Functions

Assignment

PW SKILLS

1. Define a function and explain its syntax.
2. Differentiate between types of functions such as built-in functions and user-defined functions. 3. Explain the difference between parameters and arguments in the context of function definition and function call.
4. Define and discuss global scope/variables in Python functions with examples.
5. Define and discuss local scope/variables in Python functions with examples.
6. Describe the types of arguments in Python functions, including default arguments, keyword arguments, and positional arguments with the examples.
7. Discuss the concept of keyword arguments with an example function, explaining how changing the order of arguments does not affect the function call.
8. Define a function that accepts a variable number of arguments using *args and demonstrate its usage with an example.
9. Explain keyword arguments in Python functions with an example.
10. Describe *args and **kwargs in Python functions. When and why is it used?
11. How does Python handle functions with *args when different numbers of arguments are passed?
12. Define nested functions in Python. Give an example and explain its structure.
13. What is a lambda function in Python? How is it different from regular functions , explain with example
14. What is call by value and call by reference in python. explain with an example.

Programming Assignments:

1. Write a program using a user defined function List_Mean() to calculate the mean of floating values stored in a list.
2. Write a Python program that takes a dictionary as input and returns a new dictionary with the keys and values swapped.
3. Write a program to make a simple calculator that can do addition, subtraction,multiplication and division using user defined functions.
4. Write a Python program to print the Fibonacci series up to n terms using a function.
5. Write a function that takes the input of three sides of Triangle ,and print whether it is equilateral, isosceles,Scalene

6. **Write a program that contains user defined functions to calculate area, perimeter or surface area whichever is applicable for various shapes like square, rectangle, triangle, circle, cylinder and sphere. The user defined functions should accept the values for calculation as parameters and the calculated value should be returned. Import the module and use the appropriate functions.**

7. **Create a user-defined function trafficLight() that prompts the user for input. If the input is not "RED", "YELLOW", or "GREEN", display an error message. Then, call the function light(). Depending on the return value of light(), display one of the following messages:**

a) "STOP, your life is precious" if the return value is 0.
b) "Please WAIT, till the light is Green" if the return value is 1.
c) "GO! Thank you for being patient" if the return value is 2.

8. **PW store plans to give PW Vishwas Diwas Offer 2024 discounts to its Students. The store management has decided to give discount on the following criteria:**

Shopping Amount	Discount Offered
>= 2500 and < 3000	5%
>= 3000 and < 4500	8%
>= 4500	10%

An additional discount of 5% is given to customers who are the members of the store. Create a program using a user defined function that accepts the shopping amount as a parameter and calculates discount and net amount payable on the basis of the following conditions:
Net Payable Amount = Total Shopping Amount – Discount.

9. **To secure your account, whether it be an email, online bank account or any other account, it is important that we use authentication.Write a program with a user-defined function called login(uid, pwd) that accepts a user ID and password as parameters. The function allows three login attempts. If the user enters the correct user ID "IRONMAN" and password "Tony_$t@rk3000", display "login successful". Otherwise, if the user exceeds three wrong attempts, display "account blocked".**

10. **Write a program that has a user defined function to accept the coefficients of a quadratic equation in variables and calculates its determinant.**

For example : if the coefficients are stored in the variables a,b,c then calculate the determinant as b2-4ac. Write the appropriate condition to check determinants on positive, zero and negative and output appropriate results.

Hint: Use lambda function for this.

11. Let's do some more fun with lambda function:

a)Write a lambda function that takes a list of numbers as input and returns the maximum number in the list.

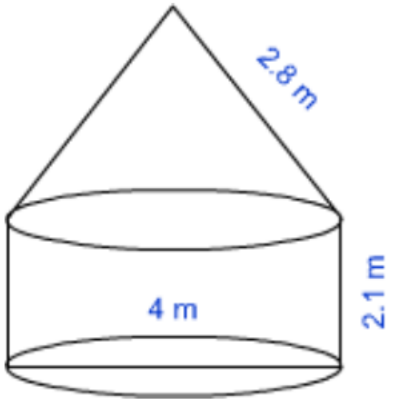
b)find square root,square and cube of each element of a given list [1, 2, 3, 4, 5, 6, 7, 8, 9, 10] using lambda function.

Now play with args and kwargs :

c).Write a Python function that takes any number of keyword arguments and prints the keys and values of the arguments.

d).Write a Python function that takes a variable number of arguments and returns a new string that is the concatenation of all the arguments.

12. Write a program to calculate the total cost of the canvas used for making a tent and the net amount payable, including tax, using user-defined functions.



Hint:
Calculate the Area of the Cylindrical Part of the Tent:
area_cyl=2×π×radius×height.

Calculate the Area of the Conical Part of the Tent:
Use the formula area_con =π×radius×slant height.

Calculate the Total Area of Canvas Used for Making the Tent: Add the areas of the cylindrical and conical parts.

Calculate the Total Cost of the Canvas Before Tax: Multiply the total canvas area by the unit price(1 Rupee per unit).

Compute the Net Amount Payable for the Tent, Including Tax: Calculate tax as 18% of the cost. Add the tax to the cost to get the net price.

Print the Results: Print the total cost of the canvas before tax and the net amount payable (including tax).