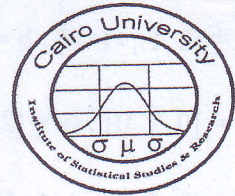




Cairo University

Cairo University
Institute Of Statistical Studies And Researches
Department: Computer Sciences
Academic Year: 2015-2016 Semester: Second
Date: 31/5/2016 Level: Diploma



Course Title: MATLAB Programming	Course code: CS522	Time: 3 Hours	Exam marks: 80	# Exam. Sheets: 2 (4 Pages)
Exam. Instructions : ANSWER THE ALL FOUR QUESTIONS				

Question One: (20 Marks)

What are the outputs of the following expressions:

1. $4 + 5 * 3$
2. $2 * 10^4$
3. -5^2
4. $10 - 6 / 2$
5. $5 * 4 / 2 * 3$
6. $4 - -4 + 4^2 * 4 / 2$
7. $'c' \sim 'd' - 1 \parallel 2 > 4$
8. $10 == 5 + 5$
9. $\text{ceil}(10 + 25 / 3)$
10. $\text{round}(10 + 25 / 3) == \text{floor}(10 + 25 / 3)$
11. Inf / Inf
12. $\sim \sim (34 / 17) == (34 / 17)$
13. $\text{zeros}(3)$
14. $1:5'$
15. $\text{eye}(2)$
16. $\text{nnz}(\text{ones}(3,5))$
17. $y = 2 : 2 : 8; y \setminus 48$

18. $a = [2 \ 1; -1 \ 4]; b = [-1 \ 3; 0 \ 2]; a * b$

19. $v = [0 \ 9 \ 0]; w = [2, 1, 5]; v.*w$

20. $d = [1 \ 2 \ 3; 4 \ 5 \ 6], d.^2$

Question Two: (30 Marks)

Execute the following instructions in order on the following matrix M and write their outputs:

$$M = \begin{bmatrix} 8 & 1 & 6 \\ 3 & 5 & 7 \\ 4 & 9 & 2 \end{bmatrix}$$

1. `min(M)`
2. `max(M)`
3. `min(M,[],1)`
4. `size(M)`
5. `mean(M,2)`
6. `prod(M)`
7. `M'`
8. `M.^2`
9. `2 \ M`
10. `flipr(M)`
11. `flipud(M)`
12. `diag(M)`
13. `M >= 5`
14. `M(3,:)`
15. `M(:,2)`
16. `M(2:3,2:3)`
17. `M(3,1)`
18. `M([1 3 5 7])`

19. `M(end)`
20. `sum(M)`
21. `sum(M,2)`
22. `sum(diag(M))`
23. What is the type of matrix M? Create it in MATLAB using a built-in function?
24. `M(2,4) = 9`
25. `length(M)`
26. `find(M == 9)`
27. `nnz(M)`
28. `M(:,end) = []`
29. `M([1 end],:)`
30. `sum(sum(~M))`

Question Three: (12 Marks)

Write one instruction line for executing each of the following:

1. Create a 3*2 matrix M of uniformly distributed random numbers in an open interval (0,10).
2. Create a cell array C of size 2*3.
3. Create a structure S that contains a student name and score.
4. Get the rows and columns indices of the elements that are between 6 and 12 in a matrix M.
5. Get the inverse of a square matrix M.
6. Export a numeric matrix M to the third sheet in an excel file named "myexcel.xlsx".
7. Export a numeric matrix M to a comma-separated file named "mytext.txt".
8. Import numeric values from a space-delimited ASCII file named "mydata.dat" into a matrix M.
9. Delete all the variables created in the current session.
10. Create a 3D array N containing two 2D matrices A and B.
11. Display the content of the cell at row 3 and column 2 in a cell array C.
12. Get the number of Inf values that could be found in a matrix M.

18. $a = [2 \ 1; -1 \ 4]; b = [-1 \ 3; 0 \ 2]; a * b$

19. $v = [0 \ 9 \ 0]; w = [2, 1, 5]; v.*w$

20. $d = [1 \ 2 \ 3; 4 \ 5 \ 6], d.^2$

Question Two: (30 Marks)

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6. `prod(M)`
7. `M'`
8. `M.^2`
9. `2.\M`
10. `flipr(M)`
11. `flipud(M)`
12. `diag(M)`
13. `M >= 5`
14. `M(3,:)`
15. `M(:,2)`
16. `M(2:3,2:3)`
17. `M(3,1)`
18. `M([1 3 5 7])`