Write a MATLAB program which asks the user to enter three numbers.

- The program should figure out the median value and the average value and print these out. Do not use the predefined MATLAB functions to compute the average and median values.

Also – the program should change the sign of the smaller of them and then add them.

##########

Write a MATLAB program which will ask the user for a number.

- If the number is positive it should print out the message the number is positive. If the number is negative it should print out the square of that number.

Also - If the number is equal to two times a predefined number the program should print out a welcome message. Otherwise it should print out a message saying you are not authorized.

##########

Write a MATLAB program which will ask the user for a name and then for a password. The program should compare this name and this password against a predefined name and password.

If both match it should print out a welcome message.

If the name matches only say your password do not match

If the password matches only say your name do not match

If neither matches it should say I do not know you.

##########

Write a MATLAB program which will ask the user for a single Standard English number (1, 5, 10, 50, 100, 500 or 1000). The program should then print out its Roman numeral equivalent (I, V, X, L, C, D or M).

Standard English	1	5	10	50	100	500	1000
Roman numeral equivalent	I	V	X	L	C	D	M

##########

Write a MATLAB program which will ask the user for two numbers ***K*** and ***L***. Using the ***for*** loop find the sum of the squares of all numbers between **K** and **L**, that is

$$\sum_{j=k}^{l} j^2$$

Repeat the pervious program using the ***while*** loop.

##########

Let's build a compound interest calculator given the initial value X and the annual interest rate R and the maximum numbers of years N use a ***for*** loop to calculate and print out the accumulated amount for each year.

##########

The following sequence is called a Fibonacci sequence 1, 1, 2, 3, 5, 8, 13, 21, 34, 55 after the first two elements each element of the sequence is the sum of the previous two elements. Write a MATLAB program which given the first two elements, will generate and printout the next ***a*** elements of the Fibonacci sequence where ***a*** is a number supplied by the user.

##########

Write a MATLAB program which will prompt the user for a predetermined word if the word is not correct it will ask again, and will keep asking until the user enters the correct word. The program should print out the number of tries used to guess the word.

##########

Write a MATLAB program which will ask the user to setup a new password. The password should be at least six characters long. If the password entered by the user is less than six characters long the program should issue a request to try again.

##########

Given the following matrices

$$A = \begin{bmatrix} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{bmatrix}, \qquad B = \begin{bmatrix} 9 \\ 7 \\ 5 \\ 3 \\ 1 \end{bmatrix}, \qquad C = \begin{bmatrix} 7 & 8 \end{bmatrix}$$

i. Extract the second, third and fourth elements of the B vector and store them in a new vector (say **D)**

ii. Create a new row vector (say **E**) from vector ***B*** and the number 3 such that

$$E = \begin{bmatrix} 3 & 9 & 7 & 5 & 3 & 1 \end{bmatrix}$$

iii. Create a new matrix (say ***F)*** from matrix ***A***, vector ***C*** and the number 9 such that

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

##

Use MATLAB to create a 3×3 identity matrix (A), then Use MATLAB to create a 5×5 matrix (B) whose elements are generated by a uniformly distributed pseudo-random number generator, then use MATLAB to create a new matrix (C) whose elements are the last two columns of the matrix (B) (remove the first three columns of the matrix (B)), then Use MATLAB to create 3×3 diagonal matrix (D) whose diagonal elements are 3, 7, 13.

##

Use the MATLAB ***for*** loop to create the following matrices:

$$H = \begin{bmatrix} 4 & 8 & 12 & 16 \\ 10 & 14 & 18 & 22 \\ 16 & 20 & 24 & 28 \\ 22 & 26 & 30 & 34 \end{bmatrix}$$

##

For the following matrix:

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

i. Extract the third column of the matrix ***R***
ii. Extract the last two elements of the matrix *R*
iii. Convert the ***R*** matrix into a long column vector whose elements are the columns of the matrix ***R*** stacked one by one under each other.
iv. Flip the ***R*** matrix up, i.e. preserve the columns and flip the rows up.
v. Extract the lower triangular part of the matrix ***R.***
vi. Extract the upper triangular part of the matrix ***R.***

##########

In figure shown, write A MATLAB program for solving V_3 at w=10 rad/s , if R1=20Ω, R2=100Ω , R3=50 Ω , and L1= 4H, L2=8H and C1=250 μF.

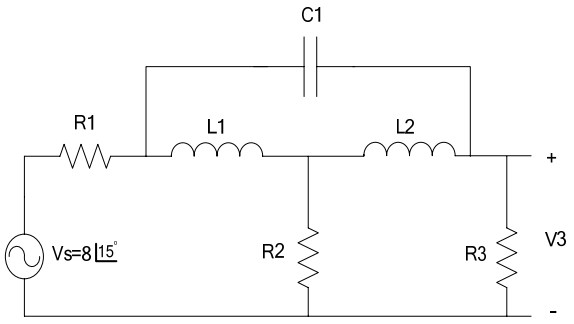

Fig. (2)

##########

The voltage V across a resistance is given as (ohm's law), V=Ri , where i is the current and R the resistance. The power dissipated in resistor R is given by the expression $P=i^2R$. If R=10ohm and the current is increased from zero to 10A with increments of 2A, write a MATLAB PROGRAM to generate a table of current, voltage and power dissipation.

##

For R-L circuit, the voltage v(t) and current i(t) are given as V(t)=10 cos(377t) and i(t)=5 cos(377t-60^{o}), Write a MATLAB script file to sketch v(t) and i(t) for t=0 To 20msec. (use the commands title, label, and color).

##

The voltage V and current I of a certain diode are related by the expression:- $I = I_S \exp[V/(nV_T)]$, If $I_S=1.0*10^{-14}$A, n=20 and V_T =26mv, write a MATLAB file to plot the current versus voltage curve of the diode for diode voltage between 0v and 6v. (Use the commands title, x-label, y-label).

##

The table below shows the final course grade and its relevant letter grads. For the course grades: - 70, 85, 90, 97, 50, 60, 71, 83, 91, 86, 77, 45, 67, 88, 64, 79, 75, 92 and 69. Write a MATLAB PROGRAM to determine the number of students who attained the grade of A, D and F.

Letter Grade	Final Course Grade
A	90 < Grade ≤ 100
B	80 < Grade ≤ 90
C	70 < Grade ≤ 80
D	60 < Grade ≤ 70
F	Grade≤ 60

##

Write a MATLAB FUNCTION FILE to solve the equivalent resistance of parallel connected resistors, R_1, R_2, R_3, ..., R_N. Use this function file program to calculate the equivalent resistance of parallel connected resistors 10, 20, 15, 16 and 15 ohms.