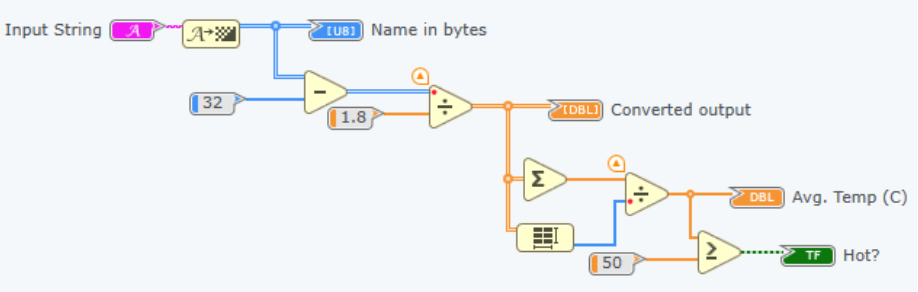
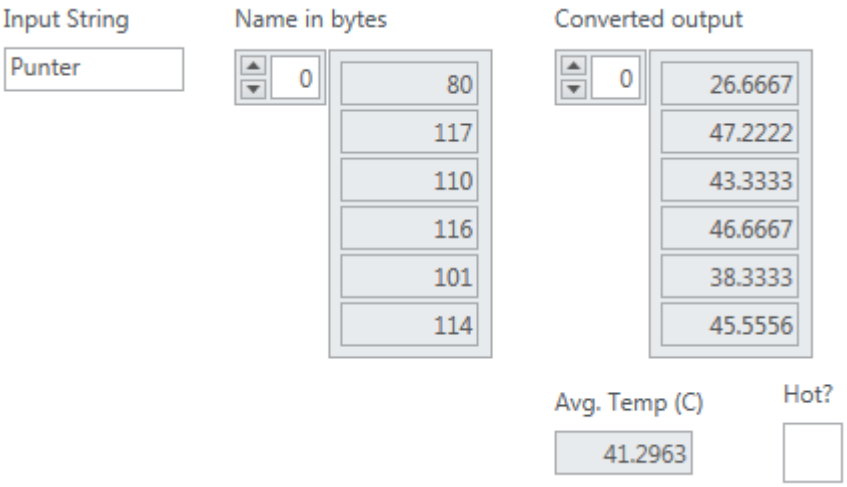
Lab 1 - Introduction to LabView

Exercise 1 - Data Types in LabView

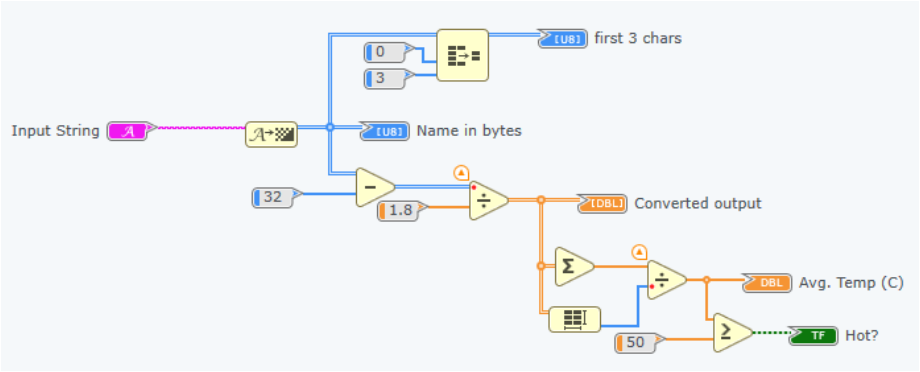
Block Diagram - Convert name into byte value, then convert from Fahrenheit to Celsius



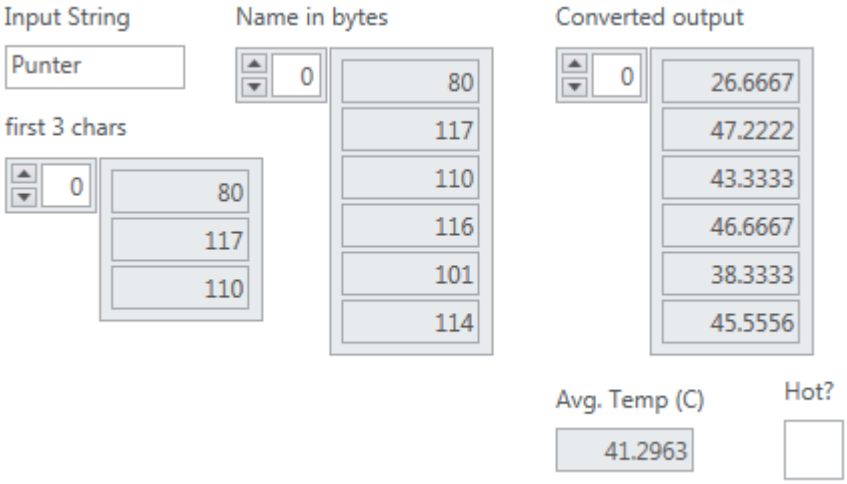
Panel - Running conversion of name from Fahrenheit to Celsius



Block Diagram - Get integer value of first three characters



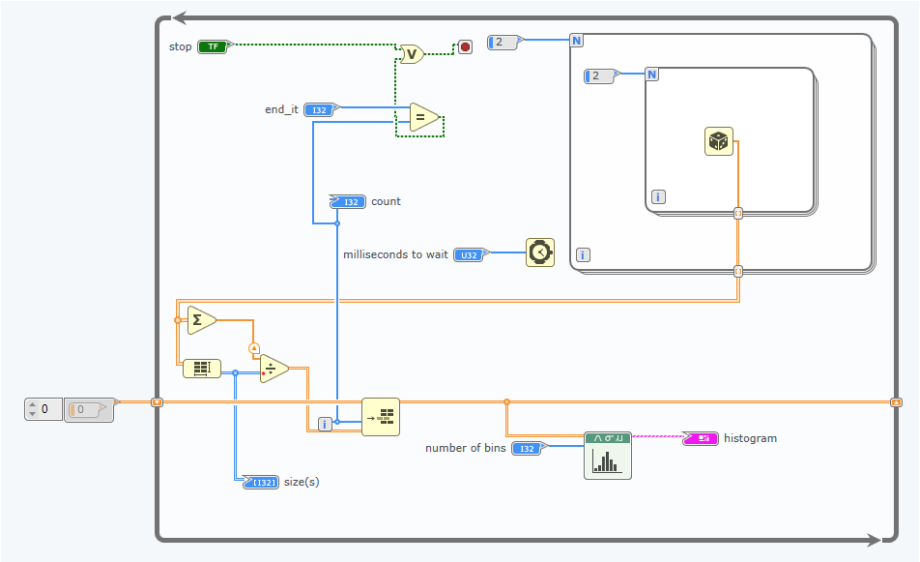
Panel - Running integer value of first three characters



Exercise 2 - Implementation of the Central Limit Theorem

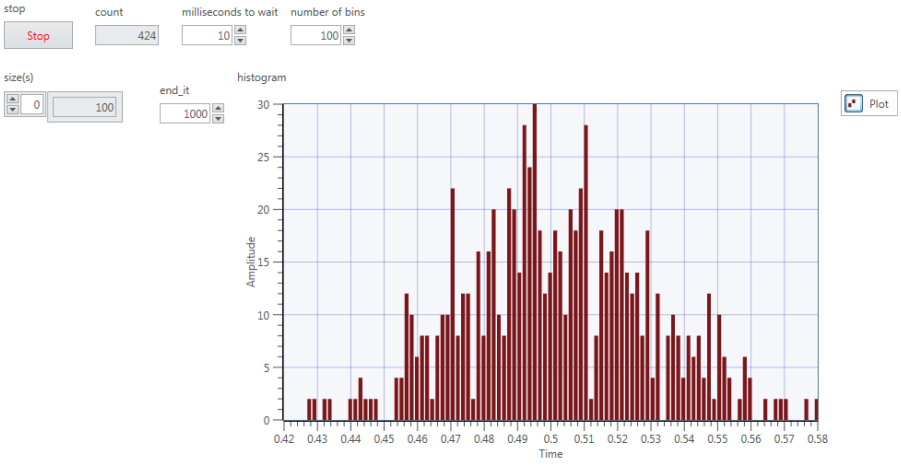
- First, we created a uniform distribution generator.
- By repeatedly generating uniformly distributed random numbers, we observed the sample mean converging to a normal distribution.

Diagram 1



Output:

Histogram 1



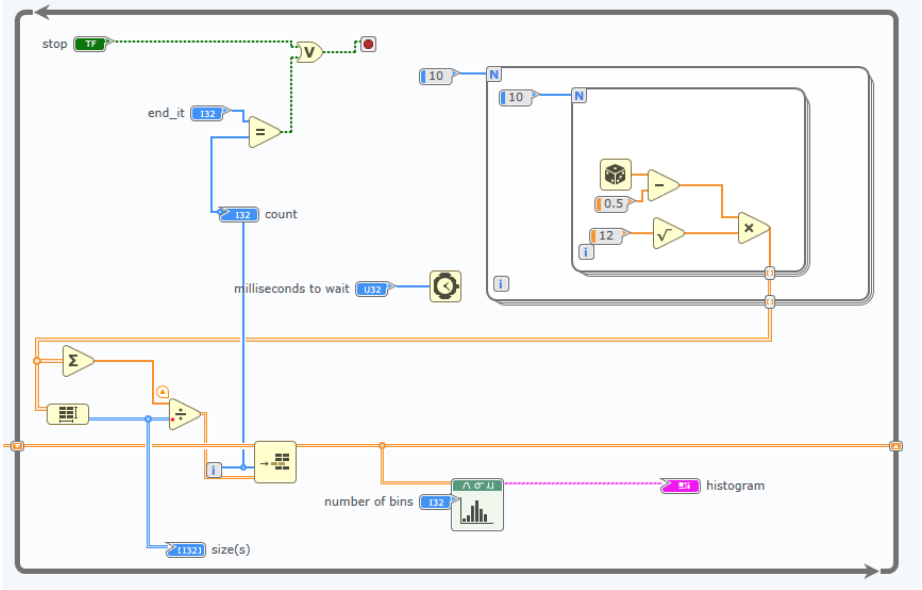
Task: to standardize the normal distribution produced by the Central Limit Theorem

- Subtracted the mean from the random variable, and then dividing by the standard deviation.

$$z = \frac{x - \mu}{\sigma}$$

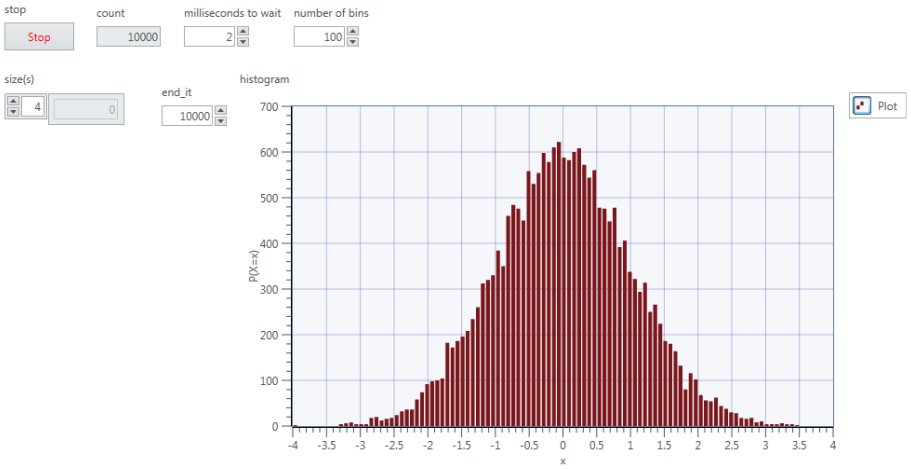
$\mu =$ Mean
$\sigma =$ Standard Deviation

Diagram 2



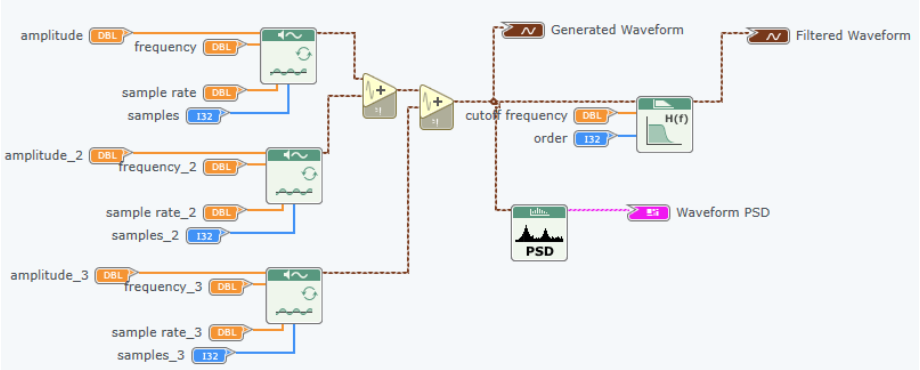
New output was as follows:

Histogram 2

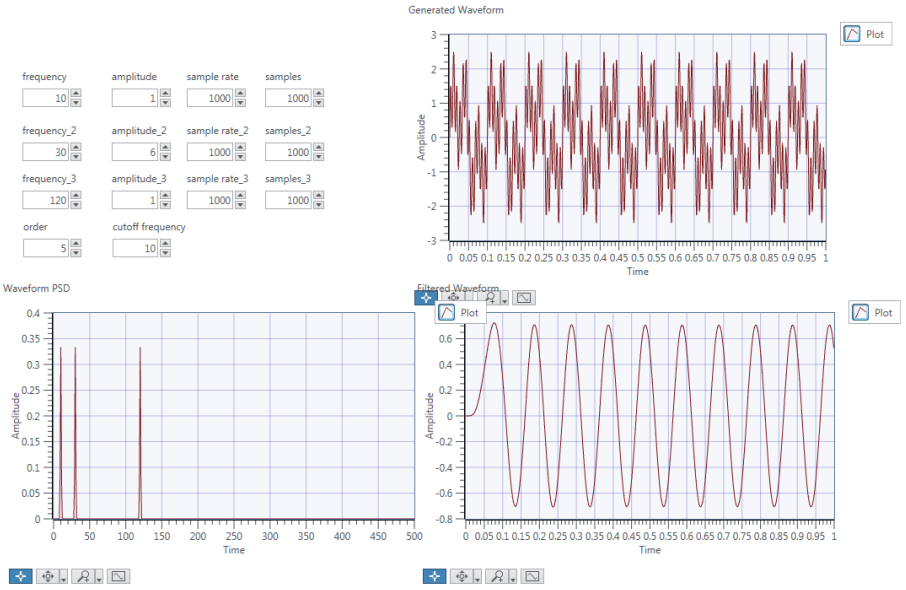


Exercise 3

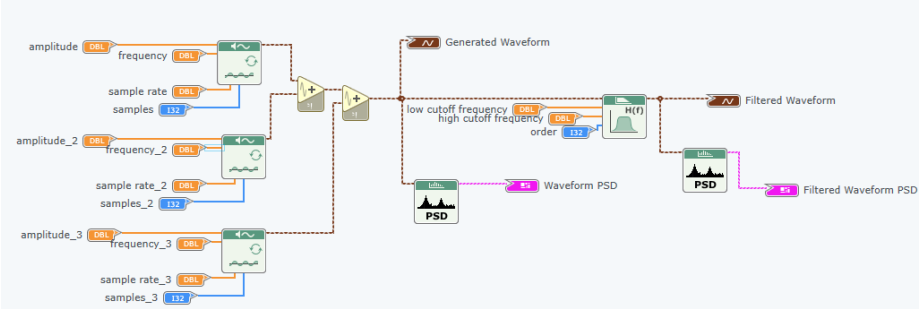
Block Diagram - Just lowpass filter



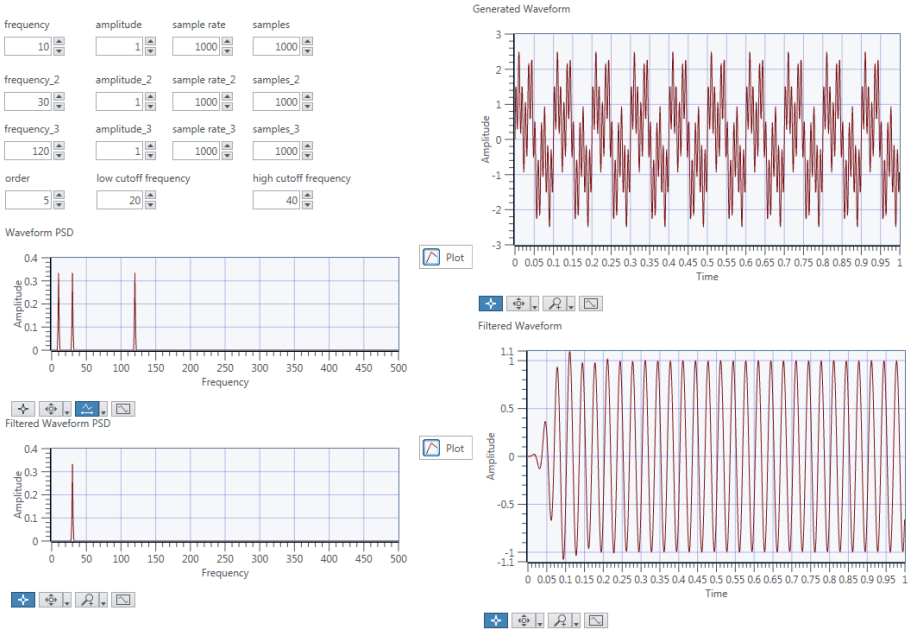
Front Panel - Just lowpass filter output



Block Diagram - Bandpass filter



Front Panel - Bandpass filter output


frequency
10
amplitude
1
sample rate
1000
samples
1000
frequency_2
30
amplitude_2
1
sample rate_2
1000
samples_2
1000
frequency_3
120
amplitude_3
1
sample rate_3
1000
samples_3
1000
order
5
low cutoff frequency
20
high cutoff frequency
40
Waveform PSD
Amplitude
Frequency
Filtered Waveform PSD
Amplitude
Frequency
Plot
Generated Waveform
Amplitude
Time
Plot
Filtered Waveform
Amplitude
Time