Name - Yash Lakhtariya
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Branch - CBA Batch - 41
PNS Practical 4

1. Coefficient of correlation between two variables

File - Correlation_YSL.m

```
function [r] = Correlation_YSL(x,y)
  n = length(x);
  r = ((n * sum(x .* y)) - (sum(x) * sum(y))) / (((sqrt(n *
sum(x .* x) - (sum(x))^2))) * ((sqrt(n * sum(y .* y) -
(sum(y))^2))))
 endfunction
```

File - prac_4.1.m

```
clc;
clear all;
close all;

x = [1 3 5 7 8 10];
y = [8 12 15 17 18 20];

r = Correlation_YSL(x,y);
```

Output :

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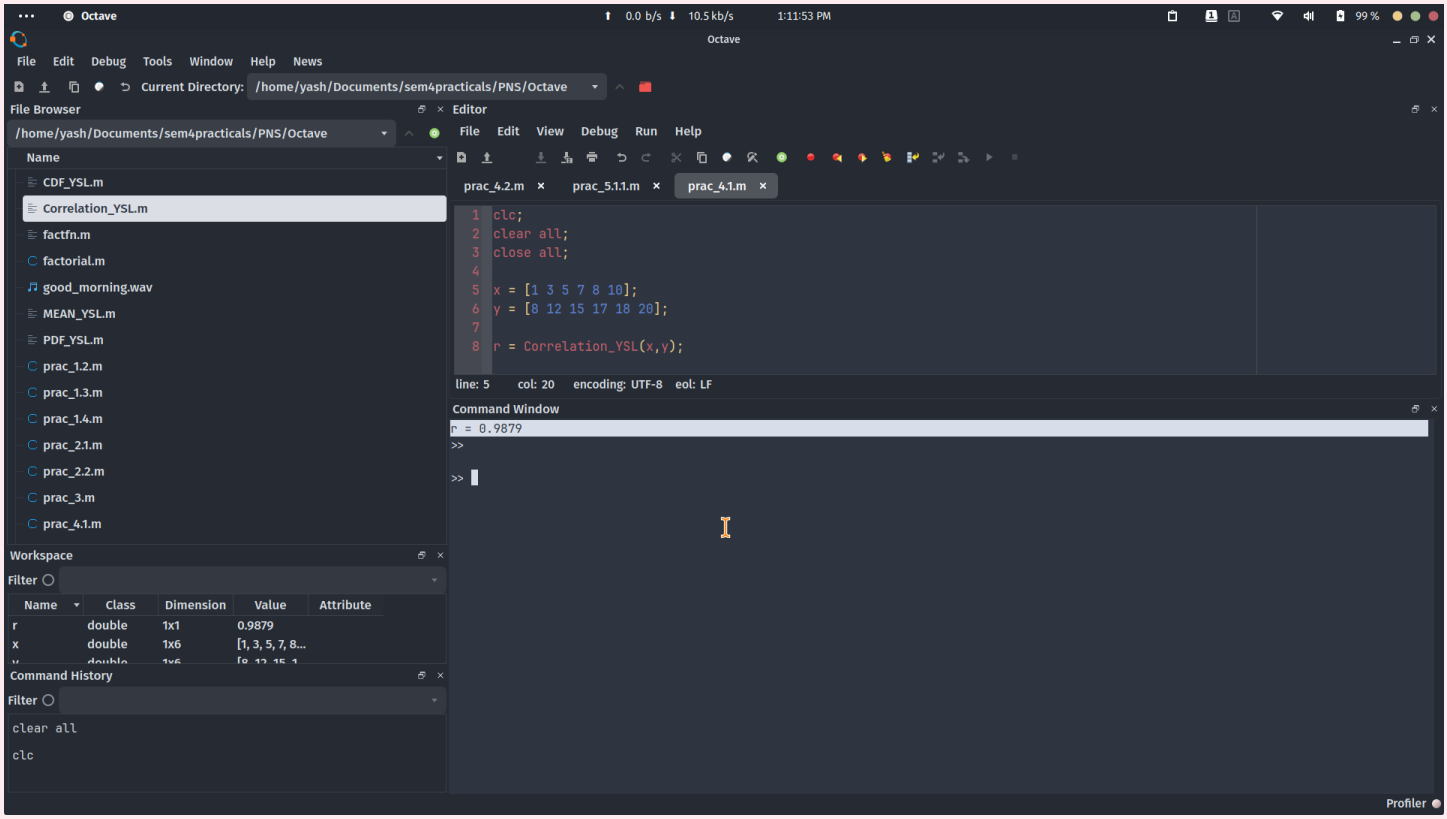

2. Coefficient of correlation on speech signal

File - prac_4.2.m

```
clc;
clear all;
close all;

y = audioread("good_morning.wav");
ysl = audioread("Sample_Audio.wav");

for i = 1:(length(ysl) - length(y) + 1)
  r(i) = sum(ysl(i:i+length(y)-1) .* y);
endfor
```

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```
MaxIndex = find(r == max(r));

subplot(3,1,1);
plot(ysl,'Color','#BF616C');
xlabel("Sample Audio waves",'fontsize',22);
title("YSL Graph of Audio File",'fontsize',32);
subplot(3,1,2);
plot(y,'Color','#5E81CC','LineWidth',3);
xlabel("Test Audio part waves",'fontsize',22);
subplot(3,1,3);
plot(r,'Color','#d18677');
xlabel("Correlation graph",'fontsize',22);
```

Output :