Lab 5 Deliverables:

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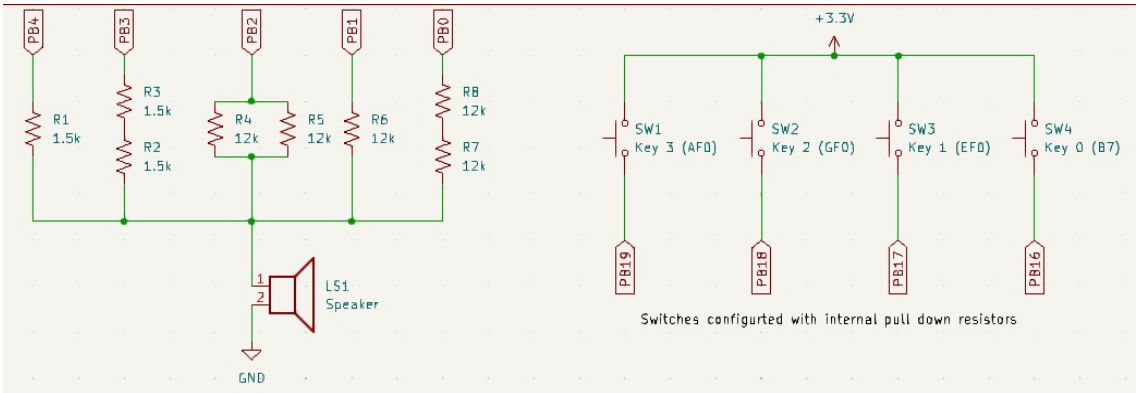
2.



9. a)

Digital Data	Theoretical DAC Voltage	Measured DAC Voltage
0	0.00000	0.000
1	0.10645	0.107
7	0.74516	0.747
8	0.85161	0.849
15	1.59677	1.598
16	1.70323	1.686
17	1.80968	1.793
23	2.44839	2.436
24	2.55484	2.539
25	2.66129	2.642
30	3.19355	3.181
31	3.30000	3.290

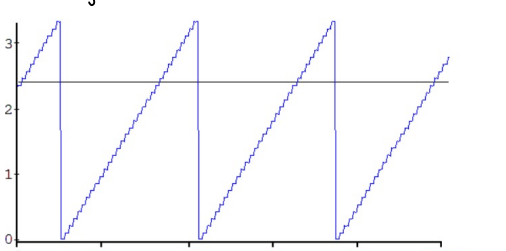
b) Resolution = $\frac{3.3}{2^5}$ = 0.103125 V

Range = 0 V → 3.3V = 3.3V

Precision = 2^5 = 32 levels

Accuracy = $\frac{\text{Actual} - \text{Ideal}}{\text{Ideal}}$ (Averaged) = -0.00359

4.

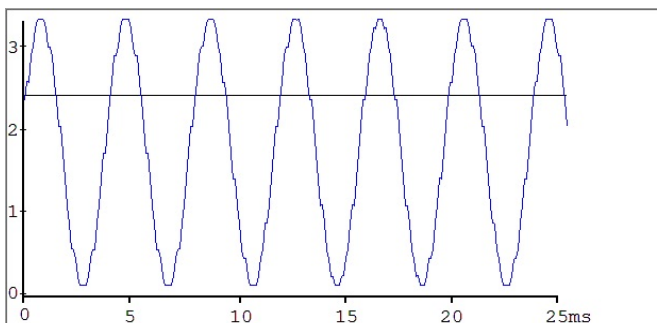


5.

Problems Output Debug Console

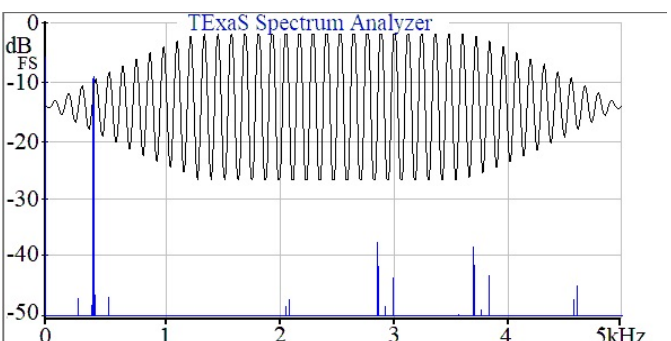
```
Lab 5, Spring 2025, Step 4. Debug switches
EID1= TMB3956
EID2= JE28736
Switch= 0x1
Switch= 0x0
Switch= 0x2
Switch= 0x0
Switch= 0x4
Switch= 0x0
Switch= 0x8
Switch= 0x0
```

6.




```
Ave=1.76V, Peak-peak=3.20V, Period=4.0ms, Freq=251Hz
high-pulse=1.8ms, low-pulse=2.2ms
```

7.




```
fs=10000Hz, dF=9.77Hz, N=1024, Time=102.4ms
Ave voltage=1.67V, Max peak=419.9Hz, -9.1dB
```

8.

```
Lab 5, Spring 2025
Student EID1= TMB3956, EID2=JE28736
Connect PB20 to DACOUT.
Initialization, good, Score=4
Activate piano Key0 Good. Score=10
Activate piano Key1 Good. Score=16
Activate piano Key2 Good. Score=22
Activate piano Key3 Good. Score=25
Done. Score=25
```

10. a) Interrupt triggers every period, as SysTick counts down for period then send interrupt signal.

b) The interrupt vector is SysTick_Handler in EE319K_Lab5main.C

c) The context switch occurs, so the current instruction finishes, R0-R3, R12, R14, R15, PSR are all pushed to stack, Vector table → PC, IPSR=15, LR=0xFFFFFFF9

PC = IVT[IPSR]

3. a) Sin Table:

1byte	Sin Table[0] = 16
1byte	Sin Table[1] = 19
	[2] = 22
	[3] = 24
	[4] = 27
	[5] = 28
	[6] = 30
	[7] = 31
	[8] = 31
	[9] = 31
	[10] = 30
	[11] = 28
	[12] = 27
	[13] = 24
	[14] = 22
	[15] = 19
	[16] = 16
	[17] = 13
	[18] = 10
	[19] = 8
	[20] = 5
	[21] = 4
	[22] = 2
	[23] = 1
	[24] = 1
	[25] = 1
	[26] = 2
	[27] = 4
	[28] = 5
	[29] = 8
	[30] = 10
	[31] = 13

b)