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Project 2 Progress Report: due April 1, 2008

Project 2 leaders: please copy this document and fill in your team response below. Then save as a web page: name "p2pr.html" and upload to your *files* folder. This Progress Report **is required** as part of Project 2 on LabVIEW Virtual Instruments.

Team #	Part I: VI#1 1) Describe the problem you will solve in a few words 2) What equation you will implement in this VI? 3) Describe the inputs and outputs, with units 4) List the LabVIEW elements you will use	Part II: VI#2 1) Describe the problem you will solve in a few words 2) What equation you will implement in this VI? 3) Describe the inputs and outputs, with units 4) List the LabVIEW elements you will use 5) Describe what operations will be grouped into a subVI and how many times the subVI will be called into the main Block Diagram	Assign a grade on communication in your team in this project: 4 –members always communicate how they are doing on their part 3 – members sometimes communicate how they are doing on their part 2- some member does not reply emails or phone calls 1 – members show no interest in participating
1	1) The VI we design will be able to determine the maximum height reached by a projectile hurled directly upward. 2) $Vy^2=Voy^2-2g\Delta y$, 3) The input will be the initial velocity in meters per second and the release angle in degrees. The output will be the maximum height reached in meters. 4) The numeric control and the numeric indicator will be needed.	1) The VI we design will be able to determine the maximum height reached and horizontal distance traveled by a projectile released at a given velocity and angle. 2) $Vox=Vo[\cos(\theta o)]$, $Voy=Vo[\sin(\theta o)]$, $Vy^2=Voy^2-2g\Delta y$, $Vy=Voy-gt$, and $\Delta x=Vox(t)$ 3) The inputs will be the initial velocity in meters per second and the release angle in degrees. The outputs will be the maximum height reached in meters and the horizontal distance traveled in meters. 4) The numeric control, numeric indicator, and string control will all be needed. 5) The equations for Vox and Voy will be used for subVIs.	3
2	1) We decided that we would use GDP	1) Free Fall	4

	formula. 2) GDP=C+I+GS+X-M 3) The input is the consumption plus investment plus Government spending plus Export minus Import, Which all equals to the gross domestic product in number of dollars. 4) We used indicator and Numeric indicator and we used four plus signs and a negative, to compute the data.	2) Y=V0gt-1/2gt2 3) The inputs and Outputs are the height, speed, gravity, acceleration, distance, weight, Time 4) Same as part one plus sub VI's 5) We are not there yet.	
3			
4	1) We planned to design a model that could measure the radius-speed of wheels on an automobile which has traveled on a straight line, starting at 0m/sec, an accelerate 2) Our first VI will be based on following formulas: $F = ma$; $a = F/m$; $S = (1/2)at^2$ $t = (2S/a)^{1/2}$ $V_t = at$ Radius-speed = $V_t/2$ 3) Mass; horse power; radius of the wheel; distance has traveled 4) Numeric control; Connect Wire; Operate Value; Numeric indicator; function numeric	1) Second VI could solve a problem like, two same auto automobile with different masses, how it would affect their radiu-speed when they have traveled after the same distance in acceleration. 2) Our first VI will be based on following formulas: $F = ma$; $a = F/m$; $S = (1/2)at^2$ $t = (2S/a)^{1/2}$ $V_t = at$ Radius-speed = $V_t/2$ 3) Mass of two cars (m1 and m2); horse power(same); radius of the wheel(same); distance have traveled()same 4) Numeric control; Connect Wire; Operate Value; Numeric indicator; function numeric 5) The sub VI will be our first VI. It will be called twice in the operation.	4
5	1)Total current of the circuit a. 2)I=V/R1+R2+(R3*R4/R3+R4) 3)10 VDC-input output-total current in amps 4)indicators, controls ,numeric functions	1)Total current and the voltage drop of each resistor in the circuit. 2)I=V/(R1=R2)+(R3*R4/R3+R4)+(R5+R6) 3)10 VDC-input output-Voltage drop across resistors 4)indicators, controls, numeric functions	4
6	1) We are going to design an AC series parallel circuit involving a transformer.	1) We are going to add power into are existing circuit. 2) Ohms law parallel resistance to be placed into series portion of circuit.	4

	2) We are going to use Ohms law, and the primary to secondary winding ratio equation for the transformer. 3) For the inputs we are going to have a variable source voltage measured in volt's, variable primary and secondary windings on the transformer, and 4 resistors measured in ohms. For the outputs we are going to have multiple voltage and current indicators throughout the circuit measured in volts and amps. 4) We are going to use the LabView numeric inputs, outputs, and mathematic function.	3) The parallel resistance will be the input and the output we be the combined value for the series circuit in ohms. 4) We are going to use the LabView numeric inputs, outputs, and mathematic function. 2) Addition division and multiplication will be grouped into the sub vi and it will be used twice.	
7	Our team is working on Potential Energy. The equation is PE=mgh The input is the height of the object and the output is the potential Energy itself measure in Joules. The Elements we use are the numeric controls, numeric indicators and the multiplication operation.		
8	1. We want to find out how much horsepower a vehicle needs to pull a certain weight or cargo size. 2. Horsepower = weight x (velocity/234)^3 3. the input is the weight or the cargo we are going to use, mostly likely its going to be the max weight the vehicle can pull (Toyota Tundra), the output is how much horsepower it needs in order to pull the weight 4. Box diagrams of the engine and how it operates, use multiplication, division, and unit conversion.	1. the second problem we want to find out is how much heat is being produced during the revving process 2. the equation we would use is somewhat very similar to the basic measuring a temperature of a object 3. the input would be the engine heat, the output would be how much it is producing 4. the elements we would use is the add, multiply, division, 5. the operations will be grouped together when the vehicle is actually revved up to pulling.	
10	1) The problem we'll be solving is for VI#1 is finding the velocity of a person falling in a	1) For VI#2 we will figure out terminal velocity with air resistance. 2) Vy(t) = -gt + Vy0 and Y(t) = -0.5gt^2 + Vy0t + Y0.	

	vacuum. 2) Vy(t) = -gt + Vy0 3) The inputs are gravity times time plus initial velocity. The output is the velocity with respect to time. 4) Numeric controls and indicators, meters and gauges.	3) The inputs are initial velocity, velocity with respect to time, initial altitude, altitude with respect to time, time elapsed, and acceleration due to gravity. 4) Numeric controls and indicators, meters and gauges. 5) Drag force	

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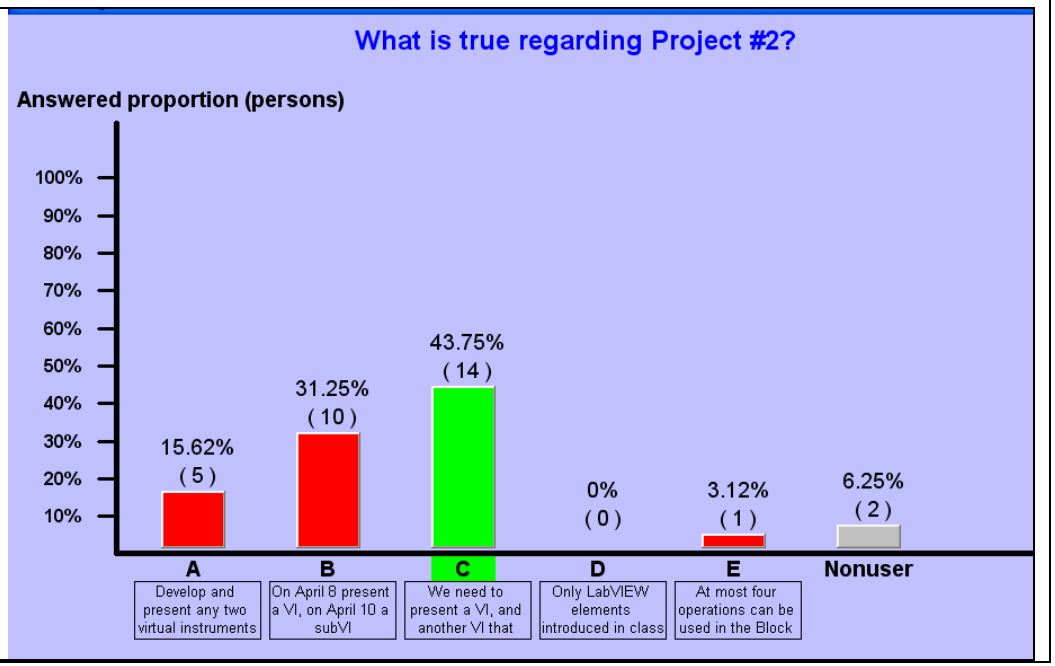
Project 2 and LabVIEW Survey

1. What is true regarding Project #2?:

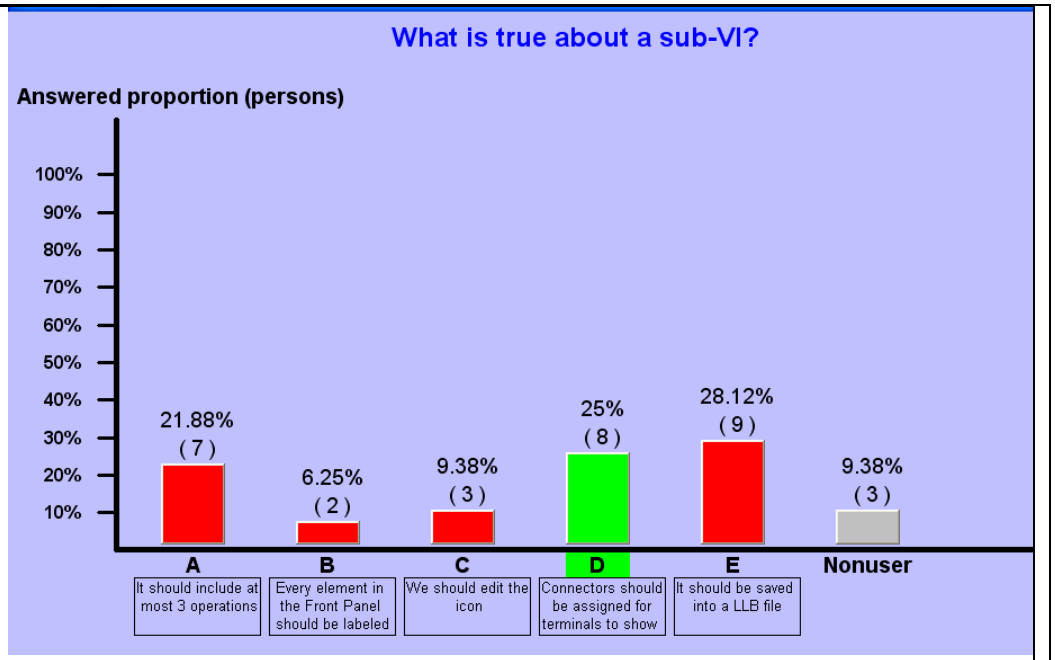
A. Develop and present any two virtual instruments.
B. On April 8 present a VI, on April 10 a subVI
C. We need to present a VI, and another VI that calls in a subVI
D. Only LabVIEW elements introduced in class can be used
E. At most four operations can be used in the Block Diagram

Correct answer is C



2. What is true about a sub-VI?

A	It should include at most 3 operations
B	Every element in the Front Panel should be labeled
C	We should edit the icon
D	Connectors should be assigned for terminals to show when it is called into the Block Diagram
E	It should be saved into a LLB file

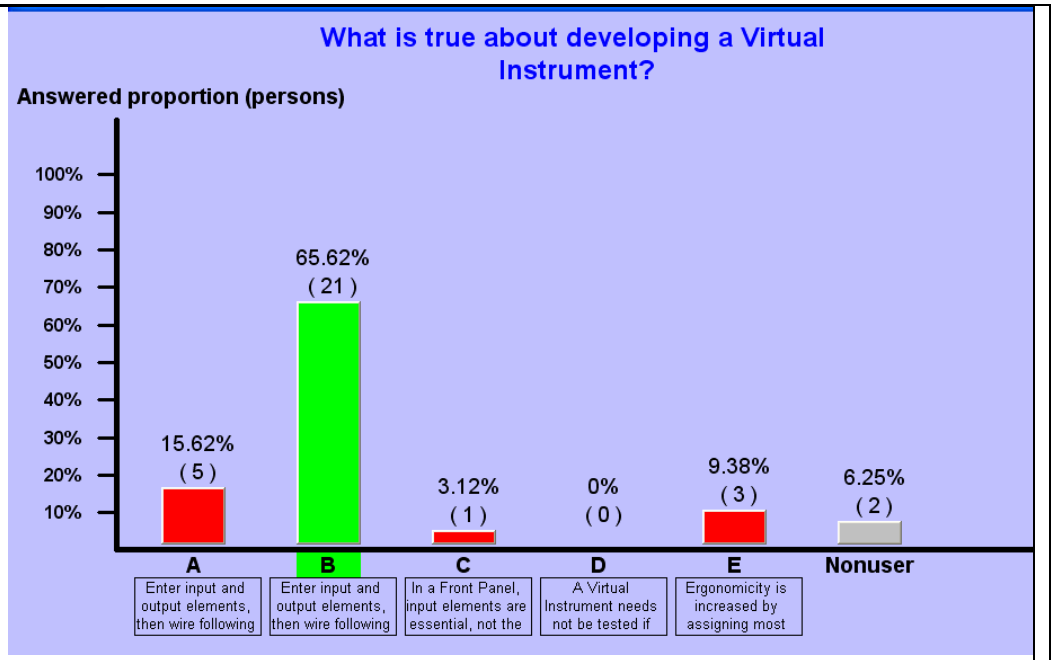


Correct answer is D.
Although we have included up to three operations in our example sub-VI, that was not all you can include, so A is not correct. We have saved VI's and sub VI's into a LLB file, this was only for the convenience of submitting everything in a same folder, so E is not correct.

3. What is true about developing a Virtual Instrument?

A	Enter input & output elements, then wire following an example
B	Enter input & output elements, then wire following the equation
C	**In a Front Panel, input elements are essential, not the output elements**
D	**A Virtual Instrument needs not be tested if there are no broken wires**
E	Ergonomics is increased by assigning most values within the Block Diagram via numeric or string constants

Correct answer is B.
When you are wiring your own Virtual Instrument, there is no example to follow, so A is not correct. By assigning values as numeric or string constants in the Block Diagram, we would make the VI Front Panel less flexible to the user, consequently decreasing its ergonomics, so E is not correct.



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Estimation

HW 3
Mass of air through your lung each day:

-Start with some fact: air density (in SI units: kg/m^3)
-Estimate volume of thorax cavity (how? - approximate by a rectangular chamber whose volume is length*width*depth)
-Estimate how many times you breathe in per minute, then per a day

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Number of books checked out at Healey Library a week:

-Fact: number of students, zooming in on which students would check out books from the library
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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:

33) Specify the inputs and outputs, with clear details, for your team Virtual Instrument to be presented as Part I of Project 2. List what LabVIEW elements will be used in the Block Diagram, use correct terminology.

34) Specify the inputs and outputs, with clear details, for your team Virtual Instrument to be presented as Part II of Project 2. List what LabVIEW elements will be used in the Block Diagram, how many times a subVI will be called in, and what elements will be included in the sub-VI, use correct terminology.

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