24/09/2025

Functions:

A function is a block of reusable code that performs a specific task. Functions make a program more organized, readable, and reduce repetition.

A function is always represented by parentheses ()

Types of Functions:

1.Built-in Functions

- These are functions that are already available in Python.
- We can use them directly without defining them.
- **Examples:** print(), len(), input(), type(), range(), etc.

2. User-defined Functions

- These are functions that are created by the user to perform specific tasks.
- They are defined using the def keyword followed by the function name and parentheses.
- **Syntax:**

```
def fun_name(parameters):
    statements
    return value
```

We can create functions in four ways:

1) function without input and without return

2) function with input and without return

3) function without input and with return

4) function with input and with return

3. Lambda Function

- A lambda function is an anonymous (nameless) function in Python.

- It is written in a single line using the lambda keyword.
- It can have any number of arguments, but only one expression.
- Commonly used for short, simple operations.
- **Syntax:**

  ```
  lambda arguments: expression
  ```

Four ways of creating functions:

1. **function without input and without return.**
   - The function does not take any arguments.
   - It also does not return any value.
   - Usually used when a task needs to be done but no data is required from the user and no result needs to be sent back.
   - Cannot access local variable
   - **Syntax:**

     ```
     def fun_name():
           statements
     ```
   - **Example: Program for simple interest**

     ```
     def si1():
        p=float(input("enter p value"))
        t=float(input("enter t value"))
        r=float(input("enter r value"))
        si=(p*t*r)/100
        print(f"the simple interest is {si} for pa={p},time={t},roi={r}")
     si1()
     ```

     o/p:

     ```
     enter p value 30000
     enter t value 2
     enter r value 2.5
     the simple interest is 1500.0 for pa=30000.0,time=2.0,roi=2.5
     ```
2. **function with input and without return**
   - The function takes one or more arguments as input.
   - It performs some operation, but does not return a value.

- Typically used when only displaying or processing is required.
- We can also use another variable
- **Syntax:**

```
syntax:
def fun_name(p1,p2....pn):
    statements
```

- **Example: Program for simple interest**

```
def si2(p,t,r):
    si=(p*t*r)/100
    print(f"the simple interest is {si} for pa={p},time={t},roi={r}")
si2(30000,2,2.5)
```

o/p:

```
the simple interest is 1500.0 for pa=30000,time=2,roi=2.5
```

Using another variable

```
x=float(input("enter p value"))
y=float(input("enter t value"))
z=float(input("enter r value"))
o/p:
enter p value 30000
enter t value 2
enter r value 2.5
si2(x,y,z)
o/p:
the simple interest is 1500.0 for pa=30000.0,time=2.0,roi=2.5
```

3. **function without input and with return**
    - The function does not take any arguments.
    - It returns a value to the caller.
    - Often used when a function generates data internally and sends it back.
    - **Syntax:**

```
def fun_name():
    statements
    return value
```

- **Example: Program for simple interest**

```
def si3():
    p=float(input("enter p value"))
    t=float(input("enter t value"))
    r=float(input("enter r value"))
    si=(p*t*r)/100
    return p,t,r,si
var=si3()
```

o/p:

```
enter p value 30000
enter t value 2
enter r value 2.5
```

```
print("the simple interest is:",var)
```

o/p:

```
the simple interest is: (30000.0, 2.0, 2.5, 1500.0)
```

4. **function with input and with return**

- The function takes one or more arguments and also returns a value.
- This is the most flexible and commonly used type of function.
- **Syntax:**

```
def fun_name():
    statements
    return value
```

- **Example: Program for simple interest**

```
def si4(p,t,r):
    si=(p*t*r)/100
    return si
siv=si4(30000,2,2.5)
print("the simple interest is:",siv)
```

o/p:

```
the simple interest is: 1500.0
```