

# ALGORITHMS AND DATA STRUCTURES

## CS106.3

### 1. What is a recursive method briefly explain.

- a method that calls itself is known as a recursive method. And this process is known as recursion.

### 2. What is identified as iteration briefly explain.

- There are times when a program needs to repeat certain steps until told otherwise, or until a condition has been met. This process is known as iteration.

### 3. What is factorial and Fibonacci show how they can be used both as recursive.

- Factorial is a mathematical function that multiplies a given number by every number below it. For example, the factorial of 5 is  $5*4*3*2*1 = 120$ .

A recursive function is a function that calls itself. A recursive factorial function can be written as follows:

```
int factorial(int n) {  
    if (n == 0) {  
        return 1;  
    } else {  
        return n * factorial(n-1);  
    }  
}
```

- Fibonacci sequence is a series of numbers in which each number is the sum of the two preceding ones, usually starting with 0 and 1. A recursive Fibonacci function can be written as follows:

```
int fibonacci(int n) {  
    if (n <= 1) {  
        return n;  
    } else {  
        return fibonacci(n-1) + fibonacci(n-2);  
    }  
}
```

- functions can be used recursively to calculate the factorial and Fibonacci sequence of a given number respectively.