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Mini-Project 1

CS 101
Fall 2015
70 points

N J I T

New Jersey's Science & Technology University

Mini Project 1: MATLAB Introduction (2 pages)

Rule 1. Read Handout 2; you submit an M-file `p1_WXYZ.m`, where `WXYZ` are the last 4 digits of your NJIT ID. Observe capitalization. Use an underscore _ instead of a dash -; **SUPPRESS output for all of your MATLAB commands.** If you submit a .mat file you get automatically a 0; if you submit a file with a different file-name than the one instructed, you also receive a 0.

Rule 2. Send an email (with subject line as specified and in accordance to Handout 2) to
(a) the instructor `alexg+cs101@njit.edu`,
(b) the grader whose email address will be posted on the course Web-page, and
(c) to yourself to make sure that everything went fine with the transmission of your mail.

Rule 3. It is imperative that you fully conform to Rules 1 and 2. Testing will be done by running a MATLAB program; If you deviate from these rules the program will give you 0 points or additinal points will get deducted. Observe variable names and capitalization or you may not get any points at all.
      Due Date: Before **noon time of Fri Oct 02, 2015**. (Penalties in Handout 1.)

1   Part A: Warm-up (21 points)

You will create a text-based M-file named (Rule 1) `p1_WXYZ.m` where `WXYZ` are as specified in Rule 1. **Always use semicolons to suppress output; 10 points will be deducted separately for every missing semicolon.**
1. First line. The first line of the M-file will contain in the form of a MATLAB comment the name of the file in question i.e. `p1_WXYZ.m` with the first character, the p, separated with two (2) spaces from the MATLAB comment symbol.
2. Second line. The second line would contain in the form of a MATLAB comment line your first or other given names in lower case (all characters), followed by your last name fully capitalized (all characters). Then include the last four digits of your id, eg `WXYZ`. Exactly two (2) space characters inbetween any two of the words or the comment indicator of MATLAB or WXYZ.
3. Third-Seventh lines. The third line will be empty. (Note the difference between an empty line like this and an empty comment line.) For 3.1-3.4 use 4 lines (fourth through seventh).
The remaining lines of the MATLAB file are described in the following questions 3.1-3.4 and 4-12. Pay attention to the details. Variables have names starting with a v followed by a number. Do not change names or capitalization. Grading will be done automatically for most problems.

   3.1 Variable v1. Set the value of variable `v1` to be a string consisting of your last name in capital (upper) case followed by a single space, followed by your first name in lower case. (If you have more than one given/first-names use a dash to connect all those given names together.)
   3.2 Variable v2. Set the value of variable `v2` to the last four digits of your NJIT id in the form of a string.
   3.3 Variable v3. Set the value of variable `v3` to the last four digits of your NJIT id in the form of a 16-bit unsigned integer.
   3.4 Variable v4. Set the value of variable `v4` to the last four digits of your NJIT id in the form of a 32-bit signed integer.

2   Part B: Playing with numbers and vectors (49 points)

There are no variables `v5` through `v13`. The next variable to be created will be `v14` and the last `v26`.

4. Create a MATLAB variable `v14` that is assigned the value `14.141`.

5. Create a MATLAB variable `v15` that is assigned the value `15.1515` and be of datatype single.

6. Create a MATLAB variable `v16` that is assigned the value $\log\left(16/(e^6\pi^{16})\right)$, where π is the ratio of the circumference to the diameter of a circle, and e is Euler's number.

7. Create MATLAB variable `v17` that is assigned the value 17.17×10^7.

8. Create MATLAB variable `v18` that is assigned the value $18^\pi/(18 * e^{18})$. (See 6 above for definitions of π, e.)

9. Create MATLAB variable `v19` such that it becomes a string of length 19 whose value is shown below. The string starts with the I and has one space between two consecutive words.

$$v19 = \text{I like MATLAB a lot}$$

10. Create MATLAB variable `v20` such that it becomes a string of 5 characters containing NJIT President's last name. The first character should be in capital and the remaining ones in lower case.

11. Use a MATLAB function/expression that retrieves from variable `v20` the number of its characters and stores the result into a newly created variable `v21`.

12. Create MATLAB variable `v22` that is assigned the value 1000000. You are not allowed to type any zeroes at all to generate the 1000000.

Grading. Most (but not all) of the grading would be performed by a program `p1_chck.m` which is an M-file. To use it (when you have access to it), read the directions at the top of it. Our M-file does most but not all of the grading: it won't check lines 1-5. The grader will do it! But your actual grade would be within 10 points or so of the reported grade.