Lecture 12

Recursion: A function is called **recursive** if a statement within the body of a function calls the same function. Sometimes called **circular definition**, recursion is thus the process of defining something in terms of itself.

Example: 1

```
int fib(int m);
int main()
{
int i, n;
printf("Please enter a number ");
scanf("%d",&n);
for(i =1; i <=n; i ++)
        printf("%d\n",fib(i));
return 0;
}
int fib(int m)
{
if(m<=2)
        return 1;
else
        return fib(m-1) + fib(m-2);
}
```

```
Please enter a number 7
1
1
2
3
5
8
13
```

Example: 2

```
int fact(int m);
void main()
{
int n;
printf("Please enter a number ");
scanf("%d",&n);
printf("The factorial is %d\n",fact(n));
}

int fact(int m)
{
int f ,s =1;
for(f =1; f < =m; f ++)
        s * = f ;
return s ;
}
```

```
Please enter a number 5
The factorial is 120
```

Example: 3

```
int fact(int m);
void main()
{
int n;
printf("Please enter a number ");
scanf("%d",&n);
printf("The factorial is %d\n",fact(n));
}

int fact(int m)
{
if(m= =1)
        return 1;
else
        return m*fact(m-1);
}
```

```
Please enter a number 5
The factorial is 120
```

Example: 4

```
int count_dn(int count);
void main()
{
int n;
printf("How many times ? ");
scanf("%d",&n);
count_dn(n);
}

int count_dn(int count)
{
count--;
printf("The value of count = %d\n",count);
if(count > 0)
        count_dn(count);
printf("Now count = %d\n", count);
}
```

```
How many times ? 4
The value of count = 3
The value of count = 2
The value of count = 1
The value of count = 0
Now count = 0
Now count = 1
Now count = 2
Now count = 3
```