Lab Question
IT Workshop (Python)
Paper Code: PCC-CS393
B. Tech CSE 2nd Year 3rd Semester
2021-2022

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1. Write a program to accept two integer values from the user and return their product. If the product is greater than 1000, then return their sum.

Sample Test	Input	Output
Test Case 1	10, 20	200
Test Case 2	10, 200	210
Test Case 3	20, 60	80
Test Case 4	30.1, 10	Invalid Input
Test Case 5	10, a	Invalid Input

2. Write a program to iterate the given list of numbers and print only those numbers which are divisible by 5 and 3.

Sample Test	Input	Output
Test Case 1	[4, 15, 12, 45]	15, 45
Test Case 2	[4, 10, 25, 12, 45, 60]	45, 60
Test Case 3	[10, 20, 30, 33, 46, 55, 45]	30, 45
Test Case 4	[a, b ,c ,d]	Invalid Input
Test Case 5	[30.0, 45.0, 90.0]	30.0, 45.0, 90.0

3. Write a program to reverse a given number and return true if it is the same as the original number.

Sample Test	Input	Output
Test Case 1	121	True
Test Case 2	12345	False
Test Case 3	14541	True
Test Case 4	14541.0	True
Test Case 5	12721	True

4. Write a program to create a third list from two given lists of integers such that it contains only odd numbers from the first list and even numbers from the second list.

Sample Test	Input	Output
Test Case 1	listOne = [10, 20, 23, 11, 17] listTwo = [13, 43, 24, 36, 12]	[23, 11, 17, 24, 36, 12]
Test Case 2	listOne = [11, 21, 23, 12, 19] listTwo = [17, 73, 64, 35, 16]	[11, 21, 23, 19, 64, 16]

5. Write a program to arrange string characters such that lowercase letters should come first.

Sample Test	Input	Output
Test Case 1	‘Netaji’	‘etajiN’
Test Case 2	‘PythonProgramming’	‘ythonrogrammingPP’

6. Write a program to count all lower case, upper case, digits, and special symbols of a string.

Sample Test	Input	Output
Test Case 1	‘CSE 2nd Year @ Netaji Subhash Engineering College’	Total counts of chars, digits, and symbols Chars = 40 Digits = 1 Symbol = 8
Test Case 2	‘A+B=C+D @ Test1’	Total counts of chars, digits, and symbols Chars = 8 Digits = 1 Symbol = 6
Test Cse3	‘P@#yn26at^&i5ve’	Total counts of chars, digits, and symbols Chars = 8 Digits = 3 Symbol = 4

7. Write a program to count occurrences of all characters within a string.

Sample Test	Input	Output
Test Case 1	‘Netaji Subhash Engineering College’	{'S': 1, 'o': 1, 'l': 2, 'u': 1, ' ': 3, 'j': 1, 'n': 3, 'N': 1, 'g': 3, 'i': 3, 'E': 1, 'h': 2, 'r': 1, 's': 1, 'e': 5, 'a': 2, 'C': 1, 't': 1, 'b': 1}
Test Case 2	‘A+B=C+D @ Test1’	{'A': 1, ' ': 2, '1': 1, 'C': 1, 's': 1, '=': 1, 't': 1, '+': 2, 'B': 1, 'D': 1, 'T': 1, 'e': 1, '@': 1}
Test Cse3	‘pynativepynvepynative’	{'p': 3, 'y': 3, 'n': 3, 'a': 2, 't': 2, 'i': 2, 'v': 3, 'e': 3}

8. Write a program to create a third list by picking an odd-index element from the first list and even index elements from the second.

Sample Test	Input	Output
Test Case 1	listOne = [10, 20, 23, 11, 17] listTwo = [13, 43, 24, 36, 12]	[20, 11, 13, 24, 12]
Test Case 2	listOne = [11, 21, 23, 12, 19] listTwo = [17, 73, 64, 35, 16]	[21, 12, 17, 64, 16]
Test Case 3	listOne = [3, 6, 9, 12, 15, 18, 21] listTwo = [4, 8, 12, 16, 20, 24, 28]	[6, 12, 18, 4, 12, 20, 28]

9. Write a program to removes the element at index 4 and add it to the 2nd position and also, at the end of the given list.

Sample Test	Input	Output
Test Case 1	[34, 54, 67, 89, 11, 43, 94]	[34, 54, 11, 67, 89, 43, 94, 11]
Test Case 2	[17, 73, 64, 35, 16]	[17, 73, 16, 64, 35, 16]
Test Case 3	[4, 8, 12, 16, 20, 24, 28]	[4, 8, 20, 12, 16, 24, 28, 20]

10. Write a program to slice a given list into 3 equal chunks and reverse each list.

Sample Test	Input	Output
Test Case 1	[34, 54, 67, 89, 11, 43, 94, 86, 43]	Original list [34, 54, 67, 89, 11, 43, 94, 86, 43] Chunk 1 [34, 54, 67] After reversing it [67, 54, 34] Chunk 2 [89, 11, 43] After reversing it [43, 11, 89] Chunk 3 [94, 86, 43] After reversing it [43, 86, 94]
Test Case 2	[11, 45, 8, 23, 14, 12, 78, 45, 89]	Original list [11, 45, 8, 23, 14, 12, 78, 45, 89] Chunk 1 [11, 45, 8] After reversing it [8, 45, 11]

		Chunk 2 [23, 14, 12] After reversing it [12, 14, 23] Chunk 3 [78, 45, 89] After reversing it [89, 45, 78]

11. Write a program to iterate a given list and count the occurrence of each element and create a dictionary to show the count of each element.

Sample Test	Input	Output
Test Case 1	[11, 45, 8, 11, 23, 45, 23, 45, 89]	Original list [11, 45, 8, 11, 23, 45, 23, 45, 89] Printing count of each item {8: 1, 89: 1, 11: 2, 45: 3, 23: 2}
Test Case 2	[17, 73, 64, 35, 16]	Original list [17, 73, 64, 35, 16] Printing count of each item {64: 1, 17: 1, 35: 1, 16: 1, 73: 1}
Test Case 3	[4, 8, 12, 16, 2, 2, 4, 2, 8]	Original list [4, 8, 12, 16, 2, 2, 4, 2, 8] Printing count of each item {8: 2, 12: 1, 2: 3, 4: 2, 16: 1}

12. Write a program to iterate a given list and check if a given element already exists in a dictionary as a key's value if not delete it from the list.

Sample Test	Input	Output
Test Case 1	[47, 64, 69, 37, 76, 83, 95, 97] {'Jhon':47, 'Emma':69, 'Kelly':76, 'Jason':97}	List - [47, 64, 69, 37, 76, 83, 95, 97] Dictionary - {'Kelly': 76, 'Jhon': 47, 'Jason': 97, 'Emma': 69} After removing unwanted elements from list [47, 69, 76, 97]
Test Case 2	[3, 6, 8, 2, 65, 12, 34, 76, 87] {'Abhi':65, 'Agni':8, 'Rangaan':12}	List - [3, 6, 8, 2, 65, 12, 34, 76, 87] Dictionary - {'Rangaan': 12, 'Agni': 8, 'Abhi': 65} After removing unwanted elements from list [8, 65, 12]

13. Write a program to get all values from a given dictionary and add it to a list but don't add duplicates.

Sample Test	Input	Output
Test Case 1	{'Jan':47, 'Feb':52, 'March':47, 'April':44, 'May':52, 'June':53,'July':54, 'Aug':44,	Dictionary's values - ([53, 47, 54, 52, 52, 44, 47, 54, 44])

	'Sept':54}	Unique list [53, 47, 54, 52, 44]
Test Case 2	{'Oct':40, 'Feb':52, 'March':47, 'April':44, 'May':52, 'June':53, 'July':54, 'Aug':40, 'Dec':52}	Dictionary's values - ([40, 47, 52, 52, 52, 40, 54, 44, 53]) Unique list [40, 47, 52, 54, 44, 53]

14. Write a program to remove duplicates from a list and create a tuple and find the minimum and maximum number.

Sample Test	Input	Output
Test Case 1	[87, 45, 41, 65, 94, 41, 99, 94]	Original list [87, 52, 44, 53, 54, 87, 52, 53] Unique list [54, 52, 44, 53, 87] Tuple (54, 52, 44, 53, 87) Minimum number is: 44 Maximum number is: 87
Test Case 2	[4, 8, 12, 16, 2, 2, 4, 2, 8]	Original list [4, 8, 12, 16, 2, 2, 4, 2, 8] Unique list [8, 16, 2, 4, 12] Tuple (8, 16, 2, 4, 12) Minimum number is: 2 Maximum number is: 16

15. Write a program to get all substrings of a given string.

Sample Test	Input	Output
Test Case 1	‘Netaji’	All substrings of string are : ['N', 'Ne', 'Net', 'Neta', 'Netaj', 'Netaji', 'e', 'et', 'eta', 'etaj', 'etaji', 't', 'ta', 'taj', 'taji', 'a', 'aj', 'aji', 'j', 'ji', 'i']
Test Case 2	‘Python’	All substrings of string are : ['P', 'Py', 'Pyt', 'Pyth', 'Pytho', 'Python', 'y', 'yt', 'yth', 'ytho', 'ython', 't', 'th', 'tho', 'thon', 'h', 'ho', 'hon', 'o', 'on', 'n']

16. Write a program for the cube sum of first n natural numbers.

Sample Test	Input	Output
Test Case 1	n=5	225
Test Case 2	n=7	784
Test Case 2	n=9	2025

17. Write a program for compound interest.

Sample Test	Input	Output
Test Case 1	Principal: 10000 Rate: 12 Year: 6	Compound interest is 19738.226851840012
Test Case 2	Principal: 5000 Rate: 5 Year: 10	Compound interest is 8144.47313388721

18. Write a program for the factorial of a number.

Sample Test	Input	Output
Test Case 1	n=7	The factorial of 7 is : 5040
Test Case 2	n=6	The factorial of 6 is : 720
Test Case 2	n=9	The factorial of 9 is : 362880

19. Write a program to print all Prime numbers in an interval.

Sample Test	Input	Output
Test Case 1	start = 11 end = 25	11 13 17 19 23
Test Case 2	start = 5 end = 20	5 7 11 13 17 19

20. Write a program to remove empty tuples from a list.

Sample Test	Input	Output
Test Case 1	[(), ('ram','15','8'), (), ('laxman', 'sita'), ('krishna', 'akbar', '45'), ("",),()]	: [('ram', '15', '8'), ('laxman', 'sita'), ('krishna', 'akbar', '45'), ("", "")]

Test Case 2	[('','','8'), (), ('0', '00', '000'), ('birbal', '', '45'), (''), (), ('',''),()]	[('', '', '8'), ('0', '00', '000'), ('birbal', '', '45'), ('', '')]

21. Write a Program to print duplicates from a list of integers.

Sample Test	Input	Output
Test Case 1	[10, 20, 30, 20, 20, 30, 40, 50, -20, 60, 60, -20, -20]	[20, 30, -20, 60]
Test Case 2	[87, 45, 41, 65, 94, 41, 99, 94]	[41, 94]

22. Write a program to sort the values of the first list using the second list.

Sample Test	Input	Output
Test Case 1	list1 = ["a", "b", "c", "d", "e", "f", "g", "h", "i"] list2 = [0, 1, 1, 0, 1, 2, 2, 0, 1]	['a', 'd', 'h', 'b', 'c', 'e', 'i', 'f', 'g']
Test Case 2	list1 = ["g", "e", "e", "k", "s", "f", "o", "r", "g", "e", "e", "k", "s"] list2 = [0, 1, 1, 0, 1, 2, 2, 0, 1]	['g', 'k', 'r', 'e', 'e', 'g', 's', 'f', 'o']

23. Write a program to accept the string which contains all vowels.

Sample Test	Input	Output
Test Case 1	'NetajiSubash'	Not Accepted
Test Case 2	'ABeeIghiObhkUul'	Accepted
Test Case3	'SEEquoiaL'	Accepted

24. Write a program to sort a list of dictionaries by values – Using lambda function

Sample Test	Input	Output
Test Case 1	[{ "name" : "Nandini", "age" : 20}, { "name" : "Manjeet", "age" : 20 }, { "name" : "Nikhil" , "age" : 19 }]	The list printed sorting by age: [{'name': 'Nikhil', 'age': 19}, {'name': 'Nandini', 'age': 20}, {'name': 'Manjeet', 'age': 20}] The list printed sorting by age and name: [{'name': 'Nikhil', 'age': 19}, {'name': 'Manjeet', 'age': 20}, {'name': 'Nandini', 'age': 20}]

		The list printed sorting by age in descending order: [{'name': 'Nandini', 'age': 20}, {'name': 'Manjeet', 'age': 20}, {'name': 'Nikhil', 'age': 19}]

25. Write a program to check if binary representations of two numbers are anagram.

Sample Test	Input	Output
Test Case 1	8,4	Yes
Test Case 2	4,5	No
Test Case3	12,16	No

26. Write a program to convert a list of Tuples into a Dictionary.

Sample Test	Input	Output
Test Case 1	[("akash", 10), ("gaurav", 12), ("anand", 14), ("suraj", 20), ("akhil", 25), ("ashish", 30)]	{'akash': [10], 'gaurav': [12], 'anand': [14], 'ashish': [30], 'akhil': [25], 'suraj': [20]}
Test Case 2	[('A', 1), ('B', 2), ('C', 3)]	{'B': [2], 'A': [1], 'C': [3]}

27. Write a Python program to construct the following patterns, using a nested for loop.

Pattern-I

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

Pattern-II

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

28. Write a function that accepts a string and calculate the number of upper case letters and lower case letters.

Sample Test	Input	Output
Test Case 1	'The quick Brown Fox'	No. of Upper case characters : 3 No. of Lower case characters : 13
Test Case 2	‘Computer Science’	No. of Upper case characters: 2 No. of Lower case characters : 13

29. Write a function that takes a list and returns a new list with unique elements of the first list.

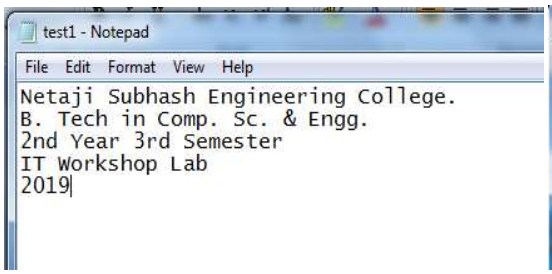
Sample Test	Input	Output
Test Case 1	[1,2,3,3,3,3,4,5]	[1, 2, 3, 4, 5]
Test Case 2	[10, 20, 30, 20, 20, 30, 40, 50, -20, 60, 60, -20, -20]	[10, 20, 30, 40, 50, -20, 60]

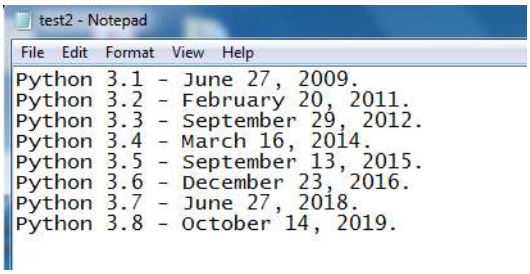
30. Write a program for GCD of more than two numbers stored in a list.

Sample Test	Input	Output
Test Case 1	[11, 22, 33, 55, 44, 66, 77]	11
Test Case 2	[12, 54, 6, 18, 24]	6

31. Write a program to read a file line by line and store it into a list.

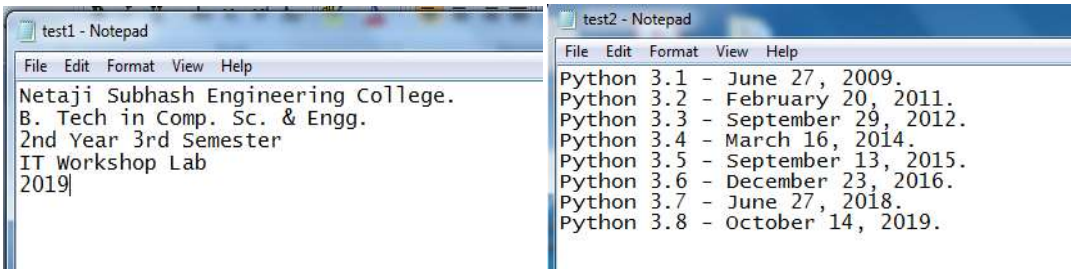
Sample Test	Input	Output
Test Case 1	test1.txt	['Netaji Subhash Engineering College.\n', 'B. Tech in Comp. Sc. & Engg.\n', '2nd Year 3rd Semester\n', 'IT Workshop Lab\n', '2019']
Test Case 2	test2.txt	['Python 3.1 - June 27, 2009.\n', 'Python 3.2 - February 20, 2011.\n', 'Python 3.3 - September 29, 2012.\n', 'Python 3.4 - March 16, 2014.\n', 'Python 3.5 - September 13, 2015.\n', 'Python 3.6 - December 23, 2016.\n', 'Python 3.7 - June 27, 2018.\n', 'Python 3.8 - October 14, 2019.']





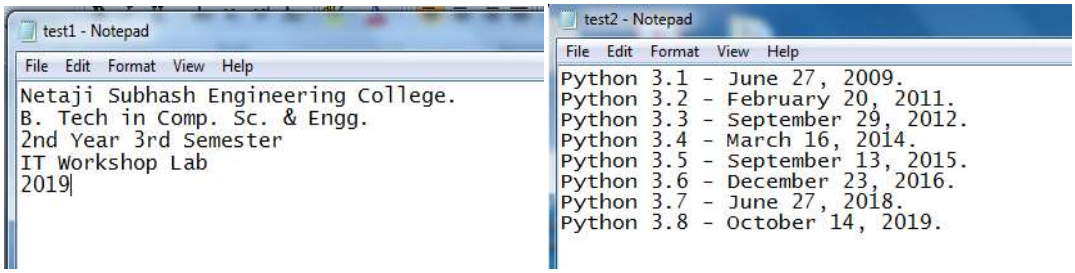
32. Write a program to find the longest word of a text file.

Sample Test	Input	Output
Test Case 1	test1.txt	['Engineering']
Test Case 2	test2.txt	['September', 'September']



33. Write a program to count the number of lines in a text file.

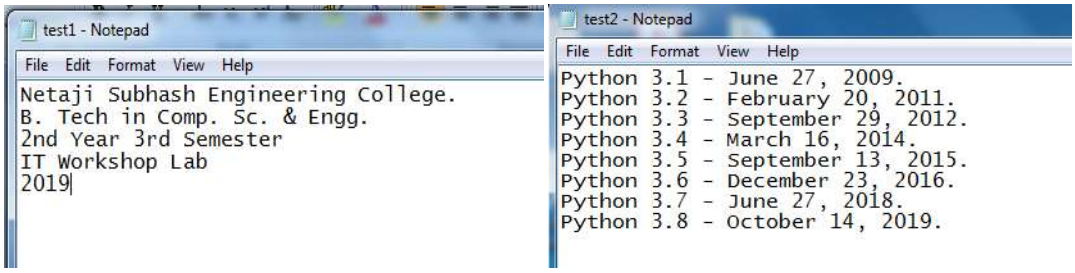
Sample Test	Input	Output
Test Case 1	test1.txt	Number of lines in the file :5
Test Case 2	test2.txt	Number of lines in the file :8



34. Write a program to count the frequency of words in a text file.

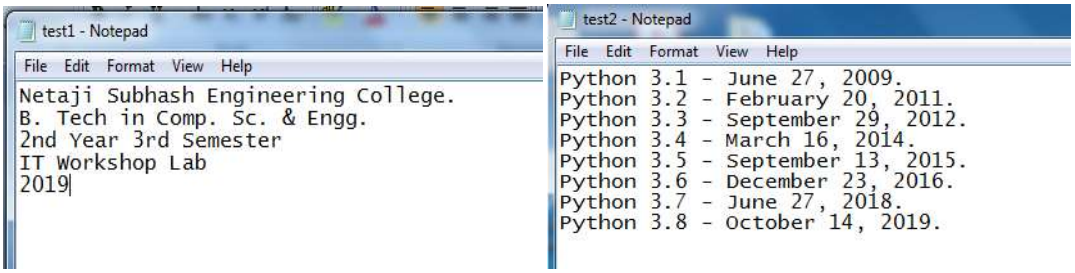
Sample Test	Input	Output
Test Case 1	test1.txt	Number of words in the file : Counter({'Subhash': 1, 'IT': 1, 'Engg.': 1, 'B.': 1, '3rd': 1, 'Year': 1, 'Sc.': 1, 'Tech': 1, 'Comp.': 1, 'in': 1, 'College.': 1, '&': 1, 'Semester': 1, 'Engineering': 1, 'Netaji': 1, '2019': 1, '2nd': 1, 'Lab': 1, 'Workshop': 1})
Test Case 2	test2.txt	Number of words in the file : Counter({'-': 8, 'Python': 8, 'June': 2, '27,': 2, 'September': 2, 'October': 1, '16,': 1, '3.8': 1, 'March': 1, '2015.': 1, '3.3': 1, '29,': 1, '3.2': 1, '3.5': 1, '2019.': 1, '3.4': 1, '14,': 1, '13,': 1, 'December': 1, '3.7': 1, '2012.': 1, '23,': 1, '3.1': 1,

		'2018.': 1, '3.6': 1, '2014.': 1, 'February': 1, '2009.': 1, '2016.': 1, '2011.': 1, '20,': 1})



35. Write a program to remove newline characters from a text file.

Sample Test	Input	Output
Test Case 1	test1.txt	['Netaji Subhash Engineering College.', 'B. Tech in Comp. Sc. & Engg.', '2nd Year 3rd Semester', 'IT Workshop Lab', '2019']
Test Case 2	test2.txt	['Python 3.1 - June 27, 2009.', 'Python 3.2 - February 20, 2011.', 'Python 3.3 - September 29, 2012.', 'Python 3.4 - March 16, 2014.', 'Python 3.5 - September 13, 2015.', 'Python 3.6 - December 23, 2016.', 'Python 3.7 - June 27, 2018.', 'Python 3.8 - October 14, 2019.']



36. Write a program to get a string made of the first 2 and the last 2 chars from a given string. If the string length is less than 2, then print the empty string.

Sample Test	Input	Output
Test Case 1	‘computer’	‘coer’
Test Case 2	‘g2’	‘g2g2’
Test Case 3	‘c’	Empty Sring

37. Write a Python program to add 'ing' at the end of a given string (length should be at least 3). If the given string already ends with 'ing' then add 'ly' instead. If the string length of the given string is less than 3, leave it unchanged.

Sample Test	Input	Output
Test Case 1	‘doi’	‘doing’
Test Case 2	‘string’	‘stringly’
Test Case 3	‘do’	‘do’

38. Write a program that accepts a comma-separated sequence of words as input and prints the unique words in the sorted form (alphanumerically).

Sample Test	Input	Output
Test Case 1	red, white, black, red, green, black	black, green, red, white
Test Case 2	white, black, red, green, black, blue, pink	black, blue, green, pink, red, white

39. Write a program to take input two integer numbers from the keyboard (a, b) and then find the following using lambda function:
    A. Product of two numbers
    B. Division of two (a/b).
    C. Find the bigger and lesser between the two numbers.

Sample Test	Input	Output
Test Case 1	a= 10, b=20	Product=200 Division=0.5 Largest among the two: b
Test Case 2	a= 10, b=0	Product=0 Zero division not allowed check inputs
Test Case 3	a= 10, b=a	Invalid input

40. Write a program to convert a hexadecimal number, octal number, and binary number to a decimal number.

Sample Test	Input	Output
Test Case 1	Hexadecimal no.:4 Octal no.:3 Binary no.:101	4 3 5
Test Case 2	Hexadecimal no.:a Octal no.:9 Binary no.:1001	Invalid input

Test Case 3	Hexadecimal no.:a Octal no.:6 Binary no.:10011	10 6 19

41. Write a Python program that would ask for the number of players for which the program should accept their names and runs scored using input and store these details in a dictionary. Finally, print the run scored against a player's name which would be input from the keyboard. It returns -1 if the player's name is not found.

Sample Test	Input	Output
Test Case 1	n=2 name :Sachin run :78 name :Sourav run :94 Run scored by Dravid	-1
Test Case 2	n=3 name :Sachin run :78 name :Sourav run :94 name :Dravid run:104 Run scored by Dravid	104

42. Write a function called 'fact' which would receive a number (n) for which it would calculate the factorial. The value of 'n' should be input from the keyboard in the main function and then pass it to 'fact' function. Give proper exceptions like ValueError.

Sample Test	Input	Output
Test Case 1	6	720
Test Case 2	0	1
Test Case 3	6.0	Invalid input

43. Write a program to create a third list 'list3' such that it contains numbers that are present in 'list1' but not in 'list2'.

Sample Test	Input	Output
Test Case 1	list1 = [11, 21, 23, 73, 12, 16, 45, 19] list2 = [17, 21, 73, 64, 35, 16]	List3=[11, 23, 12, 45, 19]

Test Case 2	list1 = [21, 23, 73, 12, 64, 32, 65, 16, 45, 19] list2 = [17, 21, 23, 64, 32, 16]	List3=[73, 12, 65, 45, 19]

44. Write a program to define a function to compute GCD and LCM of two numbers hence to find out GCD and LCM of two numbers.

Sample Test	Input	Output
Test Case 1	45, 60	The GCD of 45 and 60 is : 15 The LCM of 45 and 60 is : 180
Test Case 2	12, 65	The GCD of 12 and 65 is : 1 The LCM of 12 and 65 is : 780
Test Case 3	5, 15.0	Invalid input

45. Create a module 'prime' to check whether a number is a prime number or not. Write a program to find the prime number between two limits using module 'prime'.

Sample Test	Input	Output
Test Case 1	lower limit: 5 upper limit: 17	Prime numbers between 5 and 17 5 7 11 13 17
Test Case 2	lower limit: 2 upper limit: 25	Prime numbers between 2 and 25 2 3 5 7 11 13 17 19 23

46. Write a program that will find all such numbers which are divisible by 7 but are not a multiple of 5, between two limits (both included). The numbers obtained should be printed in a comma-separated sequence on a single line.

Sample Test	Input	Output

Test Case 1	lower limit:5 upper limit:100	7,14,21,28,42,49,56,63,77,84,91,98
Test Case 2	lower limit:20 upper limit:50	21,28,42,49
Test Case 3	lower limit:-7 upper limit:30	-7,7,14,21,28

47. Create a module 'palindromecheck' to check a string is a palindrome or not. Write a program to find whether a string is a palindrome using the module 'palindromecheck'.

Sample Test	Input	Output
Test Case 1	'madam'	String is Palindrome
Test Case 2	'computer'	String is not Palindrome
Test Case 3	'1234321'	String is Palindrome

48. Write a Python program to generate a random number between two limits. Raise a user-defined exception if the number generated is below 10.

Sample Test	Input	Output
Test Case 1	lower limit:1 upper limit:100	Random number generated 93 No exception Bye
Test Case 2	lower limit:5 upper limit:20	Random number generated 16 No exception Bye Bye
Test Case 3	lower limit:1 upper limit:9	Random error is generated Bye

49. Write a program to multiply two matrices.

Sample Test	Input	Output
Test Case 1	A = [[12, 7, 3], [4, 5, 6], [7, 8, 9]] B = [[5, 8, 1, 2], [6, 7, 3, 0],	[[114, 160, 60, 27], [74, 97, 73, 14], [119, 157, 112, 23]]

	[4, 5, 9, 1]]	
Test Case 2	A = [[12,7,3], [4 ,5,6], [7 ,8,9]] B = [[5,8,1,2], [6,7,3,0], [4,5,9,1]]	[[0, 0, 0, 0], [0, 0, 0, 0], [0, 0, 0, 0]]

50. Consider the given series: 0, 2, 1, 3, 1, 5, 2, 7, 3, 11, 5, 13, 8, 17, …, This series is a mixture of 2 series – all the odd terms in this series form a Fibonacci series and all the even terms are the prime numbers in ascending order.

    Write a program to find the nth term in this series.

Sample Test	Input	Output
Test Case 1	n=8	7
Test Case 2	n=15	13
Test Case 3	n=12	13
Test Case 4	n=17	21