Engin 103 April 2, 2009 back to e-syllabus	Topics: Project 2 Progress Reports Project 2 and LabVIEW Survey Estimation Logbook questions

Project 2 Progress Report:

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** as part of Project 2 on LabVIEW Virtual Instruments.

Team #	Part I: VI#1 due April 2, 2009 1) Describe the problem you will solve in a few words 2) What equation(s) you will implement in this VI? 3) Describe the inputs and outputs, with corresponding units 4) List the LabVIEW elements and how many of each you will use	Part II: VI#2 Due April 3, 2009 1) Describe the problem you will solve in a few words 2) What equation(s) you will implement in this VI? 3) Describe the inputs and outputs, with corresponding units 4) List the LabVIEW elements and how many of each 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			
2	We will calculate the velocity of two cars when the are involved in a head on collision. We will also calculate the direction of the vehicles after the collision.	2) What equation(s) you will implement in this VI? $m_1v_1 + m_2v_2 = (m_1 + m_2)v_f$ 3) Describe the inputs and outputs, with	

			corresponding units Inputs 1) mass car 1 2) velocity car 1 3) mass car 2 4) velocity car 2 4 numeric controls, 1 numeric indicators,2 leds, .		
	3	1) We will figure out the amount of money a person will have to pay for their monthly or bi-monthly payment on their mortgage. 2) **C=(r/(1-r(1+r)^-N)P** 3) The inputs will be the down payment, the capital, the interest rate, and the amount of time. The outputs will be the monthly payments and the bi-monthly payments. 4) We will use 4 numeric controls and 2 numeric indicator.	1) The problem we are going to solve is the growth and decline of the U.S. population. 2) Population={[(increase rate – death rate) + (immigration rate – emigration)] x population}^amount of years Double population = ln2/growth rate 3) Inputs are population, death rate, birth rate, immigration rate, emigration rate, natural disasters. The outputs population after X years, loss in growth, population after natural disaster, percent lost due to natural disaster 4) 6 numeric controls and 5 numeric indicators 5) The sub VI's were used to change the birth and death rates into percentages, and they were used twice in the main block diagram.	4	
	4	We are going to be trying to find the net fluid movement and the filtration coefficient using the starlings equation.	We are going to be trying to find the net fluid movement and the filtration coefficient using the starlings equation.	4	

		$J_v = K_f\ [(P_c - P_i) - ($ $K_f = J_v\ /\ [(P_c - P_i) - ($ Inputs: Capillary hydrostatic pressure, Interstitial hydrostatic pressure, Reflection coefficient*Capillary oncotic pressure, Reflection coefficient*Interstitial oncotic pressure. Outputs: Net fluid movement, Filtration coefficient. All in mm Hg. We used numeric controls and indicators, negative, multiplication and division signs.	$J_v = K_f\ [(P_c - P_i) - ($ $K_f = J_v\ /\ [(P_c - P_i) - ($ Inputs: Capillary hydrostatic pressure, Interstitial hydrostatic pressure, Reflection coefficient*Capillary oncotic pressure, Reflection coefficient*Interstitial oncotic pressure. Outputs: Net fluid movement, Filtration coefficient. All in mm Hg. We used numeric controls and indicators, negative, multiplication and division signs. The minus operation will used in the subVI twice.		
	5	1) we will try to find current across each resistor of the circuit for given value of resister and voltage. 2)I=V/(R3+R4)+(R1.R2/(R1+R2) I1=I-(V1/R1), I2=I-(V2/R2), and I=I3=I4=I1+I2 3) Inputs are resistors with resistance (R1,R2,R3,R4), measured in ohms and outputs are current(I1,I2,I3,I4) corresponding to each of these resistors, measured in ampere. 4) Labview elements we are using is +,-,* and divide.	1 Finding current by using labview software and wiring elements. 2.I3=V/(R3+R4+(R1R2/(R1+R2))) I1=(V-I3(R3+R4))/R1 I2=(V-I3(R3+R4))/R2 3) Inputs are resistors with resistance (R1,R2,R3,R4,R5), measured in ohms and outputs are current(I1,I2,I3,I4,I5) corresponding to each of these resistors, measured in ampere. 4.) Labview elements we are using is +,-,* and divide. 5)We grouped +,/ and * in a sub VI, so that all these sign could be replaced by one sub VI in a group.	4	
	6	1. We solved for the current. Through a set of resisters and parallel. 2. We used Ohms law to find intensity. I=V/R	1. We solved for the current through a series of three parallel resistors 2. We will use Rparellel= 1/r1+1/r2	4	

	3. Resistance R(ohms) in parallel. Input I(amps)5 output 5, V(volt)=10 4. Division 4, resistance 4, addition 4.	3. The inputs are 1/r1, +, 1/r2, and the output is Rparallel. 4. 1/x(6), +(5), ‘/,(1) 5. The operation sub VI grouped is the resistance through the resistors in parallel and we used it three times.	
7	1) We will construct a formula to determine the voltage and resistor values on a hypothetical battery. A number of the values will be fixed and supplied, and the formula will determine the others. 2) I = V1/R4 V1 = R6 * (V2 * {R5 + V3/R5 * V3}) R4 = (R6 + V1 / R6 * V1) * (V3 + R5) 3) V1=6, V2=4, V3=2, R4=8, R5=4, R6=2, I=0.75 4) We will use 4 numerical constants and 3 numerical indicators. In addition, we will also utilize 3 multiplication operators, 1 each of an addition and division operators, and two sub-Virtual Instruments consisting of the division of a sum over a product.	1) Our model will show expected gains and losses based on an initial investment over a period of years. This model will also include a tax rate deduction at the end of the investment period. 2) I=INVESTMENT R=RATE OF GROWTH G=GAIN T=TAX RATE Ta=TAXED AMOUNT Ifinal = FINAL RETURN I * R1 = G1, G + I = I1 I1 * R2 = G2, G2 + I1 = I2 I2 * R3 = G3, G3 + I2 = I3 I3 * R4 = G4, G4 + I3 = I4 I4 * T = Ta I4 – Ta = Ifinal 3) I=1000, R1=.05, R2=.025, R3=-.05, R4=-.1, T=.05, Ifinal= 874.184. 4) Our model will use 6 numerical constants and 10 numerical indicators. We also have 6 multiplication operators, 5	4

		addition operators, and 1 division operator across 5 sub-Virtual instruments. 5) We have 4 essentially identical sub-Virtual instruments consisting of the 'Iy * Rx = Gx, Gy + Iy = Ix' portion of our model. Also, our final sub-Virtual instrument is of the taxation portion (I4 * T = Ta, I4 – Ta = Ifinal) of our model.		
8	1) Loan Calculator. 2) Six equation(s) will be necessary for the four outputs the VI will display: a)LoA=PA-(PA*DP/100) b)i=IR/100/12 c)n=TR*12 d)M=LoA P [i(1 + i)^{n}] / [(1 + i)^{n} - 1] e)TP=M*n f)TI=(M*n)-LoA 3) Inputs: Purchase Amount, Down Payment, Interest Rate, Term. Outputs: Loan Amount, Monthly Payment, Total Payments, Total Interest. 4) probably 4 numeric control and 4 numeric indicator	1) Calculating the area, height and perimeter of a triangle with the use of X,Y coordinates. 2) Side length=[(Xa-Xb)^2+(Ya-Yb)^2]^(1/2) s= (A+B+C)/2 (A,B,C sides of triangle) Area=[s(s-A)(s-B)(s-C)]^(1/2) Height=2*Area/base 3) Inputs: X and Y points Outputs: Height, Area, Perimeter. 4) 6 Numeric Controls, 5 indicators, 2 sub-VI's (used multiple times) 5) Side Length and Area were calculated using Sub-VI's		
9	1) The problem we solved was finding the power, current, and resistance total 2)Rt=R1+[(R3R4/R4+R3)R2/R2+R3+R4] I=V/Rt	1)The problems we will be solving are Kilowatt hours and cost 2) Along with equations used in part one the KWh is P/t where t(hours) lastly using		

	P= I²R=VR 3)The input are voltage and resistance. The outputs are current and power. 4)There are 7 controls and 4 indicators. The controls are battery voltage, and six resistors. The indicators are the current and 3 voltage drops.	the average cost of electricity we can find cost per hour. 4)There are 6 controls, 3 indicators, and 1 constant. The controls are battery voltage, 4 resistors, and hours. The indicators Rtotal, current , and power per hour. 5) In the sub VI 3 operations will be used to simplify parallel circuits, these operarions will be used twice within the main VI.	
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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. Write the equations that allow the calculation of the outputs from the inputs, explain each variable in your equations.

34) Insert a snapshot of the Front Panel and Block Diagram of your team VI for Part I of Project 2, explain did you need to use those specific elements.

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