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Work Sheet 2: Basic data types and containers

Writing Python programs that manipulate numbers, booleans, strings, lists, dictionaries, sets, and tuples.

1. L is a list defined as L= [11, 12, 13, 14].

(i) WAP to add 50 and 60 to L.
(ii) WAP to remove 11 and 13 from L.
(iii) WAP to sort L in ascending order.
(iv) WAP to sort L in descending order.
(v) WAP to search for 13 in L.
(vi) WAP to count the number of elements present in L.
(vii) WAP to sum all the elements in L.
(viii) WAP to sum all ODD numbers in L.
(ix) WAP to sum all EVEN numbers in L.
(x) WAP to sum all PRIME numbers in L.
(xi) WAP to clear all the elements in L.
(xii) WAP to delete L.

2. Write a Python program to sum all the items in a list without using any inbuilt function.

3. Write a Python program to multiply all the items in a list without using any inbuilt function.

4. Write a Python program to generate a 3*4*6 3D array whose each element is *.

5. D is a dictionary defined as D= {1:5.6, 2:7.8, 3:6.6, 4:8.7, 5:7.7}.

(i) WAP to add new entry in D; key=8 and value is 8.8
(ii) WAP to remove key=2.
(iii) WAP to check weather 6 key is present in D.
(iv) WAP to count the number of elements present in D.
(v) WAP to add all the values present D.
(vi) WAP to update the value of 3 to 7.1.
(vii) WAP to clear the dictionary.

6. S1 is a set defined as S1= {10, 20, 30, 40, 50, 60}. S2 is a set defined as S2= {40, 50, 60, 70, 80, 90}.

(i) WAP to add 55 and 66 in Set S1.
(ii) WAP to remove 10 and 30 from Set S1.
(iii) WAP to check whether 40 is present in S1.
(iv) WAP to find the union between S1 and S2.
(v) WAP to find the intersection between S1 and S2.
(vi) WAP to find the S1 - S2.

7. Write the following program.

(i) WAP to print 100 random strings where each string, Has a length between 6 and 8 characters (inclusive), Consists of uppercase and lowercase English alphabets only (A–Z, a–z), Characters may be repeated.
(ii) WAP to print all prime numbers between 600 and 800.
(iii) WAP to print all numbers between 100 and 1000 that are divisible by 7 and 9.

8. Write a Python program to display the examination schedule. (extract the date from exam_st_date). exam_st_date = (11, 12, 2025)
   Hint: Format: The examination will start from: 11 / 12 / 2025

9. Iterate the given list of numbers and print only those numbers which are divisible by 5.

10. Write a Python program to check if a given number is even or odd using boolean variables.

11. Write a program to find how many times substring “Emma” appears in the given string.

12. Create a new list from two list using the following condition, Given two list of numbers, write a program to create a new list such that the new list should contain odd numbers from the first list and even numbers from the second list.

13. A robot’s logged positions are stored as: positions = [(2,3), (4,5), (6,7), (7,8)]. Write a Python program to find all positions where the x-coordinate is even.

14. A robot’s sensor readings are stored as: sensor_data = {1: 2.3, 2: 4.5, 3: 1.8, 4: 3.6}. Write a Python program to find all sensor IDs whose reading is above 3.0.

15. A robot was given the following commands:
    commands_received = {"MOVE", "TURN_LEFT", "TURN_RIGHT", "STOP"}
    commands_executed = {"MOVE", "TURN_LEFT", "STOP"}.
    Write a Python program to find which commands were not executed.