

## CM1602 : Data Structures and Algorithms for AI

### Tutorial 2

1. Briefly explain Best Case, Average Case, and Worst Case.

2. Find the complexity of the following programs.

A.

```
function(int n)
{
    if (n==1)
        return;
    for (int i=1; i<=n; i++)
    {
        for (int j=1; j<=n; j++)
        {
            printf("*");
            break;
        }
    }
}
```

B.

```
function(int n)
{
    if (n==1)
        return;
    for (int i=1; i<=n; i++)
    {
        // Inner loop executes only one
        // time due to break statement.
        for (int j=1; j<=n; j++)
        {
            printf("*");
            break;
        }
    }
}
```

C.

```
void function(int n)
{
    int count = 0;
    for (int i=n/2; i<=n; i++)
        for (int j=1; j+n/2<=n; j = j++)
            for (int k=1; k<=n; k = k * 2)
                count++;
}
```

D.

```
void function(int n)
{
    int count = 0;
    for (int i=n/2; i<=n; i++)
        for (int j=1; j<=n; j = 2 * j)
            for (int k=1; k<=n; k = k * 2)
                count++;
}
```

E.

```
void function(int n)
{
    int count = 0;
    for (int i=0; i<n; i++)
        for (int j=i; j< i*i; j++)
            if (j%i == 0)
            {
                for (int k=0; k<j; k++)
                    printf("*");
            }
}
```