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## Seventh Semester B.E. Degree Examination, Jan./Feb. 2023

### Python Application programming

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

#### Module-1

- 1
  - a. Explain the rules of precedence used by python to evaluate an arithmetic expression. Also explain the arithmetic operators used in python. (07 Marks)
  - b. With a neat diagram, explain computer hardware architecture. List and explain three types of errors encounter in python programs. (08 Marks)
  - c. Write a user defined function named "Read\_age" that reads and returns age of a person. Call the function to read the age of Amar, Akbar and Antony. Print the youngest and Eldest age among three friends. (05 Marks)

#### OR

- 2
  - a. Explain if, if-else and elif statements in python. (06 Marks)
  - b. Write a program to prompt a score between 0.0 and 1.0. If the score is out of range. Print an error. If the score is between 0.0 and 1.0, print a grade using the following table:

Score	Grade
$\geq 0.9$	A
$\geq 0.8$	B
$\geq 0.7$	C
$\geq 0.6$	D
$\geq 0.5$	E
$< 0.5$	F

- c. Define the following: (i) Functions (ii) Parameters and arguments  
(iii) Fruitful functions and void functions

Also write the reasons to divide the program into functions. (07 Marks)

#### Module-2

- 3
  - a. Explain while and for loop statements in python. Write a program to display First 'n' Natural numbers using while loop. (08 Marks)
  - b. Write a python program to accept a filename from the uses :
    - (i) Display the first N-lines of the file.
    - (ii) Find the frequency of occurrences of the word accepted from the user in the file. (07 Marks)
  - c. Define string. Explain string slicing in python with examples. (05 Marks)

#### OR

- 4
  - a. Write a python program to accept a sentence from the user and display the longest and smallest word of that sentence along with its length. (07 Marks)
  - b. Explain the following:
    - (i) read ()
    - (ii) string traversing
    - (iii) open ()
    - (iv) break keyword (08 Marks)
  - c. Write a python program to print the sum of the following series :  $1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{n}$ . 'n' is read from the user. (05 Marks)

**Module-3**

- 5 a. Write a python program to read all the lines in a file accepted from the user and print all email addresses contained in it. Assume the email addresses contain only non\_ white space characters. (06 Marks)
- b. Explain how to traverse and slice a list with suitable example. Also explain how to delete elements from a list with different methods. (08 Marks)
- c. Write a program progress to accept a string from user and print the frequency of each character in the string. Use Dictionary. (06 Marks)

**OR**

- 6 a. Given three points as list of tuples i.e.,  $[(x_1, y_1), (x_2, y_2), (x_3, y_3)]$ , write a program to check if they are collinear. (06 Marks)
- b. Explain the following functions:  
(i) append ( )      (ii) extend ( )      (iii) sort ( )      (iv) keys ( ) and values ( ) (08 Marks)
- c. Write a python program that matches a string that has an 'a' followed by zero or more 'b's'. Use Regular Expressions search ( ) method. (06 Marks)

**Module-4**

- 7 a. Explain `__init__` method with an example. (05 Marks)
- b. What is a pure function? Write a python program to find duration of event if start and end time is given by defining class TIME. (08 Marks)
- c. Explain operator overloading. How `__add__` method is invoked when operator + used between the objects. Explain its working. (07 Marks)

**OR**

- 8 a. Create a Temperature class. Include two methods:  
Method 1 : ConvertFahrenheit-takes Celsius and print in Fahrenheit  
Method 2 : ConvertCelsius-takes Fahrenheit and print in Celsius  
Derive the above methods through objects of temperature class. (07 Marks)
- b. Explain `__str__` method with an example. (05 Marks)
- c. Define polymorphism. Write a class Rectangle that has attributes length and breadth and a method area which returns the area of the Rectangle. Also add a method `move_rectangle ( )` that takes an object of Rectangle class and two numbers named dx and dy. It should change the location of the rectangle by adding dx to the X coordinate of corner and adding dy to the y coordinate of corner. (08 Marks)

**Module-5**

- 9 a. What is socket? Explain how socket connection can be established to the internet using python code over the TCP IP connection and http protocol to get the web document. (08 Marks)
- b. Write a python code for creating employee database inserting records and selecting the employees working in the company. (08 Marks)
- c. Write a note on JSON. (04 Marks)

**OR**

- 10 a. Explain the significance of XML over the web development. Design a python program to retrieve a node present in XML tree. Illustrate with an example. (08 Marks)
- b. What is embedded SQL? Explain the importance of SQLite database. With suitable example, explain functions involved in creation of database table in python. (08 Marks)
- c. What is service oriented architecture? Discuss its benefits. (04 Marks)

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