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Application Development Using Python(18CS55) - Question Bank

Module I

1. Explain the concept of conditional execution, alternate execution and chained execution with suitable examples
2. Explain the concept of type conversion functions and math conversions in python with suitable examples
3. Explain the working of while loop with suitable example
4. Briefly explain the working of range() function
5. Discuss exception handling in Python with an example and Exception Classes.
6. Demonstrate the usage of break and continue statements in looping structures using a snippet code
7. What is a variable? List the rules to declare a variable in python? Demonstrate the same
8. List the features of Python Programming Language
9. Briefly explain the working of definite loop in python with snippet code
10. Briefly Explain the usage of keyword import and global statement in python
11. Explain the working of python user defined functions along with its syntax.

Module II

1. Define list. How do you create a list? Give examples.
2. Discuss different ways of traversing a list. Explain with an example for each
3. Explain list operations with suitable examples.
4. Explain the various list methods
5. Lists are Mutable. Justify the statement with examples.
6. What are the different ways of deleting elements from a list? Discuss with suitable functions.
7. Give the differences between
    a. append() and extend()
    b. pop() and remove()
8. When do we encounter TypeError, ValueError and IndexError while operating on Lists?
9. Consider the list scores = [5, 4, 7, 3, 6, 2, 1] and write the python code to perform the following operations:
    i) Insert an element 9 at the beginning of the list.
    ii) Insert an element 8 at the index position 3 of the list.
    iii) Insert an element 7 at the end of the list.
    iv) Delete all the elements of the list.
    v) Delete an element at the index position 3.
    vi) Delete an element at the beginning of the list.
10. For the following three questions, let's say spam contains the list ['a','b', 'c', 'd',[3,4]].
    - What does spam[int('3' * 2) / 11] evaluate to?

- What does spam[-2] evaluate to?
- What does spam[4][1] evaluate to?

11. For the following three questions, let's say bacon contains the list [3.14, 'cat', 11, 'cat', True].
    - What does bacon.index('cat') evaluate to?
    - What does bacon.append(99) make the list value in bacon look like?
    - What does bacon.remove('cat') make the list value in bacon look like?
12. Define a dictionary type in Python. Give example.
13. With example, explain how list can be passed as arguments to a function.
14. What are Dictionaries? Explain with examples how the dictionaries are created. Differentiate between Key and value of the Dictionary element. Mention the properties of Key . Discuss the following Dictionary operations and functions with examples
    1. Accessing , Traversing , Updating , Deleting
    2. Traversing a Dictionary using looping
15. With example program illustrate how the Dictionary can be used as counters
16. What are Tuples ? Explain with examples how tuples are created. Compare Tuple with list. Discuss the following Dictionary operations and functions with examples
    1. Accessing , Updating , Deleting , Traversing (Iteration) , Comparing
    2. len ,(in) membership + (concatenation) and * (Repetition)
17. Discuss the Tuple Assignment with example .Explain how swapping can be done using tuple assignment. Write a Python program to input two integers a and b , and swap those numbers . Print both input and swapped numbers.

18.Define String? Explain how the strings are accessed and traversed.

19.Explain the concept of string with suitable examples

20. Justify "Strings are immutable"

21. Explain at least 5 String in built methods with examples.

22.Briefly explain the usage of pyperclip module.

23. Explain get() and setdefault() methods in dictionary with suitable code snippet.

24. Discuss the dictionary methods keys() and items() with suitable programming examples.

25.1Define a tuple. Give an example to illustrate creation of a tuple.

26.How do you create an empty tuple and a single element tuple

27.How do you create a tuple using a string and using a list? Explain with example.

28. How tuples can be used as a key for dictionaries? Discuss with example.

29.Demonstrate how dictionary items can be represented as list of tuples

Programming Questions:

1. Write a python program to create a list and print all the items in reverse index order(without using reverse() method)

2. Write a Python function that takes two lists and returns True if they have at least one common member.

3. Write a Python program to illustrate operations of queues using list

4. Write a Python program to illustrate operations of stacks using list

5. Write a Python Program that finds the sum of all even numbers and odd numbers in a predefined list

6. Write a Python Program that creates a list of 10 integers. Then create two lists-Odd List and Even List that has all odd and even values in the list respectively

7. Write a Python Program that creates a list of 20 numbers and then create a list that contains all the numbers from the original list that are divisible by 3

8. Write a Python Program that counts the number of times a value appears in the list without using built in function

9. Python program to find smallest number from list

10. Write Python program to swap two numbers using functions. (Write without using intermediate/temporary variables). Prompt the user for input.

11. Find the area and perimeter of a circle using functions. Prompt the user for input.

12. Write a Python Program to check whether the number is prime or not

13. Implement a python program using lists to store and display the average of 'n' numbers accepted from the user

14. Write a python program to accept 'n' numbers from the user, find sum of all even numbers and product of all odd numbers in the entered list

15. Write a Python Program that reads 'n' elements from the user and creates a list, and then display the same

16. Write a Program that reads a string from the user and displays the count of uppercase, lowercase letters, digits and spaces in the read string.

17. Write a Program that swaps the cases of the read string without using inbuilt method

18. Write a Program to check whether a given sentence is pangram or not [Example: The five boxing wizards jump quickly is a pangram]

19. Write a Python program to check the validity of a password (input from user). Validation :

- At least 1 letter between [a-z] and 1 letter between [A-Z].
- At least 1 number between [0-9].
- At least 1 character from [$#@].
- Minimum length 6 characters and Maximum length 16 characters.

20. Write a Python Program to Reverse words in a given String in Python.

[Input : str = “python quiz practice code." Output : str = "code. practice quiz python“]

21. Write a Python program to create a Caesar encryption.

Note: In cryptography, a Caesar cipher, It is a type of substitution cipher in which each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet. For example, with a shift of 3, A would be replaced by D, B would become E, and so on.

22. Write a Python to display a number in left, right and center aligned of width 10

23. Write a program that simulates Password Manager Software

24. Write a program to display the presence of given substring in main string

25. Write a python program to read a sentence from the user and display the longest word of that sentence along with its length.

26. Program to get a string from a given string where all occurences of its first character have been changed to “$” except the first character (Example : restart to be changed as resta$t)

27. Program to add “ing” at the end of the given string, if it ends with “ing” then add “ly”. If the string length of the given string is less than 3 leave it unchanged

28. Write a Program to count the number of vowels in a given string

29. Write a Program that creates a function which checks whether the given string is palindrome or not

30. Write a function that takes 2 arguments: string and a character, which counts the number of occurrences of character in the string

31. Write a function to check whether two strings are anagram or not [LISTEN and SILENT are anagrams]

32. Write a Program to remove all duplicate characters in a string and prints the string with unique characters

33. Consider the string 'brontosaurus'. Write Pythonic code that implements and returns the functionality of histogram using dictionaries for the given string.

34. Write a Program that has a dictionary of names of students and a list of marks in 4 subjects. Create another dictionary from this dictionary that has the name of the students and their total marks. Find out the topper and his/her score

35. Write a Python program to get the maximum and minimum value in a dictionary.

36. Write a Python program to get the top three items in a shop.

Sample data: {'item1': 45.50, 'item2':35, 'item3': 41.30, 'item4':55, 'item5': 24}

Expected Output:

item4 55

item1 45.5

item3 41.3

37. Write a python program to print the frequency of characters in a string. **(Hit: Use a dictionary with the character as keys and the counter as values.)**

38. Write a program to store data about your friends' birthdays.(Hit: Use a dictionary with the names as keys and the birthdays as values.)

39. Consider a dictionary with strings as keys and numbers as values. Write a program to sort the elements of this dictionary based on keys.

40. Read a string from keyboard input. Create a list containing tuples, where each tuple represents a word in the input string and length of that string. Write a program sort the words in descending order of their length

Module IV

1. Define class and object. Given an example for creating a class and an object of that class.

2. What are attributes? Explain with an example and respective object diagram.

3. Write a program to create a class called Point with two attributes x and y. Write following functions and demonstrate the working of these functions by creating suitable objects.

    a. To read attribute values

    b. To display point as an ordered pair

    c. To find distance between two points

    d. To find the midpoint of two points

    e. To find reflex of the point about x-axis i.e., it must return a new point object

    Example: point(5,10) -> reflex_x must return a new point (5,-10)

4. Write a program to create a class called Rectangle with the help of a corner point, width and height. Write following functions and demonstrate their working:

    a. To find and display center of rectangle

    b. To display point as an ordered pair

    c. To resize the rectangle

d. To find area and perimeter of a rectangle

5. Differentiate copy.copy() and copy.deepcopy() with suitable examples.
6. Differentiate between class variables and instance variables with suitable examples
7. Discuss the functions isinstance(), hasattr() with suitable examples.
8. With help of programming examples explain the difference between Prototype and Planned Programming Development.
9. Differentiate pure functions and modifiers with suitable examples
10. What is a Docstring? Why are they written?
11. What do you mean by "instance as returning value"? Explain with an example.
12. Justify the statement "Objects are mutable" with suitable examples
13. What is an embedded object? Give an example.
14. When do we encounter AttributeError?
15. How do you find the memory address of an instance of a class?
16. Explain assert statement. Illustrate the situation of getting AssertionError exception.
17. List out the object oriented characteristics possessed by Python.
18. Differentiate methods and functions.
19. Discuss the significance of __init__() method in Python with a proper example code snippet.
20. Briefly discuss self keyword in Python.
21. What does __str__() method do in Python? Illustrate with a code snippet.
22. Discuss operator overloading. Mention any five operators with respective special functions to be overloaded in Python.
23. Write a program to add two point objects by overloading + operator. Overload __str__() to display point as an ordered pair.

24. Write a program to create a class Time to represent time in HH:MM:SS format. Perform following operations:
    a. Overload + to add two time objects
    b. Overload + to add a numeric value to a time object (commutative)
    c. Overload __str__() to display time in appropriate format