**M-FILES EXERCISES**

**Instructions:**

* Type each of the following exercises in a new M-file document.
* Study the each line of code. Make sure you understand each line of code.
* Save the M-file.
* ‘Run’ the saved M-file.
* Observe the result of each exercise.

Exercise1

clc

disp('\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*')

disp('\*\*\*\*\* \*\*\*\*\*')

disp(' THIS PROGRAM COMPUTES THE DAY OF BIRTH OF A PERSON ')

disp('\*\*\*\*\* \*\*\*\*\*')

disp('\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*')

M=input('ENTER MONTH OF THE YEAR=');

D=input('ENTER DAY OF THE MONTH=');

Y=input('ENTER THE YEAR=');

JD = juliandate(Y,M,D);

WEEK\_DAY=rem((JD+1.5),7);

disp('You were born on:')

if WEEK\_DAY==0

disp('SUNDAY')

elseif WEEK\_DAY==1

disp('MONDAY')

elseif WEEK\_DAY==2

disp('TUESDAY')

elseif WEEK\_DAY==3

disp('WEDNESDAY')

elseif WEEK\_DAY==4

disp('THURSDAY')

elseif WEEK\_DAY==5

disp('FRIDAY')

elseif WEEK\_DAY==6

disp('SATURDAY')

end

Exercise2

disp('\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*')

disp('\*\*\*\*\* \*\*\*\*\*')

disp('THIS PROGRAM IS A SIMPLE CALCULATOR ')

disp('\*\*\*\*\* \*\*\*\*\*')

disp('\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*')

%description of options

disp('1. Addition');

disp('2. Subtraction');

disp('3.Multiplication');

disp('4. Division');

%condition for option input

i=input ('Select Option (1-4): ');

if ((i <= 0) | (i > 4)), break, end

%fetches and converts text to numbers

First=input('ENTER FIRST VALUE: ');

Second=input('ENTER SECOND VALUE: ');

if i==1, Result = First + Second; end

if i==2, Result = First - Second; end

if i==3, Result = First \* Second; end

if i==4, Result = First / Second; end

fprintf ('\n Result = %6.4f\n',Result)

**Survey Area and Contour plot**

In the following two exercises,we going to plot area and contour of survey works by importing an excel file named CONTOUR PLOT.check if you have it in your current directory. CONTOUR PLOT has two excel sheets,sheet1 contains boundary points in(x,y,h).sheet2 contains internal points for contours in (x,y,h).follow the following steps carefully.

Exercise3

Area plot

fn='CONTOUR PLOT.xls'

x1=xlsread(fn,1);%reading excel sheet1

R1=size(x1,1);%fnding size of sheet1

N1=x1(:,1); %assigning 1ST column to northing coordinates(sheet1)

E1=x1(:,2); %assigning 2ND column to northing coordinates(sheet1)

N1\_1=N1(1,1);

E1\_1=E1(1,1);

NX1P=[N1' N1\_1];

EY1P=[E1' E1\_1];

plot(EY1P, NX1P,'-og', '[LineWidth](http://www.mathworks.com/access/helpdesk/help/techdoc/ref/lineseriesproperties.html#LineWidth)',2)

grid on

axis([min(EY1P),max(EY1P),min(NX1P),max(NX1P)])

xlabel('Eastings','FontSize',14,'FontWeight','b');

ylabel('Northings','FontSize',14,'FontWeight','b');

title('Area Plot','FontSize',14,'FontWeight','b ');

legend('Area')

set(gcf,'Name','Area Plot ');

Exercise3

Contour plot

fn='CONTOUR PLOT.xls'

x1=xlsread(fn,1); % reading excel sheet1

x2=xlsread(fn,2); % reading excel sheet2

X1=x1(:,1); %assigning first column to northing coordinates(sheet1)

X2=x2(:,1); %assigning first column to northing coordinates(sheet2)

Y1=x1(:,2); %assigning 2nd column to easting coordinates(sheet1)

Y2=x2(:,2); %assigning 2nd column to easting coordinates(sheet2)

H1=x1(:,3);%assigning 3rd column to heights (sheet1)

H2=x2(:,3);%assigning 3rd column to heights (sheet2)

%comdining contents of sheet1 and sheet2

NX=[X1;X2];

EY=[Y1;Y2];

H3=[H1;H2];

X1\_1=X1(1,1);

Y1\_1=Y1(1,1);

NX1P=[X1' X1\_1];

EY1P=[Y1' Y1\_1];

cx=size(NX,1);%size of file

Xlin=linspace(min(EY),max(EY),cx);

Ylin=linspace(min(NX),max(NX),cx);

[XI YI]=meshgrid(Xlin,Ylin);% creating new grid

ZI=griddata(EY,NX,H3,XI,YI,'cubic')

[C h]=contour(XI,YI,ZI),

hold on

plot(EY1P,NX1P,'-or')

hold off

grid on

axis([min(EY),max(EY),min(NX),max(NX)])

colormap autumn

clabel(C,h,'FontSize',10,'Color','b');%labelling contours

title('\bfContour Plot')

xlabel('EAST','fontsize',14,'fontweight','b')

ylabel('NORTH','fontsize',14,'fontweight','b')

h = legend('contour','area',2);

set(h,'Interpreter','none')

set(gcf,'Name','CONTOUR PLOT');

EXERCISE4

% Computing Area from coordinates

fn='CONTOUR PLOT.xls'

x1=xlsread(fn,1);%reading excel sheet1

N1=x1(:,1); %assigning 1ST column to northing coordinates(sheet1)

E1=x1(:,2); %assigning 2ND column to northing coordinates(sheet1)

N1\_1=N1(1,1);

E1\_1=E1(1,1);

NX1P=[N1' N1\_1];

EY1P=[E1' E1\_1];

%Get the number of vertices

cy=length(NX1P);

% Apply the formula

for i=1:cy-1;

P\_area=((NX11P(i)+NX11P(i+1))\*(EY11P(i)-EY11P(i+1)));

end

P\_area=abs(P\_area)/2 ; % area in square feet