



Exercise's

By
Dr. R. R. Manza



Chapter 1(Introduction)

1. What are the advantages and disadvantages of Basic features of MATLAB over the high level programming languages?
2. What do you mean by In-built function and User-defined functions? What are the different in-built functions provided in MATLAB to make its interaction more user friendly?

Cont..

3. Give details about Application Development Interfaces (API) facility of MATLAB. Also explain how API is useful to develop dedicated software's
4. What are the basic categories of MATLAB system? Explain any four in detail.
5. What are the typical uses and applications of MATLAB?

Chapter 2(Starting with MATLAB)

1. Create a one-dimensional array named as A of size 10. Initialize elements in array A by colon (:) operator.
2. What is the possible syntax to access middle five elements of Vector A which contains 10 elements?
3. Create two-dimensional array B of size 5 X 5, having all elements 1 and array B of size 4 X 4 having all elements equal to 0's.

Cont..

4. Access elements of 4 x 4 two dimensional array using colon (:) operator as follows:

- a) First two rows
- b) Last two rows
- c) Middle two rows
- d) Middle 2 x 2 matrix.
- e) First and third column
- f) Second and fourth column

Cont..

5. Perform assignment statements with appropriate data values using variable names and show their contents related to following data values:

- a) numeric value
- b) string value
- c) fractional number
- d) character

Chapter 3 (Data Types)

1. Write a program in MATLAB to initialize two arrays by 10 numbers and perform addition on them; show resultant value in third array.
2. Write a program to input two numbers from user and find out the largest and smallest number.
3. Write a program using switch case statement to find out whether a given character is oval or not and also find the number of ovals given by the user.

Cont..

4. Write a program to read and display contents of a two dimensional matrix named as M of size 3 x 4 used for loop.
5. Write a program to read the number of elements in one dimensional array form with the user using while loop. Terminate the loop when the user gives input as -1.

Chapter 4 (Mfile Programming)

1. Assuming there are 7.481 gallons in a cubic feet, write a program that asks the user to enter a number of gallons and then displays the equivalents in cubic feet.
2. The British pound was equivalent to \$1.487 U.S. The French franc was \$0.172, the German deutschemarks was \$0.584, and the Japanese yen was \$0.00955. Write a program that allows the user to enter an amount in dollars, and then displays this value converted to these four other monetary units.

Cont..

3. Write a program with appropriate comments for statements to determine the salvage value of an item when the purchase price, years of service, and the annual depreciation are given. $\text{Depreciation} = ((\text{purchase price} - \text{salvage value}) / \text{year of service})$.

Cont..

4. Write a program that consists of a function named as `cirarea()` that finds the area of a circle. Write a m-file that gets a radius value from the user, calls `cirarea()` function without passing or retuning any argument and then display the result.
5. Write a program that contains a function `power()`, which takes a value of number as a input argument and returns the power 2 of the given number.

Chapter 5 (Advanced capabilities of MATLAB)

1. Write a program using structure to read record of employee. Employee record consists of empno, empname, designation and salary. Give emprec as name of structure and names of record attributes as field name of structure using assignment statement.
2. Write a program to modify above question no. 1 to maintain record of five employees.

Cont..

3. Write a program to create a cell array that consists of 3 x 4 and 4 x 5 two 2-D matrices and 'MATLAB also support for object orientated' as third element. Display contents of this cell array using assignment statement.
4. Write a program to modify question no. 3 to create cell array using *cell* function.

Cont..

5. Write a program to create a cell array named, as result consists of role no. of 10 students in first cell and name of these in second cell. Extend code of this program to add third cell in this cell array to feed the result of the student. Further write a code to access subset (includes only role no. and result) of this cell array using cell indexing.

Chapter 6 (Mathematics)

1. Generate 4 X 5 random matrix and determine its inverse, determinant and also find out their matrix norms.
2. Generate 3 X 3 and 4 X 4 magic and eye matrix and determine the Kronecker Tensor product of these two matrixes.
3. Write a program to determine the inverse determinant of the matrix $A = \begin{bmatrix} 3 & -0.1 & -0.2 \\ 0.1 & 7 & -0.3 \\ 0.3 & -0.2 & 10 \end{bmatrix}$.

Cont..

4. Write a program to determine the inverse determinant of the matrix $A = \begin{bmatrix} 3 & -0.1 & -0.2 \\ 0.1 & 7 & -0.3 \\ 0.3 & -0.2 & 10 \end{bmatrix}$.
5. Write a program to solve the equation
$$f(x) = 0.2 + 25x - 200x^2 + 675x^3 - 900x^4 + 400x^5$$
Using numerical integration method.

Chapter 7 (Graphics)

1. Plot a sine wave having plot properties like line, marker, style, annotation, legend, label and color. Sine wave $=2*\pi*\sin(x)$.
2. Use graph of above example and edit text label, annotation, color and legend properties of graph using edit mode.

Cont..

3. Create a graph to show the selling percentage of MATLAB book within last week and also plot its mean, median and max through statistical property editor.
Days=[Mon Thru Wed Thu Fri Sat Sun] and
percentage=[80 50 64 77 82 68 91].

Cont..

4. Create a contour graph to show directions by using directional velocity graph.
5. Assume appropriate data values to show how interactive plotting allows plotting freehanded graphs.

Chapter 8 (Graphical User Interface)

1. Build GUI for calling an image file using push button and show it in the separate axes component.
2. Create a GUI layout of a numeric scientific calculator of 10 digits manipulation facility at a time.
3. Build a Suitable GUI layout to read n different numbers from user and display its original list, reverse order list and sorted order list.

Cont..

4. Create a suitable GUI for city survey office to take a survey of metropolitan cities. It consists of name of the city, geographical area; built up area, free space, population, rate of population and rate of development. Also show the graphical representation of this data on the same GUI.

Cont..

5. Create a GUI of Govt. of Maharashtra to maintain the information of its educational development. It consists of types of education, total enrollment, total pass-out, total number of employment and total number of unemployment. Show this information in graphical representation on the same GUI.

Chapter 9 (Application Program Interface)

1. Write a program to import the text file created in MS-word which consists of three pages addressed to president of India. It may contain ASCII, Numeric and binary data.
2. Show the import facility of MATLAB through Import and Export wizard to read the same file, which is mentioned in question no. 1.
3. Write a code to read the Microsoft Excel file, which is started in your working directory using *xlsread* function.

Cont..

4. Write a code to Read Microsoft wave(.wav) sound file, which is started in your working directory using *wavread* function
5. Write a code for read a text file by using *dlmread*, which is created by using tab-delimited.



Thank You