MATLAB Basic 3

Script File & Function File in MATLAB

Script:

File containing sequence of MATLAB commands as if typed in command windows and executed and all the variables are stored in MATLAB workspace.

Function File:

These files may have certain input(s) variable when the function is called then it executes sequence of steps and may return output(s). Function variables are stored in local function workspace not in the global MATLAB workspace.

Function file starts with

$$function[out1, out2..] = functionName(input1, input2...)$$

Remember functionName should be same as the function file name.

Example:

1. Write a function file to calculate factorial of a number
2. Use that function and write a script to calculate ${}^5C_2$ & ${}^5P_2$

Solution:

To make a function file of name fact that will take one input and one output.

In the command window type,

edit fact

That will create a matlab file as fact.m

Then in the blank file write the following code

function output=fact(n)

x=1:n;

output=prod(x);

Save fact function file. It is now ready. You can call it now in any script.

Let us write a script to find ${}^5C_2$ & ${}^5P_2$

We know, ${}^nP_r = \frac{n|}{(n-r)|}$; ${}^nC_r = \frac{n|}{r|(n-r)|}$

In the command window type,

edit permutationCombination

That will create a matlab file as permutationCombination.m

Then write the following script.

```
n=5;
r=2;
fivePtwo=fact(n)/fact(n-r)
```

```
fivePtwo = 20
```

```
fiveCtwo=fact(n)/(fact(r)*fact(n-r))
```

```
fiveCtwo = 10
```

Assignment:

1. Write a function file to calculate combination, it will take two arguments n & r to return ${}^{n}C_{r}$
2. Use that function to calculate the series sum $S = {}^{100}C_{0} + {}^{100}C_{1} + {}^{100}C_{2} + \ldots\ldots\ldots + {}^{100}C_{100}$