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BCA / B.Sc. (IT) (Sem.–3)

PROGRAMMING IN PYTHON

Subject Code : UGCA1914

M.Code : 78180

Date of Examination : 12-07-21

Time : 2 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE question(s), each question carries 12 marks.**

1. Do you need to set path variables in Python before making it operational. Explain use of it. What is role of environment variables in interaction with operating system in this case? Can you design your own environment variable? Illustrate. Is there any type of problems where we cannot apply python? Discuss.

2. Ram is designing a device that can sprinkle water in a lawn on temperature increase. He also wants to display current temperature on a display. He can manage the Hardware and its connectivity but need a software module designed in Python which can help with temperature display part. Temperature has to be displayed on screen in Celsius and Fahrenheit. Can you help in designing that module? Write down the module and discuss other applications of various libraries used in the program. Discuss scope of variables used in this case by giving an example.

3. If you have to store your personal information: name (first, last), age, address, email address, and phone number. Which data structure will you use in Python with any combination of built-in object types you like (lists, tuples, dictionaries, strings, numbers). Write Python code to access the individual components of your data structures by indexing. Do some structures make more sense than others for this object? How tuples are different from arrays?

4. Write Python code to create a new list containing the square roots of all the numbers in this list: [9, 16, 25, 36, 49]. Code this as a loop first, then as a map call, and finally as a list comprehension. Use the sqrt function in the builtin math module to do the calculation. Which approach do you like best and why?

5. Write a program that counts number of characters and vowels in a string. With your text editor, code a Python module named pymodu.py that exports two top-level names:

   a) A countchar(name) function that reads an input string and counts the number of characters in it.

b) A countvow (name) function that reads an input string and counts the number of vowels in it.

These pymodu functions should expect a string to be passed in. Write process to test your module interactively, using import and attribute references to fetch your exports. Do PYTHONPATH need to include the directory where you created pymodu.py?

6. How can you differentiate between bug and error? Sham wants to make a Python program that can read data of students from a class. Design a program to read the data of students. What can be the exceptions in this case and how will Sham deal with it? Write down code to handle those exceptions in the program. Discuss importance of exception handling in improving performance of the program.

7. How can object oriented programming may assist in better security of data in an application? Elaborate, how can you create instance variables inside methods? What are the advantages of using variables with global scope? Illustrate Data Abstraction.

8. Design a program in Python to create a dictionary in text file. Store these files in a new directory created through program. Also write a program to search a specific word from the file. Differentiate between tell() and seek() method.