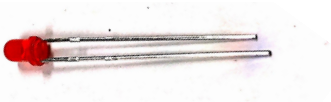
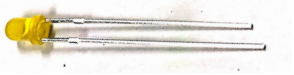
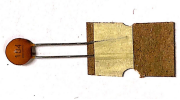
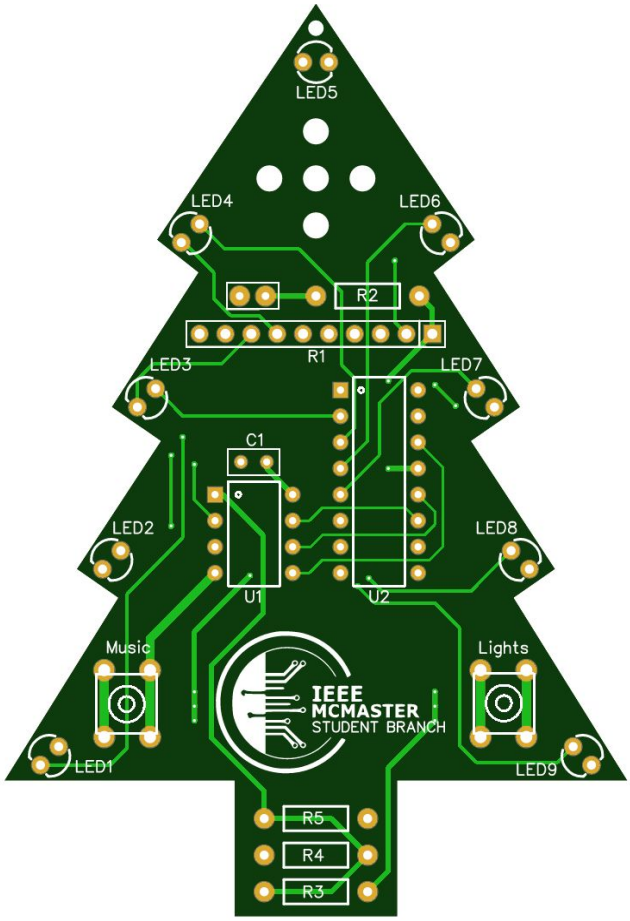
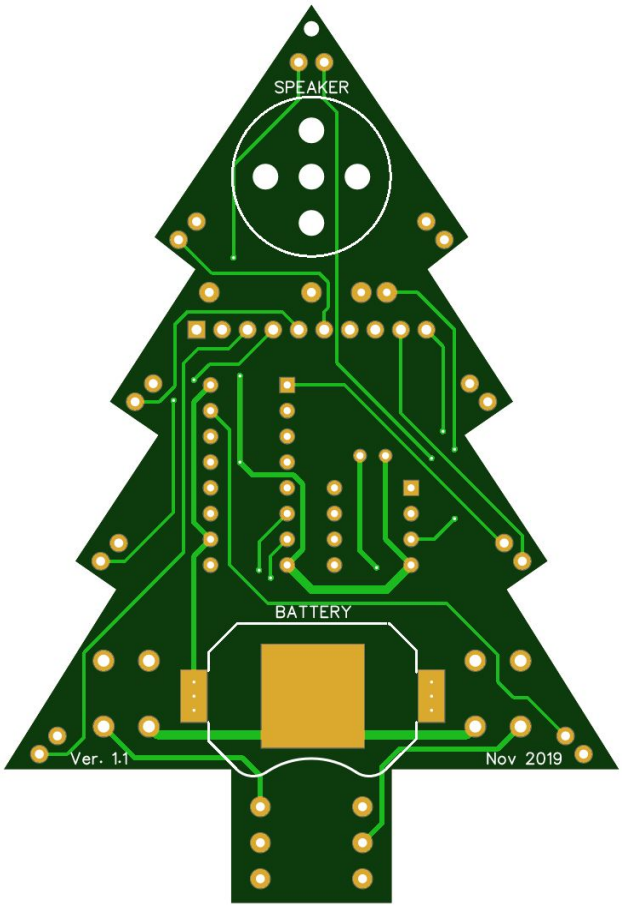
Parts List

Quantity	Label	Part Description	Image
1	R1	Resistor Network	
1	U1	ATtiny85 Microcontroller	
1	U1	8 Pin Socket	
8	LED1-4, LED6-9	Red LEDs	
1	LED5	Yellow LED	
1	C1	Ceramic Capacitor	
2	Music, Lights	Pushbuttons	
1	Speaker	Speaker	
1	U2	Shift Register	
1	U2	16 Pin Socket	
1	Battery	Battery Holder	
1	Battery	Battery	
1	R3	10k Resistor (brown, black, orange)	

1	R4	36k Resistor (orange, blue, orange)	
1	R5	0Ω Resistor (solid green)	
1	R2	470Ω Resistor (yellow, purple, brown)	



Top Side

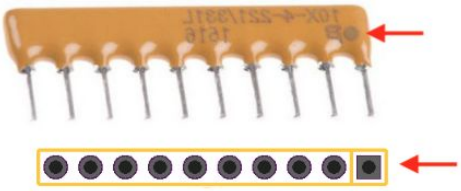


Bottom Side

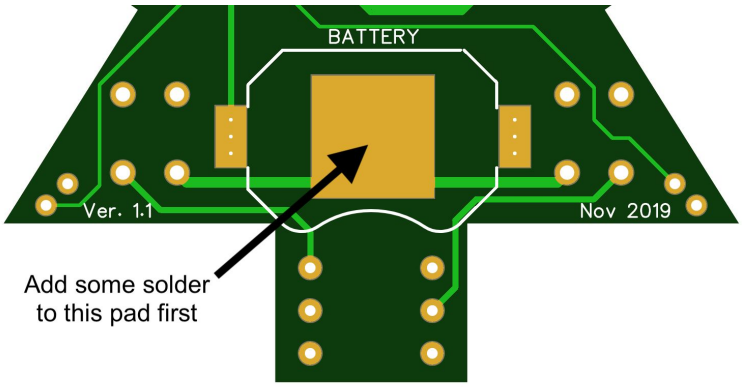
All components are soldered onto the front side of the PCB, which is the side with the IEEE logo. The only exception is the speaker and battery holder, which go on the back side. It's best to solder the smallest components first, such as resistors and LEDs, and the larger components last, such as the IC sockets and battery holder.

Step-By-Step Instructions

1. Insert and solder the following resistors:
   R2, 470Ω, yellow purple brown
   R3, 10kΩ, yellow orange black
   R4, 36kΩ, orange blue orange
   R5, 0Ω, solid green
2. Place the yellow LED at the top of the tree, in position “LED5”. Place the red LEDs in the remaining positions (LED1-4, LED6-9).
   IMPORTANT: LEDs are polarized, meaning they must be placed in the correct orientation! Make sure the flat side of the LED is facing the bottom of the tree PCB.
3. Solder the pushbuttons in their positions, labelled “Music” and “Lights”.
4. Solder the ceramic capacitor in position C1.
5. Place the resistor network (the long brown component with 10 pins) in position R1.
   IMPORTANT: The black dot on one end of this component must be on the **right** side of the PCB. This should match the square in the outline on the PCB.



6. Place the 8-pin socket in position U1, and the 16-pin socket in position U2.
7. Flip the PCB over. Peel off the white paper from the speaker to reveal the adhesive, and stick in in place, centred over the 5 sound holes.
8. Insert the speaker wires through the two unlabelled holes just below the speaker, and solder them. The polarity doesn’t matter here.
9. Apply a small amount of solder (~1cm length of solder) to the square pad where the battery goes.



10. Place the battery holder and solder the two side terminals.
11. Insert the 8-pin chip into its socket, making sure the small dot on the chip faces up.
12. Insert the 16-pin chip into its socket, making sure the notch on the chip faces up.

Before inserting the battery, please ask a volunteer to check your board to avoid any blown components!