

# Ch8: Functions

305172 Computer Programming  
Laboratory  
Jiraporn Pooksook  
Naresuan University

# What is a Function?

- A function is a block of code which only runs when it is called.

Function  
Definition

```
def fac(n):  
    ans = 1  
    for i in range(1,n+1):  
        ans = ans*i  
    return ans
```

```
num = int(input("Enter a number: "))  
print(fac(num)) ← Function call  
print(f'Factorial of {num} = {fac(num)}')
```

# Function Definition

keyword

Function  
name

Function  
parameters

```
def fac(n):  
    ans = 1  
    for i in range(1, n+1):  
        ans = ans*i  
    return ans
```

Return  
value

# Function with default values

```
def fac(n, less_zero=False):  
    if less_zero==True:  
        return 1  
    else:  
        ans = 1  
        for i in range(1,n+1):  
            ans = ans*i  
    return ans  
  
num = int(input("Enter a number: "))  
print(fac(num))  
print(fac(num, True))
```

# Defining scope

```
i=5
def fac(n=i, less_zero=False):
    if less_zero==True:
        return 1
    else:
        ans = 1
        for i in range(1,n+1):
            ans = ans*i
        return ans
```

Default value depends on where the variable is defined

```
print (fac())
```

```
i=6
```

```
print (fac())
```

```
print (ans) ← Error : ans is a local variable
```

# Default values with sequence




Empty  
list

```
def list_append(num, L=[]):  
    L.append(num)  
    return L
```

```
print(list_append(1))  
print(list_append(2))
```

# Default values with sequence



a list contains  
None object

```
def list_append2(num, L=None):  
    if L is None:  
        L=[]  
  
    L.append(num)  
    return L  
  
print(list_append2(1))  
print(list_append2(2))
```

# Keyword Arguments

```
def fac(n, less_zero=False):  
    if less_zero==True:  
        return 1  
    else:  
        ans=1  
        for i in range(1,n+1):  
            ans=ans*i  
        return ans  
  
num = int(input("Enter a number: "))  
print(fac(num))  
print(fac(n=num))  
print(fac(num, True))  
print(fac(n=num, less_zero=True))
```