

CC461 – Spring 2023
Digitally Controlled Frequency Generator Project
Deadline: Saturday 11 PM - 15/4/2023

This project is based on AT89S51/52 microcontrollers. The target is to generate a square wave with different frequencies up to 9999 Hz. The frequency will be entered via a hex keypad and displayed on a quad seven segment display. After entering the frequency value, a push button connected to INT0 is pressed to enable the generation of the square wave on pin P3.7.

- 1- The Hex keypad is connected to P1 and is scanned via the software to determine the pressed key from 0 to 9.
- 2- The segments of the quad common anode display module are connected to P2 and the control of the four common anodes is done using P0.0 to P0.3 via 2N3906 transistors. The refreshing of the display is done using Timer 0 interrupt. After pressing a key, it is displayed and shifted until 4 digits are entered.
- 3- After entering the frequency value to be generated (in Hz), a push button connected to INT0 is pressed to generate an external interrupt which loads timer 1 with the proper values and enables square wave generation on pin P3.7.
- 4- If a new frequency value is to be entered, the switch connected to INT0 is pressed again.

The crystal used with project could be 11.0592 MHz or 22.1184 MHz
Usb2TTL module will be used for debugging purposes

Required

- 1- You are required to connect the hardware as mentioned above, write the code in Keil compiler, simulate the circuit on Proteus Simulator, and burn the program into the microcontroller
- 2- Three videos recorded
 - Video for the proteus simulator
 - Video for the operation of the circuit
 - Video explaining the codeWill be uploaded on google drive named TeamXX_vid1.mp4, TeamXX_vid2.mp4 and TeamXX_vid3.mp4 respectively
- 3- The keil project (all files including the directories inside) in a compressed file named Keil_TeamXX.zip or Keil_TeamXX.rar
- 4- The proteus project PSD_TeamXX.zip or PSD_TeamXX.rar
- 5- A pdf report should be uploaded named report_teamXX.pdf

Your code can be written in C or assembly language

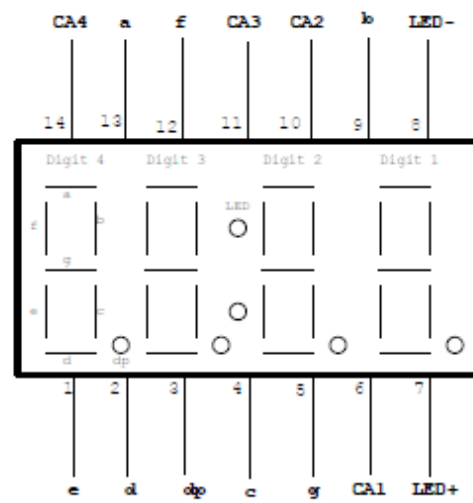
XX is the team number. All uploaded files will grant access to meltelaiti71@gmail.com

Good Luck

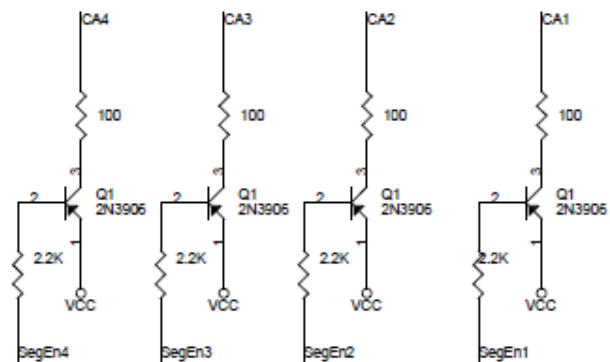
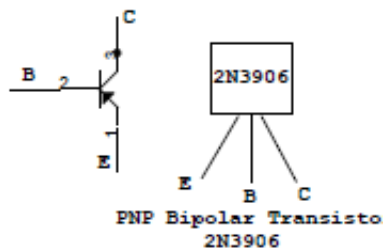
	3	2	1	0
R3	1	2	3	A
R2	4	5	6	B
R1	7	8	9	C
R0	*	0	#	D

R3	R2	R1	R0	C3	C2	C1	C0
----	----	----	----	----	----	----	----

4x4 HEX Matrix Keypad



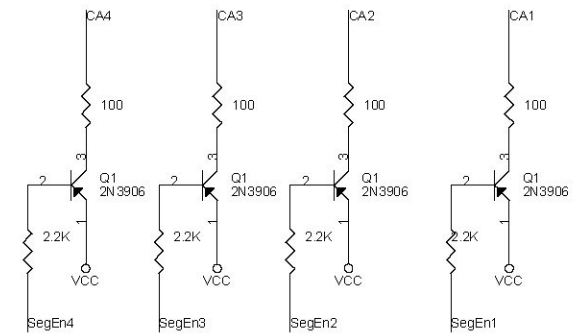
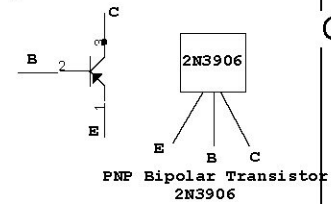
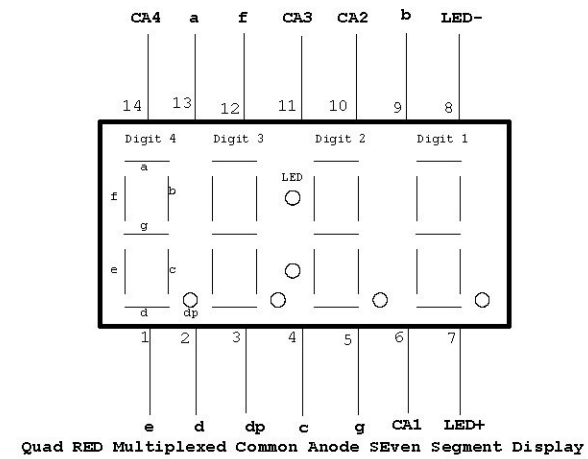
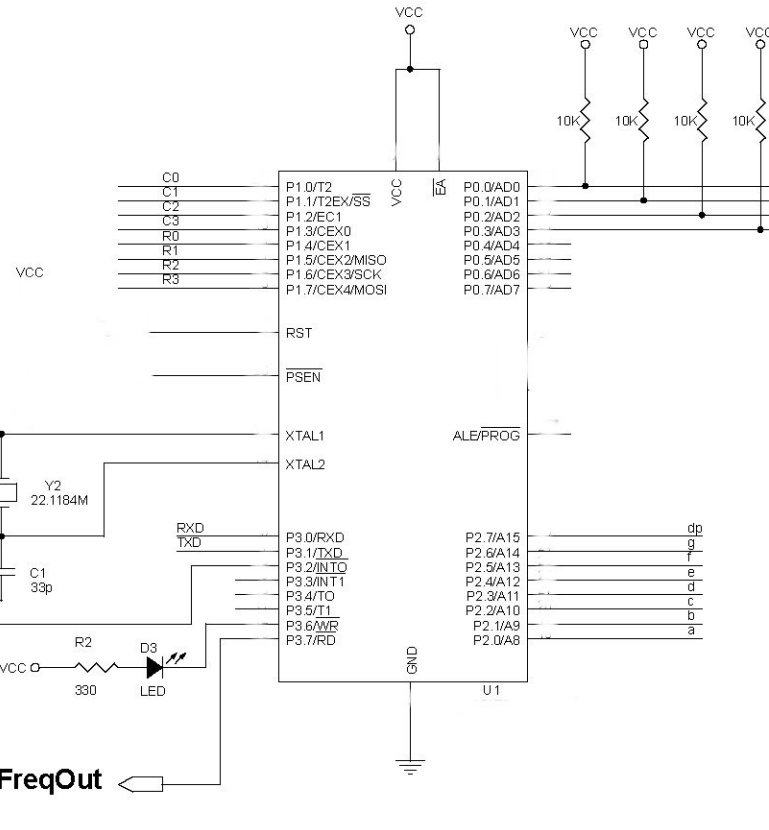
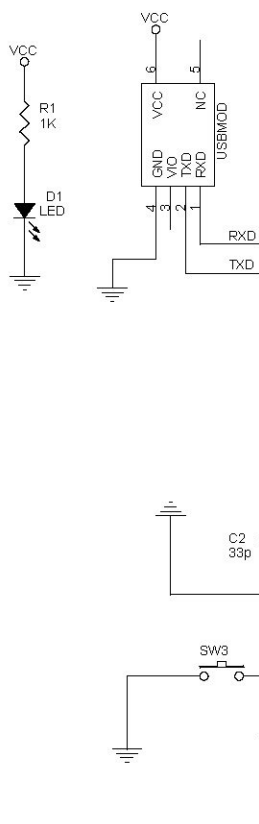
Quad RED Multiplexed Common Anode SEven Segment Display
BL-Q56D-43D



	3	2	1	0
R3	1	2	3	A
R2	4	5	6	B
R1	7	8	9	C
R0	*	0	#	D

R3	R2	R1	R0	C3	C2	C1	C0
----	----	----	----	----	----	----	----

4x4 HEX Matrix Keypad



Title <Title>			
Size B	Document Number <Doc>		Rev <Rev>
Date:	Wednesday, May 04, 2016	Sheet	1 of 1