1. In Python, what is the difference between a built-in function and a user-defined function? Provide an

example of each.

Build in functions are already defined in python package and available to everyone for use.

e.g. random() from package random

User defined functions are created by users as per their requirement.

def total\_bill():

return 50

# this function will return total bill, hardcoded as 50 in above example

2. How can you pass arguments to a function in Python? Explain the difference between positional

arguments and keyword arguments.

Arguments can be passed to function calls inside ()

Positional arguments: used where strict order is followed for arguments

Keyword arguments: with keyword arguments, function call is made with argument name and its value pairs.

3. What is the purpose of the return statement in a function? Can a function have multiple return

statements? Explain with an example.

Return statement is used to return a value from the function to calling entity.

A function can have multiple return statement with if-else clause, However only one of them will be executed.

Example:

def func():

If 1>2:

return False

Else:

return True

4. What are lambda functions in Python? How are they different from regular functions? Provide an

example where a lambda function can be useful.

Lambda function is defined without a name and is used for single statement methods.

e.g.

x= lambda a,b:a+b

above method will store sum of a and b in variable x.

5. How does the concept of "scope" apply to functions in Python? Explain the difference between local

scope and global scope.

Variables defined inside a method have a local scope and such variables can not be accessed outside that method.

Variables defined outside any method has global access and can be accessed inside methods also.

6. How can you use the "return" statement in a Python function to return multiple values?

return can return multiple values by returning a variable of data type which can hold multiple items, eg. List, tuple, dictionary, object

7. What is the difference between the "pass by value" and "pass by reference" concepts when it

comes to function arguments in Python?

In Python, mutable datatypes like list,set are passed by reference to method by default. Hence any change made to such variables inside the method is reflected on original variable. To avoid changes to original variable, we can pass copy of the variable as an argument for the method.

Immutable variables or variables of primitive datatypes are passed by value to the methods, Inside method, copy of the variable is used.

8. Create a function that can intake integer or decimal value and do following operations:

a. Logarithmic function (log x)

b. Exponential function (exp(x))

c. Power function with base 2 (2x)

d. Square root

import math

def calc(a):

print(f"log({a}): {math.log(a)}")

print(f"exp({a}): {math.exp(a)}")

print(f"pow({a},2): {math.pow(a,2)}")

print(f"sqrt({a}): {math.sqrt(a)}")

print()

calc(25)

Output:

log(25): 3.2188758248682006

exp(25): 72004899337.38588

pow(25,2): 625.0

sqrt(25): 5.0

9. Create a function that takes a full name as an argument and returns first name and last name.

def name(a):

sp=a.split(" ")

return [sp[0],sp[-1]]

name("Monika Sharma Bhabhoria")

output:

['Monika', 'Bhabhoria']