**LAB REPORT NO 4**



Submitted by:  **Muhammad Ali**

Registration No: - **19PWCSE1801**

Class Section: A

“On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work.”

Submitted to:

**Engr. Durr-e-Nayab**

Data:(22,05,2021)

Department of Computer Systems Engineering

University of Engineering and Technology, Peshawar

**Task no 1: -**

% task 1,a part

clc

clear all

close all

tic;

x1=[2 5 8 4 3];

x2=[4 3 2 0 0];

add=x1+x2

mul=x1.\*x2

sigplot1(x1,x2,add,mul);

% b part

x1=[2 5 8 4 3];

x2=[4 3 2 1 1];

for n=1:5

add(1,n)=x1(1,n)+x2(1,n);

end

add

for n=1:5

mul(1,n)=x1(1,n)\*x2(1,n);

end

mul

% c part

function sigplot1(s1,s2,s3,s4)

figure

plot(s1)

figure

plot(s2)

figure

plot(s3)

figure

plot(s4)

figure

plot(s1)

hold on

plot(s2)

hold on

plot(s3)

hold on

plot(s4)

hold on

figure

subplot(4,1,1)

plot(s1)

hold on

subplot(4,1,2)

plot(s2)

hold on

subplot(4,1,3)

plot(s3)

hold on

subplot(4,1,4)

plot(s4)

hold on

**Task no 2: -**

clc;

clear all;

close all

x=input('Enter Number of samples of your signal: ');

for i=1:x

samp(1,i)=input(['enter element no' i 'of sample']);

end

beta=input('Enter Scaling factor value beta: ')

sigplot(samp,scalesig(samp,beta))

function y=scalesig(s,sfac)

y=s\*sfac;

end

function sigplot(s1,s2)

figure

plot(s1)

figure

plot(s2)

figure

plot(s1)

hold on

plot(s2)

hold on

figure

subplot(4,1,1)

plot(s1)

hold on

subplot(4,1,2)

plot(s2)

hold on

**Task no 3: -**

clc

clear all

close all

x1=[1 2 3 1 1];

x2=[2 3 0 1 2];

t=[0:4];

s=[];

y=1;

for x=1:5

if x1(1,x)<x2(1,x)

s(1,y)=x-1;

y=y+1;

end

end

disp('X1 sampal has smaller amplitude compare to sampal x2');

disp(s);

sigplot3(x1,x2,t)

function sigplot3(s1,s2,x)

figure

stem(x,s1);

figure

stem(x,s2);

figure

stem(x,s1);

hold on

stem(x,s2);

hold on

figure

subplot(2,1,1);

stem(x,s1);

hold on

subplot(2,1,2);

stem(x,s2);

hold on

**Task no 4: -**

clc;

clear all;

close all;

tic;

i=1;

t1=[-15:15];

t2=[-50:+50];

for x=-15:15

y1(1,i)=(2)\*(x.^2);

y2(1,i)=(4)\*(x.^3);

i=i+1;

end

figure

subplot(2,1,1)

plot(t1,y1,'g -\*')

hold on

subplot(2,1,2)

plot(t1,y2,'r -.')

hold on

i=1;

for x=-50:50

y1(1,i)=(2)\*(x.^2);

y2(1,i)=(4)\*(x.^3);

i=i+1;

end

figure

subplot(2,1,1)

plot(t2,y1,'g -\*')

hold on

subplot(2,1,2)

plot(t2,y2,'r -.')

hold on

**Task no 5: -**

clc;

close all;

clear all;

x=input('Enter x coordinate :');

y=input('Enter y coordinate :');

r=input('Enter radius of circle :');

plotcircle(x,y,r)

function plotcircle(x,y,r)

theta=[0:1/100:2\*pi];

px=(r\*cos(theta))+x;

py=(r\*sin(theta))+y;

figure

plot(px,py)

**Task no 6: -**

clc

clear all

close all

T=-9:11;

sign1=zeros(21);

sign1(10)=1;

sign1(9)=3;

sign1(8)=2;

sign1(7)=6;

sign1(6)=4;

sign1(5)=7;

sign2=zeros(21)

sign2(10)=1;

sign2(9)=2;

sign2(8)=2;

sign2(7)=4;

sign2(6)=6;

sign2(5)=7;

stem(T,sign1);

figure;

stem(T,sign2);

figure;

sign3=sign1+sign2;

stem(T,sign3)

**Task no 7: -**

**%**main code as task 6

function [s, c] = AmpScale(in)

c = 0;

for i = 1:length(in)

if (in(i) > 8) || (in(i) < (-8))

c = c + 1;

s(c) = in(i);

end

stem(s);

end

end

**Task no 8: -**

**%**main code as task 6

function [d] = Downsample(input, retain)

index = 1;

for i = 1:r:length(input)

d(index) = input(i);

index = index + 1;

end

end

**Task no 9: -**

**%**main code as task 6

function [out] = upsample(input, retain)

out = zeros(size(input));

for a = 0:1:length(input)-1

out(a\*retain +1) = input(a+1);

end

end