


VIT[®]

 Vellore Institute of Technology
(Approved by the University Grants Commission, UGC, AICTE, 1986)
Final Assessment Test – May 2024

 Course: **CBS1011 - Programming in Python**

 Class NBR(s): **3608/3619**

 Slot: **A2**

 Time: **Three Hours**

 Max. Marks: **100**

- **KEEPING MOBILE PHONE/ELECTRONIC DEVICES EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE**
- **DON'T WRITE ANYTHING ON THE QUESTION PAPER**

Answer any TEN Questions
(10 X 10 = 100 Marks)

1. Describe the various operators and unique keywords available in Python 3.0 and its usages. Explain all the possible operators with examples.
 - Value Keywords: True, False, None.
 - Operator Keywords: and, or, not, in, is.
 - Control Flow Keywords: if, elif, else.
 - Iteration Keywords: for, while, break, continue, else.
 - Structure Keywords: def, class, with, as, pass, lambda.
2. Write a python program to accept the 5 products purchased by 5 customers from a super market along with the bill amount.

Customer-1	Soap	Biscuits	Oil	Egg	Egg	150
Customer-2	Oil	Oil	Soap	Biscuits	Bread	400
Customer-3	Soap	Oil	Biscuits	Bread	Bread	500
Customer-4	Oil	Biscuits	Bread	Soap	Egg	700
Customer-5	Soap	Oil	Biscuits	Bread	Biscuits	800

Determine the most frequently purchased product by each customer and identify the customer who spent the most money at the supermarket. The program should handle invalid bill amounts (less than or equal to zero) by prompting the user to enter a valid amount.

3. Predict the output for the following Python Snippet

```
l2=[1,2,3,[4,5,6],[7,8,9],[11,12,13]]
tup = (22, 3, 45, 4, 2.4, 2, 56, 890, 1)
print(l2[5][2])
print(l2[2:4])
print(l2[2:5:2])
print(l2[::-1])
print(l2[:-2:2])
print(tup[::-4])
```

```

L1 = [1,2,3,4,5]
L2 = ['a','b','c','d','e']
res=zip(L1,L2)
print(tuple(res))
x = ('key1', 'key2', 'key3')
thisdict = dict.fromkeys(x)
print(thisdict)
Dict={1: 'SCOPE', 2: 'SCORE', 3: {'V': 'Vellore', 'I': 'Institute', 'O': 'Of', 'T': "Technology"}, 0: 'r'}
a=Dict.pop(3)
print(a)
x=Dict.popitem()
print(x)

```

4. a) Write a program that accepts a sentence and calculate the number of letters and digits. [5]

Suppose the following input is supplied to the program:

hello world! 123

Then, the output should be:

LETTERS 10

DIGITS 3

- b) Write a program which takes 2 digits, X,Y as input and generates a 2-dimensional array. The element value in the i-th row and j-th column of the array should be $i*j$. [5]

Note: $i=0,1,.., X-1$; $j=0,1,i-Y-1$.

Example

Suppose the following inputs are given to the program:

3,5

Then, the output of the program should be:

[[0, 0, 0, 0, 0], [0, 1, 2, 3, 4], [0, 2, 4, 6, 8]]

5. The Head Librarian at a library wants you to make a program that calculates the fine for returning the book after the return date. You are given the actual and the expected return dates. Calculate the fine using the user defined function `cal_fine()` as follows:

- a) If the book is returned on or before the expected return date, no fine will be charged, in other words fine is 0.
 - b) If the book is returned in the same month as the expected return date,
Fine = 15 Rupees × Number of late days
 - c) If the book is not returned in the same month but in the same year as the expected return date, Fine = 500 Rupees × Number of late months
 - d) If the book is not returned in the same year, the fine is fixed at 10000 Rupees.
6. a) Write a Python program to replace the last value of tuples in a list. [5]
 Sample list: [(10, 20, 40), (40, 50, 60), (70, 80, 90)]
 Expected Output: [(10, 20, 100), (40, 50, 100), (70, 80, 100)]
- b) Write a python program to create a Dictionary with Key as First Character and Value as Words Starting with that Character. For eg if the input given as "Hello World" the output should written as {"H": "Hello", "W": "World"} [5]
7. Write an algorithm and a function in Python to parse a string such that it accepts a parameter- an encoded string. This encoded string will contain a first name, last name, and an id. You can separate the values in the string by any number of zeros. The id will not contain any zeros. The function should return a Python dictionary with the first name, last name, and id values.
 For example, if the input would be "John000Doe000123". Then the function should return: {"first_name": "John", "last_name": "Doe", "id": "123" }
8. a) What does map () function do ? Write a program in Python to print the cube of the numbers present in the list, by using map () function. [5]
 b) What do you understand by the term "tuples are immutable"? Write Python syntax for creation, printing and accessing specific element of the tuple. [5]
9. Write the functions in Python to read lines from a text file "notes.txt".
 The function named upper_case() should convert the file content into uppercase letter and display it.
 The function named find_occur() should find and count the occurrence of the word "the" and display it.
 The content of the file is:
 "India is the fastest-growing economy. India is looking for more investments around the globe. The whole world is looking at India as a great market. Most of the Indians can foresee the heights that India is capable of reaching."

10. How do you handle exceptions with Try/Except/Finally In Python? Write a function to compute $7/0$ and use try/except to catch the exceptions.

11. Given a set of intervals, check if any two intervals intersect. An interval is represented as a combination of start time and end time. The sample input and output is shown below

Input: arr[] = {{1, 3}, {5, 7}, {2, 4}, {6,9}}

Output: The intervals {1, 3} {2, 4} overlap, {5,7} {6,9} overlap

Input: arr[] = {{1, 3}, {7, 9}, {4, 6}, {10, 13}}

Output: No pair of intervals overlap.

12. Given a string S of length N with all characters in lowercase representing a sentence, the task is to print the words with the highest and lowest average of ASCII values of characters. The ASCII for character 'a' starts with 97 and increase by 1 for each character.

Examples:

Input: S = "every moment is fresh beginning"

Output:

Word with minimum average ASCII values is "beginning".

Word with maximum average ASCII values is "every".

$$\begin{array}{r} 76 \\ + 56 \\ \hline 132 \end{array} \qquad \begin{array}{r} 97 \\ - 65 \\ \hline 32 \end{array}$$

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