

Engin 103
December 8, 2011

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Topics:

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Project 3 Part II Presentations

Section 1 (9:30 AM)

Team #	1) Insert a snapshot of your modified Front Panel, resize to 2in. tall	2) Insert a snapshot of the modified Block Diagram here, resize to 2in. tall	Explain how did your team implement the modifications for Part II of the project
1 section 1			
2 section 1			
3 section 1			
4 section 1			
5 section 1			
6 section 1			
7 section 1			
8 section 1			
9 section 1			
10 section 1			

Section 2 (2:00 PM)

Team #	1) Insert a snapshot of your modified Front Panel, resize to 2in. tall	2) Insert a snapshot of the modified Block Diagram here, resize to 2in. tall	Explain how did your team implement the modifications for Part II of the project
1 section 2			
2 section 2			
3 section 2			
4 section 2			
5 section 2			
6 section 2			
7 section 2			
8 section 2			
9 section 2			
10 section 2			

Total part I P&D (90)										
Project 3 -part I P&D/ Teams										
Total part II P&D (90)										
Project 3 -part II P&D/ Teams										

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Project 3

Project	Description		Part II Assigned Modifications
A	Predict the max. temp. for the next day using previous thirty days' temperatures, using polynomial and other models		In the polynomial option have it produce polynomials from order 1 up to the chosen order, the output which order gave the lowest s parameter. Also have it produce the prediction using that order.
B	Predict the oil price for next week using previous thirty weeks' prices, using polynomial and other models		Add a third option to do data modeling beyond polynomials and exponentials; also output coefficients and residue or standard deviation for all models
C	Detect the frequency spectrum of a given signal (in wav format) using Fourier Transforms, output the number of frequency components of the signal		Option 1: Apply a low-pass filter on the spectrum (allowing the user to control the cut-off frequency), then do an inverse FFT and sound out the filtered signal Option 2: Have it combine a chosen number (Numeric Control) of sinusoids given a starting frequency and a frequency increment (both Numeric Controls). Check to see if it outputs the correct number of frequencies.
D	Say the decimal number for any four-digit binary number		Allow two binary number inputs, have it say in decimal each number and their sum
E	Make a 16 keys piano		Add a button so it plays all 16 sounds up and down one after the other: 1 to 16 to 1. Also allow the option of going up one or more octaves.
F	Solve the quadratic equation with distinction of the three cases for the discriminant. Provide solutions including: double roots, different roots, and complex conjugate roots.		Add a graph of the quadratic polynomial
G	A VI that inputs sound via a microphone, when the sound amplitude is above certain limit it will display the waveform, replay the sound, save it into a file, and present results of a tone measurement including amplitude,		Acquire a second sound wave, then insert a button to make it play both the direct and reverse waves at the same time and show the sum signal in a graph.

		frequency and phase of the signal		
H		A VI that will produce and display an html file containing the front panel (with a description of problem solved, inputs and outputs), block diagram, and notes. The html file will be saved as p2p2a.html		Allow the option of adding a second VI with its Front Panel and Block Diagram plus text into the same report. Also allow the option to insert a picture into the html file.
I		A VI that produces two or more chirp sounds, that is, a sound whose frequency is changing with time		Produce two chirps and with one Graph display their spectra in one case of a Case Structure, in the other case show the spectrum of the sum of the two chirps. Only one graph should be added.
J		Make a “sound recording utility” that can record voice from a microphone, display it and its FFT, then save it into a file. When a ‘playback button’ is pressed it will play the recorded sound.		The VI should acquire two voice samples (with graphs of each signal and its spectrum), then the playback button will play both at the same time and show the FFT Spectrum of the sum.

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LOGBOOK: [example of a logbook page](#)

- Use a quadrille notebook; number all pages; date all entries
- Write your notes for all activities, thoughts, problems and solutions, and learning conclusions related to Engin 103. You should write down progress, outcomes, and conclusions on projects and teamwork; conclusions from class work (including LabVIEW) and homework.
- In addition you should answer in the logbook all questions listed in these notes in blue, as shown below:

53) Describe two other projects (presented by other teams), include information about their Front Panel and Block Diagram (what elements did they use and why)

54) Describe the modifications required for your team Virtual Instrument. Explain how this was done: what LabVIEW elements have been added in the Front Panel and Block Diagram, name those elements as they are called in LabVIEW, include a diagram of their inputs and output connections, and explain how were these elements connected to the rest of the Block Diagram.

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