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OJT - Python Exercise

1. Write a program in Python to find second highest number in an integer array without using inbuilt functions.

2. Write a program in Python to remove duplicate elements form array without using inbuilt function.

3. Write Python Program to delete element from array at given index.

4. Write Python program to perform left rotation of array elements by two positions.

5. From given list of numbers, create a list of square of prime numbers .
   l1 = [1, 4, 6, 11,15, 24, 19, 25, 27, 30,17]

6. Read a given file and extract the integers from each line, concatenate all the integers present in the same line and print the sum of all these integers.

eg: <File content>
He is 32 yrs old and his son is 7 yrs old .
She is 27 yrs old and her daughter is 2 yrs old .

Output : 599 ## calculation : Integers on Line 1 + Line 2 = 327 + 272 = 599

7. Reverse the below string without changing the position of special characters .
 s = "adfw$vf&yvy*ugv%uy"

8. Write a function in Python that accepts a credit card number. It should return a string where all the characters are hidden with an asterisk except the last four.

For eg., if the credit card no. is "4509876278910046", then function should return "***********0046".

9. For the given sentence, return the average word length.
sentence = "I need to work very hard to learn more about algorithms in Python!"
Note: Remember to remove punctuation first.

10. Sort the list of integers in descending order without using inbuilt functions .
  lst = [56,2,13,1,78,4,6]

11. From the given list, check if the element is an integer then return square of that element and if element is a string then return the same string 2 times. Output should be in list format.
  a = [8,9,10,"f",5,8,"d"]
  Output should be : [64, 81, 100, 'ff', 25, 64, 'dd']

12. Write a Python Program to Reverse the Content of a File.

Input :-
I am
new to this
world of
Python.

Output :-
Python.
world of
new to this
I am

13. Write a python program to take 2 inputs(numbers) from user. Divide the greater number by the smaller number. Validate the user inputs, it should be integer type only . If the input is not integer, raise exception and catch it. Also, if divisor is 0, catch the exception raised.

14. In the given list, check if the element is None, replace it with the recent value .
  l = [1,None,None,3,None,4]
  Output should be : [1,1,1,3,3,4]

15. Create a new dictionary using the list and dictionary defined below. The keys of the new dictionary will be the elements in the list so we will iterate over the elements in list. If the element is also in the dictionary, the value will be the values of that key in the dictionary. Otherwise, the value will be the length of the key.

  I/p:
  lst = ['data','science','artificial', 'intelligence'] dct = {'data': 5, 'science': 3, 'machine': 1, 'learning': 8}

  O/p:
  {'artificial': 10, 'data': 5, 'intelligence': 12, 'science': 3}

16. Write a function in Python that accepts one numeric parameter. This parameter will be the measure of an angle in radians. The function should convert the radians into degrees and then return that value. Do not use inbuilt functions.
  Note : Angle in Radians × 180°/π = Angle in Degrees.

17. Create a function that takes the number of wins, draws and losses and calculates the number of points obtained so far for 'n' number of football teams . Print the winner team in the end .
  wins get +3 points, draws get +1 point, losses get -1 points .

  I/p:
  Team1(3, 4, 2) ## calculation : 3*3 +4*1 + 2(-1) = 11

Team2(5, 0, 2) ## calculation : 5*3 + 0*1 + 2(-1) = 13
Team3(0, 0, 1) ## calculation : 0*3 + 0*1 + 1(-1) = -1

O/p:
Winner: Team2

18. dct = {111: "Eric", 112: "Kyle", 113: "Butters"}
Load the above dictionary variable in a file 'test.txt' . Now create a new dictionary
variable (eg. dct2) and load the contents of the file 'test.txt' in it. Print the value of
key '112' using the new dictionary variable .

Note : Use pickling for solving this question.
O/p : Kyle

19. Write a Python program to extract year, month, date and time using Lambda.
 I/p:
 2020-01-15 09:03:32.744178

 O/p :
 Year : 2020
 Month : 1
 Day : 15
 Time : 09:03:32.744178

20. Use a nested list comprehension to find all of the numbers from 1-1000 that are
divisible by any single digit besides 1 (2-9)

21. Write a program that takes one or more filenames as arguments and prints all
the lines which are longer than 40 characters. Note :Use generator to solve this
question.

22. Print the following rhombus pattern .
 eg. If input is 4, it should print the following output .

```
   1
  22
 333
4444
 333
  22
   1
```

23. Print the following pattern :

```
    *
   *_*
  *___*
 *_____*
*_____*
*_____*
```

24. Write a Python class Restaurant with attributes like menu_items, book_table, and customer_orders, and methods like add_item_to_menu, book_tables, and customer_order. Perform the following tasks now:
- Now add items to the menu.
- Make table reservations.
- Take customer orders.
- Print the menu.
- Print table reservations.
- Print customer orders.

Note : Use dictionaries and lists to store the data.

25. Write a function that employs regular expressions to ensure the password given to the function is strong. A strong password is defined as follows:
-at least eight characters long
-contains one uppercase character
-contains one lowercase character
-has at least one digit
-has at least one special character

26. Check sum of 2 numbers from given list which matches target value and returns the indexes of those numbers in the form of list.
l1 = [7,8,2,3,6,9,2,8]
Target = 14

O/p should be: [1,4]
Note : We should not be using more than 1 loop.

27. For any function, find out the arguments passed in the function using in-built python module and also explore on all other possible values we can get using the same python module.
eg. def test(x1, x2, x3=10):
        pass
Using the in-built python module, find all the arguments passed in the test function.

28. Open the site "carwale.com" , search "Tata Nexon" and go to version tab.
Print the version name and its price.
Note: You can use selenium for solving this question.

29. Open flipkart site and search for "mobile phones". Filter with brand name as "samsung" and "Flipkart assured" tag. In the list obtained, print the name and price of the 2nd mobile phone .
Note : You can use selenium for solving this question.

30. Create below 3 functions :
- function 1 calculates sqrt
- function 2 calculates cube

- function 3 calculates square

Pass 50,00,000 as an integer argument which is going to be used as a range of integers.

Call above 3 functions in parallel using below 3 ways :

1) Using multiprocessing

2) Using threading.thread

3) Using threadpoolexecutor

Calculate the total time taken in each of these 3 ways .

Share your observations/insights on the results obtained.