 1. Based on the positions of the on-board DIP switches, you should be able to hear the notes being played out on the speaker.

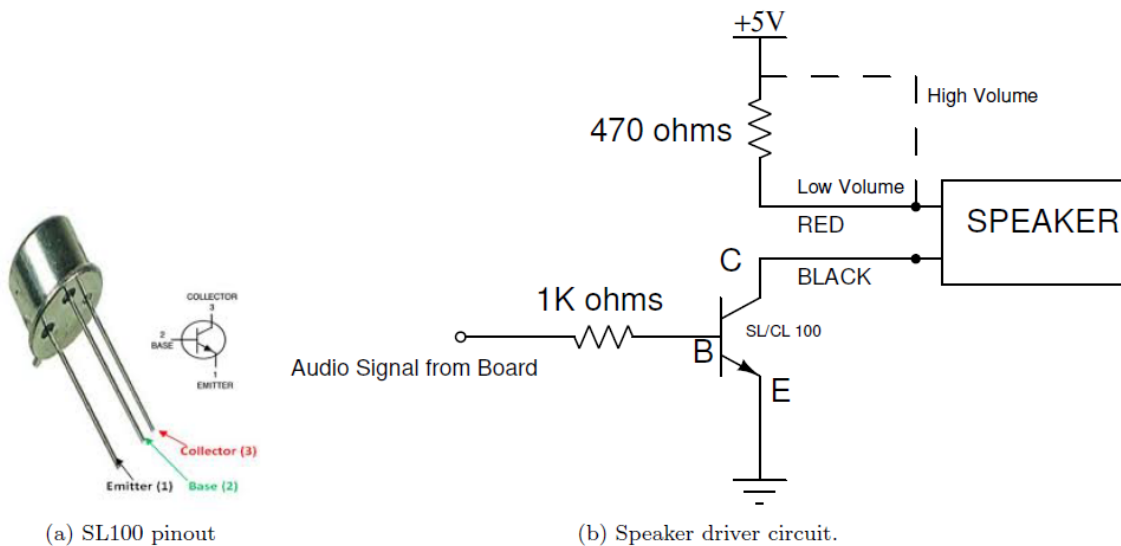


Figure 1: Circuit diagram for interfacing

For the speaker interfacing circuit, use 5V supply and GND from the ON BOARD SUPPLY VOLTAGES (refer to Figure 2).

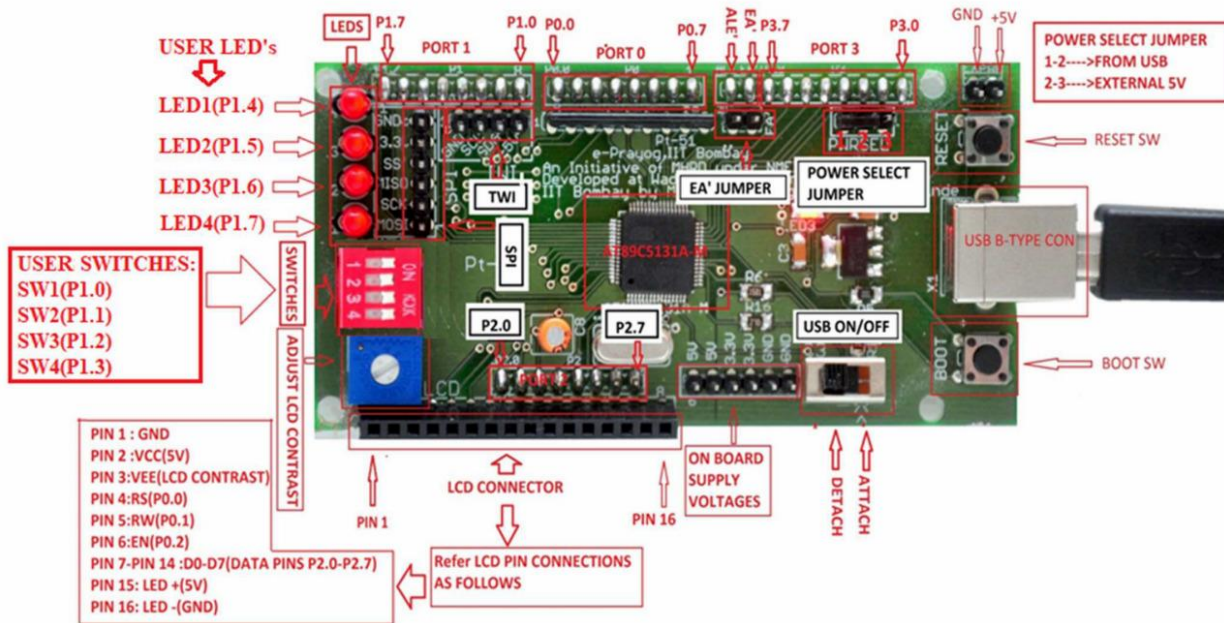


Figure 2: PT-51 Board Detailed Layout

TA Checkpoint

- Check if the wave-forms of required frequencies are being generated in the Logic Analyser.
- Check if the interfacing is working by providing different inputs and observing the output from the speaker.