MATLAB Scripts and Programming

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Creating Script Files in MATLAB

- Just like a programming language, you can write scripts (mini programs) in MATLAB. This way instead of typing every command in the prompt, you can automate your calculations

- % is used to create a non-executed remark in the script

- Select New M-File from the menu

- You can ask the user to input a value to MATLAB by using the input command

- x=input('Enter the required value: ')

Simple Script to Draw a Circle in MATLAB

```
% This is a program to draw a Circle
% (;) is used so that MATLAB executes all at once
% User inputs the radius of the circle
r=input('Enter the radius of the circle:  ')
theta=linspace(0,2*pi,100);          % Create vector
x=r*cos(theta);                      % generate x
y=r* sin(theta);                     % generate y
plot (x,y);                          % plot the circle
axis('equal');                       %  equalize axis
title('circle of given radius r')  % graph title
```

Programming Commands in MATLAB For Loop

- For loop is used to repeat a statement or a group of statements for a fixed number of times
- The syntax is for for i=m,k,n where counter i is advanced by k until n is reached
- for m=1:100

num = 1/(m+1)

end
- for n=100:-2:0

k=1/(exp(n))

end

Programming Commands in MATLAB While Loop

- While loop is used to execute a statement or a group of statements for an indefinite number of times until the condition specified by while is no longer valid

- % Finds the powers of 2 below 10000

```
v=1;        num=1;      i=1
while num < 10000
    v=[v;num];
    i= i+1;
    num=2^i;
end
v    %display v
```

Programming Commands in MATLAB If-Elseif-Else Statement

- If-Elseif-Else statement is used to test logical conditions in the scripts. You can have numerous If statements. If you want you can have a single if statement, but end statement must be present

- i=6; j=21;
  ```
  if i > 5
        k =i
  elseif (i>1) & (j==20)
      k = 5*i;
  else
      k=1;
  end
  ```

Programming Commands in MATLAB

- There are numerous MATLAB commands that you can use in a script. You should use Help menu to see them all

- **break** statement terminates any loop regardless of the condition of the loop

- The command **error('message')** inside a function or a script aborts the execution and displays the error message and returns command to keyboard