





%default parameters for waveforms:

amplitude=3; freq=20; time=0:0.001:1;

%load theremin data

load data1

%ask user for input

sel = input('1. Sine Wave\n2. Square Wave\n3. WedgeWave\n4. Theremin\nPlease Select one of the options: ');

sel2 = input('1. Enter "a" to change the amplitude\n2. Enter "b" to change the frequency\n3. Enter "c" to change both\n4. Enter "d" to change the amplitude of the theremin\nPlease select one of the options: ','s');

if(sel==4 && sel2~='d')

disp('Wrong Choice!');

else

%check menu 2

switch sel2

case 'a'

amplitude = input('Enter the desired amplitude: ');

case 'b'

freq = input('Enter the desired frequency: ');

case 'c'

amplitude = input('Enter the desired amplitude: ');

freq = input('Enter the desired frequency: ');

case 'd'

%check for bad selection:

if(sel~=4)

disp('Wrong Choice!');

else

%play theremin

theremin\_amp = input('Enter the desired amplitude for the theremin: ');

theremin\_data = data1\*theremin\_amp;

disp('Playing theremin!');

sound(theremin\_data);

plot(1:120, data1(1:120));

end

otherwise

disp('Wrong choice!');

end

if(sel2~='d')

sine\_wave = amplitude\*sin(2\*pi\*freq\*time);

sq\_wave = amplitude\*square(2\*pi\*freq\*time, 50);

wd\_wave = amplitude\*sawtooth(2\*pi\*freq\*time);

switch(sel)

case 1

plot(time,sine\_wave);

case 2

plot(time,sq\_wave);

case 3

plot(time,wd\_wave);

otherwise

disp('Error');

end

end

end

Report:

I did this project on my own. Although, I have to give credit to another gentleman in the class who allowed another student and I to use his Theremin data because we were both absent during the first lab. Also, the TA helped me figure out how to plot the data and use the sound() function. If I were to divide up the work I would give 10% to the TA and the other student (5% each) and 90% to myself.

Solve 1,2,4,5 from Chapter 3:

**1.**

‘b’ >= ‘c’ -1 will evaluate to 1 b/c ‘b’ is equal to 98 and c-1 = 98

3 == 2+1 evaluates to 1, because it does the addition before the comparison

(3 == 2) + 1 evaluates to 1 because (3 == 2) evals to 0 and then the 1 is added on.

Xor(5<6,8>4) will evaluate to 0 because of the exclusive condition. (if both inputs are 1 the output is 0)

**2.**

user\_input = input('Enter the character x: ','s');

if(user\_input ~= 'x')

disp('Wrong!');

end

**4.**

disp('Calculate the volume of a pyramid: ');

l = input('Enter the length of the base: ');

lu = input('Enter i for inches or c for cm: ', 's');

if(lu == 'c')

l = (l/2.54);

end

w = input('Enter the width of the base: ');

wu = input('Enter i for inches or c for cm: ', 's');

if(wu == 'c')

w = (w/2.54);

end

h = input('Enter the height: ');

hu = input('Enter i for inches or c for cm: ', 's');

if(hu == 'c')

h = (h/2.54);

end

volume = (1/3)\*(l\*w)\*(h);

fprintf('\nThe volume of the pyramid is %0.3f cubic inches\n', volume);

**5.**

letter = input('Enter a character: ', 's');

if(isletter(letter))

fprintf('%s IS a letter of the alphabet\n', letter);

else

fprintf('%s is NOT a letter of the alphabet\n', letter);

end