Programming with MATLAB

CONDITIONAL STATENEMTS

1. If Statement

Syntax

```
if expression
  \\Statements
end
```

Program: Check whether the number is greater than 10

```
number = 28;

if number>10
    disp('The number is greater than 10.');
end
```

Output: The number is greater than 10.

2. if-else statement

Syntax

```
if expression
      \\Statements
else
       \\Statements
end
```

Program: Check whether the number is even or odd

```
a = 15;
if rem(a,2) == 0
    disp('an even number')
else
    disp('an odd number')
end
```

Output: an odd number

3. Elseif

Syntax

```
if expression
     \\Statements
elseif expression
     \\Statements
else
   \\Statements
end
```

Program: Check the given number is within range or not.

```
a = 10;
min = 2;
max = 20;
if (a >= min) && (a <= max)
disp('a is within range')
elseif (a <= min)
disp ('a is less than minimum')
else
disp('a is more than maximum value')
end
```

Output: a is within range

4. Switch Case

Syntax

```
switch switch_expression
   case case_expression1
      \\Statements
   case case_expression2
      \\Statements
   case case_expressionN
      \\Statements
   otherwise
      \\Statements
end
```

Program:

To check whether the entered number is a weekday or no t

```
a = input('enter a number : ');
switch  a
    case 1
        disp('Monday')
    case 2
        disp('Tuesday')
    case 3
        disp('Wednesday')
    case 4
        disp('Thursday')
    case 5
        disp('Friday')
    case 6
        disp('Saturday')
    case 7
        disp('Sunday')
    otherwise
        disp('not a weekday')
end
```

Output: enter a number : 3
Wednesday

LOOPING STATEMENT

5. For loop

Syntax

```
for index = values
 <program statements>
 ...
end
```

Program: **Print multiples of first prime number between 6 to 10**

```
pr = 0;
for k = 6:10
    if isprime(k)
        pr = k;
        disp(['The first prime number is :
',num2str(pr)])
        for m = pr:pr:pr*3
            disp(m)
        end

        break
    end
end
```

Output: The first prime number is : 7
7 14 21

6. While

Syntax

```
while <expression>
 <statements>
end
```

Program: **To calculate factorial of 5.**

```
n = 5;
f = n;
while n > 1
    n = n-1;
    f = f*n;
end
disp(['n! = ' num2str(f)])
```

Output: n! = 120

7. Continue

Syntax

```
continue
```

Program: **To print all numbers divisible by 5 and skip remaining**

```
a = (1:4:50);
for k = 1:numel(a)
    if rem(a(k),5)
        continue
    end
    disp(a(k))
end
```

Output: n! = 5 25 45

8. Break

Syntax

```
break
```

Program: **To print all numbers from 11 to 20**

```
a = 10;
% while loop execution
while (a < 20)
   fprintf('value of a: %d\n', a);
   a = a + 1;
      if( a >= 15)
         % terminate the loop using break statement
         break;
      end
end
```

Output: value of a: 10
value of a: 11
value of a: 12
value of a: 13
value of a: 14

9. Nested Loop

Syntax (for loop)

```
for m = 1:j
for n = 1:k
 <statements>
    end
end
```

Syntax (While loop)

```
while <expression1>
 while <expression2>
    <statements>
    end
end
```

Program: **To print all prime number from 1 to 10**

```
for i=2:10
         for j=2:10
               if(~mod(i, j))
                    break; % if factor found,
not prime
               end
         end
         if(j > (i/j))
                fprintf('%d is prime\n',
i);
         end
end
```

Output: 2 is prime
3 is prime
5 is prime
7 is prime