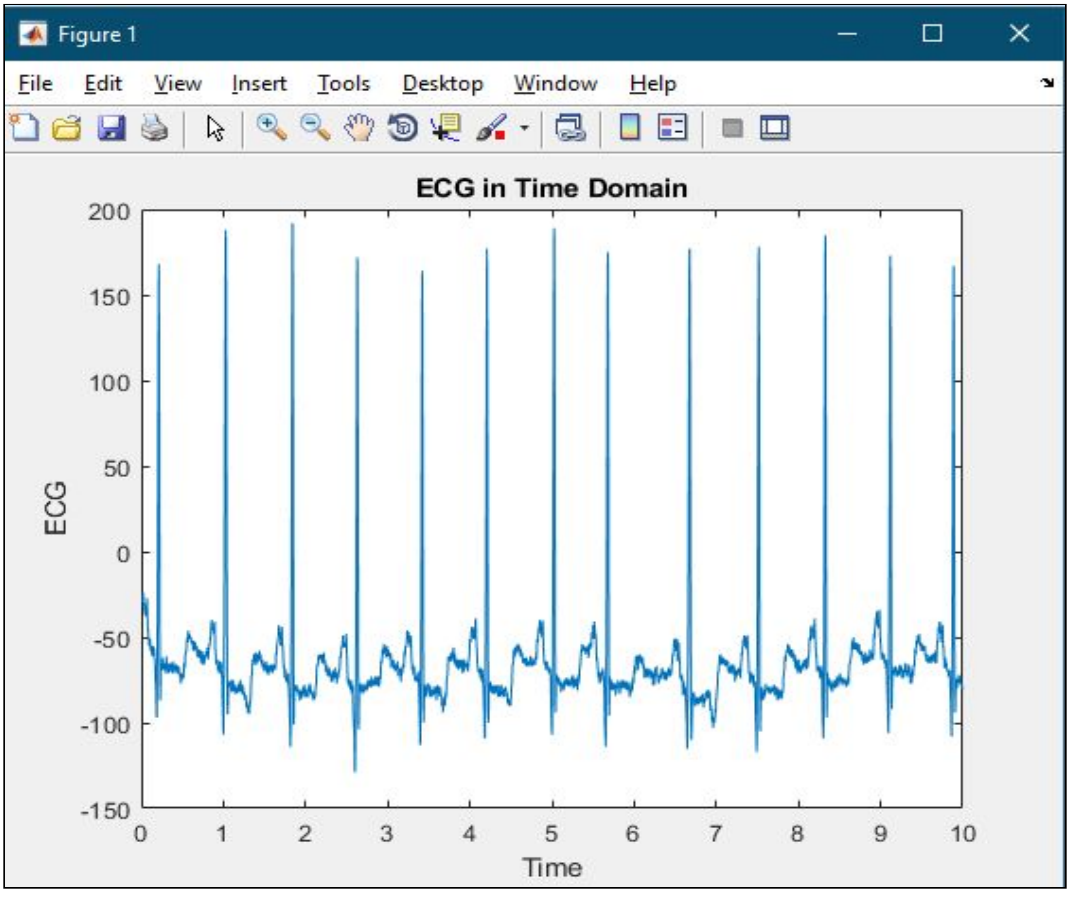
BSP FINAL PRACTICAL
BM-17050

Objective 1:

```
clc;
clear all;
close all;
load("data.mat");
fs = 360;
%Time interval between two samples
ts = 1/fs;
units = "mV";
N = 3600;
%time vector
t = 0:ts:(N/fs)-ts;
gain = 200;
figure(1)
plot(t,val(1,:));
xlabel('Time');
ylabel('ECG');
title('ECG in Time Domain');
```



Objective 2

```
clear all;
close all;
clc;

eeg = load("eeg1-c3.dat");

t = 0:length(eeg)-1;
fs = 1;
subplot(4,1,1);
plot(t, eeg);
xlabel("Samples");
ylabel("Amplitude");
title("EEG waveform");

M = 200; % window size
hamm_win = hamming(M);
eeg_hamm = eeg(1:M).*hamm_win'; % dot product
subplot(4,1,2);
plot(eeg_hamm);
title("Hamming window");
xlabel("Time");
ylabel("Amplitude");

M = 200; % window size
rect_win = rectwin(M);
eeg_rect = eeg(1:M).*rect_win'; % dot product
subplot(4,1,3);
plot(eeg_rect);
title("Rectangular window");
xlabel("Time");

Y_freq_pre = fft(eeg); % step 1 for PSD
Y_mag_pre = abs(Y_freq_pre);
PSD_pre = (Y_mag_pre.^2); % step 2 for PSD
N_pre = length(PSD_pre); % used for plotting
freq_pre = (1:N_pre)*fs/N_pre;
subplot(4,1,4);
plot(freq_pre, PSD_pre);
title('power spectral density')
xlabel("Frequency");
```

```
ylabel("Power");
```