**Purdue University NORTHWEST DEPARTMENTS OF ENGINEERING**

**ENGR15100: Software Tools for Engineers**

**Laboratory 2**

**PURPOSE:** Further practice with MATLAB.

For each problem, create a MATLAB script file and name it FIRSTNAME\_LASTNAME\_LAB2\_ problemX.m. Put ALL the commands for the required steps in your script file:

* Be sure to clear the display and the memory.
* Display your name.
* Separate and label different steps using comments.

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%{

Class: ENGR15100: Software Tools for Engineers

Instructor: Xiaoli Yang

Author: [Student’s Name]

Assignment: Lab [No.]

File Name: LASTNAME\_LAB[No.]\_problem[No.].m

Date: [MM]/[DD]/[YY]

%}

%Delete an eventual pre-existing diary

delete xxx.txt

%Turn on a diary called mydiary.txt

diary xxx.txt

%clear screen

clc

%clear workspace

clear

disp('Your Name Here');

disp('');

disp('starting code: ');

%Completing lab x

%your source code here%

%Turn off the diary function

diary off

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**Problem 1**(10 points)

Display both the string “***Hello World.***” and the numeric value stored in variable ***x*** (***x***’s value is 173.0192) by using the built-in function named ***disp***. An expected/sample output after executing this step is shown below:

Hello World.  
------------------------------------------   
The value of scalar variable x is:   
------------------------------------------  
173.0192

**Problem 2**(20 points)

|  |
| --- |
| **5** |

**a=**

|  |  |  |
| --- | --- | --- |
| **1** | **2** | **3** |

**b=**

|  |
| --- |
| **4** |
| **5** |
| **6** |

**c=**

|  |  |  |
| --- | --- | --- |
| **1** | **1** | **1** |
| **2** | **2** | **2** |
| **3** | **3** | **3** |

**e=**

* Find
* Find
* Find
* Find
* Find
* Find

**PROBLEM 3**(10 points)

Using what you have learned thus far:

* Activate a diary of FIRSTNAME\_LASTNAME\_LAB2\_problem3.txt in the script
* Set up the vector from 0.4 (start value) to 5.0 (final value) by 0.01 (step increment)
* Calculate
* Turn off the diary

**problem 4**(20 points)

* Activate a diary of FIRSTNAME\_LASTNAME\_LAB2\_problem4.txt in the script
* A food company manufactures five types of Trail mix packages using different mixtures of peanuts, almonds, walnuts, raisins, and M&Ms. The mixtures have the following compositions:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Mix 1 | Mix 2 | Mix 3 | Mix 4 | Mix 5 |
| Peanuts (oz) | 3 | 1 | 1 | 2 | 1 |
| Almonds (oz) | 1 | 2 | 1 | 3 | 1 |
| Walnuts (oz) | 1 | 1 | 0 | 3 | 3 |
| Raisins (oz) | 2 | 0 | 3 | 1 | 2 |
| M&Ms (oz) | 1 | 2 | 3 | 0 | 2 |

* How many packages of each mix can be manufactured if of peanuts, of almonds, of walnuts, of raisins, and of M&Ms are available? Write a system of linear equations and solve in MATLAB.
* Turn off the diary.

**problem 5**(20 points)

* Activate a diary of FIRSTNAME\_LASTNAME\_LAB2\_problem5.txt in the script
* Enter and solve the following system of linear algebraic equations:

5x – 4y +6z = 37

11x +3y +3z = -5

5x + 6y +z = -3

* Solve it by hand first and then solve it using MATLAB. Display using the command FPRINTF the values for x, y, and z. Make sure the values are clearly labeled.
* Turn off the diary.

**problem 6**(20 points)

* Activate a diary of FIRSTNAME\_LASTNAME\_LAB2\_problem6.txt in the script
* Using the INPUT command three times, ask the user to insert the values of ***A***, ***D*** (enter values for both 0.75 < (A,D) < 3), and ***phi***(φ, an angle measured in radians, between 0 and 2π).
* Set up the vector ***t*** from 0 (start value) to 3.0 (final value) by 0.03 (step increment)
* Calculate v = . Note the equation on the left is not in MATLAB format. Display the value of v using the command FPRINTF.
* Turn off the diary

**SUBMITTING YOUR LAB:**

Submit your lab by uploading .m files using the Blackboard Assignment feature no later than the date specified.