Functions

Agenda

What are functions?

What are functions?

➢ A function is a group of related statements that perform a specific task.

➢ A function is a block of reusable code.

➢ Functions make our code more organized and manageable.

The advantages of using functions are:

- Duplication of code is reduced.
- Breaking complex problems into simple small pieces.
- Improving clarity of the code.
- Reusability of code.

Built-in functions

Built-in functions

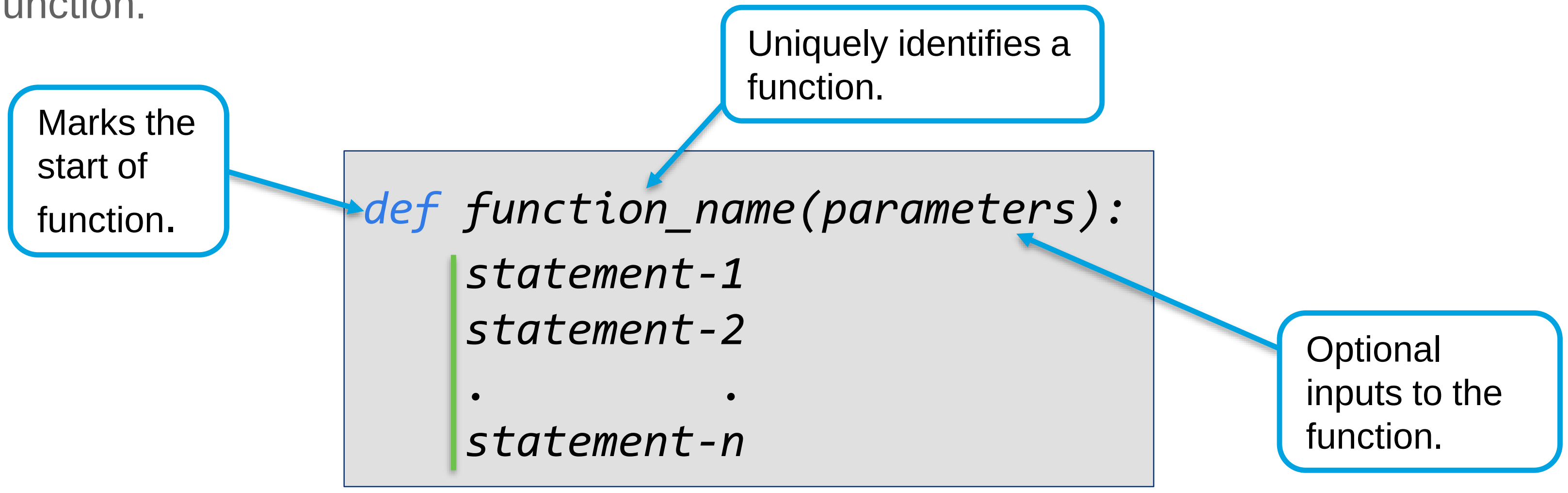
- Python has a number of built-in functions which are always ready to use.
- Built-in functions helps us in accomplishing the tasks quickly.

Frequently used built-in functions			
type	id	max	int
len	chr	min	float
abs	ord	input	bool
pow	print	super	lower
range	sum	open	upper

User defined functions

User defined functions

- You can create(define) your own functions to write and implement functionalities.
- If a functionality(set of code) needs to be executed repeatedly in your program, Function can be used to include those codes and execute it whenever we required, by calling that function.



```
def function_name(parameters):
    statement-1
    statement-2
    .           .
    statement-n
```

Marks the start of function.
Uniquely identifies a function.
Optional inputs to the function.

User defined functions

```
Execute this code:
def message():
    print('Welcome to Python tutorial')


message() #calling or invoking the function
```

This piece of code will never run unless you call the function.

```
Output:

Welcome to Python tutorial
```

User defined functions : Quiz

```
Predict the output:

message() #calling or invoking the function

def message():
    print('Welcome to Python tutorial')
```

Error

```
Traceback (most recent call last):
  File "main.py", line 1, in <module>
    message()
NameError: name 'message' is not defined
```

User defined functions : return statement

- A return statement is used to return the result(value).
- **return** is a keyword which ends the execution of the function call.

```
Program:
def message():
    return 'Hello World'


s1 = message() #print(message())
print(s1)
```

```
Output:
Hello World
```

User defined functions : return statement

- Statements written after **return** are never executed.

```
Program:
def message():
    return 'Hello World'
    print('End')

print(message())
```

```
Output:
Hello World
```

User defined functions : return statement

- When there is no return statement, by default functions in python return **None.**

```
Program:
def message():
    print('Hello World')

s1 = message() #receiving None in s1
print(s1)
```

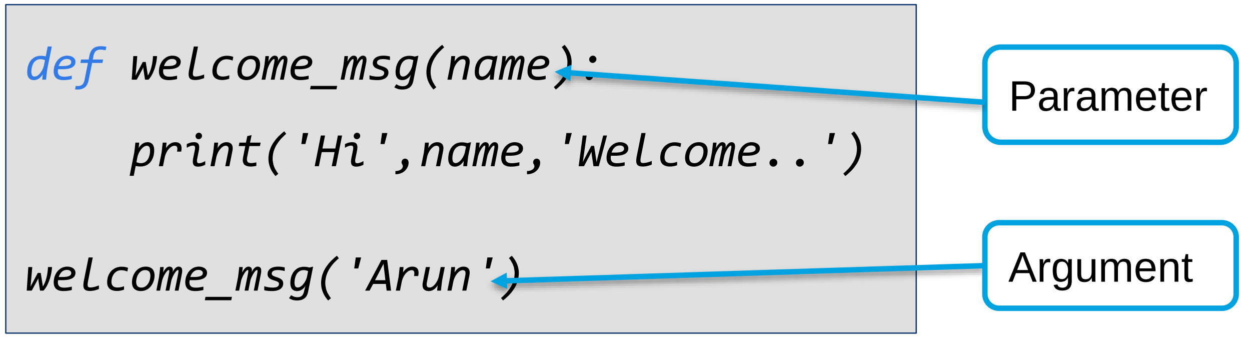
```
Output:
Hello World
None
```

Functions with arguments

Functions with arguments

- Functions can take inputs called as **parameters.**
- Parameters are specified inside the parentheses ( ).
- Multiple parameters are separated with comma.
- The values we pass to the parameters in the function call are called **arguments** or **args.**

Function with one parameter:



```
def welcome_msg(name):
    print('Hi',name,'Welcome..')

welcome_msg('Arun')
```

Functions with arguments : Quiz

```
Predict the output:

def welcome_msg(name):
    print('Hi',name,'Welcome..')

welcome_msg( )
```

Required argument.

```
Traceback (most recent call last):
File "main.py", line 4, in <module>
TypeError: welcome_msg() missing 1 required
Positional argument: 'name'
```

Functions with arguments

Required arguments

- Required arguments are passed to a function in correct order.
- The number of arguments in the function call should match exactly with the number of parameters in the function definition.

Function definition	Right way to call

def calculate(x, y, z):	calculate(10, 20, 30)
	calculate(1.5, 2.5, 3.5)

def prime_check(input1):	prime_check(27)
	prime_check(4)

Functions with arguments

Keyword arguments

- While calling a function by passing arguments, we can name the arguments with their respective parameter name to which these arguments are being passed.
- With these keyword arguments we can pass the arguments in any order.

```
def message(name, age):
    print('Hi', name)
    print('Age is', age)

message(name='Chandu', age=25)
message(age=24, name='Ajay')
```

Both statements are valid.

Functions with arguments

Default arguments

- A default argument assumes a default value if value is not passed to it in the function call.

```
Program:
def display(a, b, c=50):
    print(a, b, c)

display(10,20)
display(10,20,30)
```

```
Output:


10 20 50
10 20 30
```

- When value is passed in the function call, it overrides the default value.

Thank you