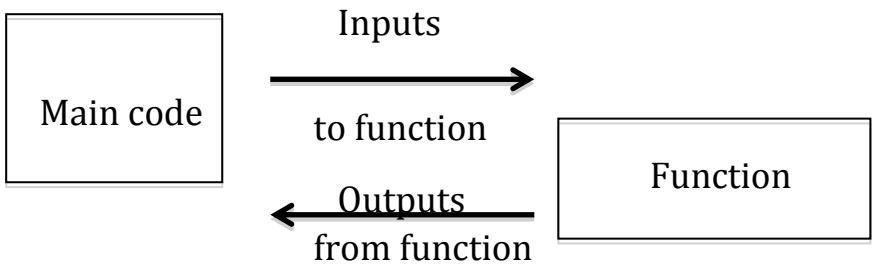
Matlab files (M-files)

Script files

- Contain codes
- You can name it as you want
- You can save it anywhere

Function files

- Contain functions which help you in the main program (code)
- These files should be named exactly the same as the name of the function
- To use this function, you should save it in the current folder



❖ Flow control programming:

1) Loop control

   For loop
   While loop

2) Conditional control

   If statement
   Switch statement

3) Error control

   Try-catch statement

❖ For loop:

- For i=……..

  ----

  end

Group of statements that must be executed for n times

- Any way to define a vector as mentioned before
- The vector lengh = n

❖ While loop: ("as long as")

- While x>2

  ----
  end

- While x>2

  ----
  if ……..
  break
  end
  end

Break terminates the execution of for/while loops

- While ……..

  ----
  while…….
  Break
  end
  end

Break will terminate the internal while loop only

- While 1

  ----
  end

  } Continuous execution

❖ <u>If statement:</u>

- If x>2 & y<=5

  ----
  end

- If x==2 **&** y~=3 (and)

  ----
  end

- If x>=2 | y<7 (or)

  ----
  end

- If …….

  ----
  else

  ----
  end

N.B: for every <u>If</u>, <u>end</u> is a must.

- If ……..

  ----
  else if ……...

  ----
  else if ……...

  ----
  else

  ----
  end
  end
  end

❖ <u>Switch statement: ("look at")</u>

- Switch x
  case 2

  ----
  case 3

  ----
  case 4

  ----
  case $\{-1,3\}$ → -1 or 3

  ----
  otherwise

  ----
  end

- Switch x
  case ‘yes’

  ----
  case ‘no’

  ----
  case $\{'maybe','don'tknow'\}$

  ----
  otherwise

  ----
  end

<u>N.B:</u> switch expression has to be either numeric or string

❖ <u>Try statement:</u>

- Try

  ----
  end

  If any error took place in the statements below « try », all these statements will be skipped and the computer will terminate the whole try statement.

- Try

  ----
  catch

  ----
  end

  If error occurs in the statements below « try », directly execute that below « catch ».

❖ <u>Inputs and outputs:</u>

- <u>Input:</u>
  User_entry=input(‘……..’)

  It is used to request from the user to enter input and store it in user_entry variable.

E.x:

```
a=input('xmin=');
b=input('xmax=');
y=input('f(x)=');
x=linspace(a,b,1000);
plot(x,y)
grid
.
.
.
```

} Note the semicolons.

- Output:
  Disp(x)
  It is used to display the value of x.
  num2str(x)

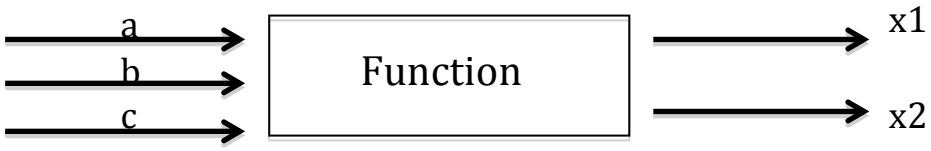
❖ Functions:

E.x:

$Ax^2+bx+c=0$

$\therefore \quad x_1=\frac{-b+\sqrt{b^2-4ac}}{2a} \quad$ and $\quad x_2=\frac{-b-\sqrt{b^2-4ac}}{2a}$

$\therefore$ input (a,b,c) and output (x1,x2)



❖ Method of writing functions:

Function $[x1, x2]$=quadsolve(a,b,c)

x1= -b/2a+$\sqrt{b^2-4ac}/2a$

x2= -b/2a+-$\frac{\sqrt{b^2-4ac}}{2a}$

∴ Generally speaking:

Function [$outputs$]=function name(Inputs)

-

---
code

---
end

❖ Function calling:

In the main program:

[a, b]=quadsolve(1,4,3)
This means that

Variable a=-3
&
variable b=-1
} The function output

❖ Notes:

1) Function name should be in lower case letters.
2) The m.file of the function should be saved with the name of the function itself.