Practice 9

Task 01: Declare a list of 10 elements. Initialize elements at random (with any range of your choice).

Print elements in single line. Find and print average. Subtract all element from average. Print elements again in single line. Next, count and print number of negative elements and number of positive

elements.

Sample Runs:

Length: 10

37 17 61 95 51 72 12 49 80 92

Average: 56.60

-19.60 -39.60 4.40 38.40 -5.60 15.40 -44.60 -7.60 23.40 35.40

Count of positive values: 5

Count of negative values: 5

Length: 10

18 96 79 13 54 39 54 28 67 86

Average: 53.40

-35.40 42.60 25.60 -40.40 0.60 -14.40 0.60 -25.40 13.60 32.60

Count of positive values: 6

Count of negative values: 4

Task 02: Declare a list of 30 elements to store marks of 30 students of a class. Initialize elements at random in range 1-100. The management is interested to divide students in three categories i.e., failures, above average and below average. For this purpose, calculate average of passed students only.

Do following tasks in steps:

- Initialize marks and print in single line

- Print marks in a single line

- count number of pass students (students with 50 or more marks are pass)

- sum number of pass students

- calculate and print average of pass students

- Next, print marks of fail students in single line

- Next, print marks of students with above average

- Lastly, print marks of student with below average

Note: Run different loop for each step

Sample Runs:

Marks: 80 66 97 69 90 77 92 45 14 50 5 79 73 94 62 91 18 89 63 35 11 10 49 1 46 52 82 41 35 99

Average: 78.06

Marks of Fail Students: 45 14 5 18 35 11 10 49 1 46 41 35

Marks of Students Above Average: 80 97 90 92 79 94 91 89 82 99

Marks of Students Below Average: 66 69 77 45 14 50 5 73 62 18 63 35 11 10 49 1 46 52 41 35

Task 03: Declare a list of 12 elements to store monthly sales of XYZ Company. Initialize elements at random (range 1000 to 2000) and print in single line. Company wants to do different analysis. For example, difference of sale in first half of the year and second half of the year. Difference of sales in each quarter.

A year has two halves. First half has first six month and the second half has next six month. Print total sales in first & second half. There are four quarters of three months in a year. Like first quarter has January, February & March. The second quarter has April, May & June. Print sales of each quarter. (By adding sales of consecutive three months)

Note: Run different loop for each step

Sample Runs:

1081 1380 1789 1037 1865 1703 1549 1694 1526 1768 1557 1746

Sale in Two Halves

First Half: 8855

Second Half: 9840

Quarter Wise Sale

Sale in Quarter 1: 4250

Sale in Quarter 2: 4605

Sale in Quarter 3: 4769

Sale in Quarter 4: 5071

Task 04: Write a program to declare an array of ten elements. Initialize them randomly in any range. Print even and odd elements in separate rows. Count both elements. If there are more even elements, make all elements even by adding one or if there are more odd elements, make all elements odd by subtracting one. At the end print all elements in a single line.

Sample Run:

List: 99 28 61 98 75 53 76 92 2 60

List after processing: 99 27 61 97 75 53 75 91 1 59

Task 05: Initialize an array of 10 elements with random values in range 3-7. For each element print stars in single line.

Sample Run:

3 6 4 3 4 6 7 5 3 3

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Task 06: Initialize an array of 10 elements with random values in range 3-7. Print elements of array in triangular style. Also, print the sum of elements.

Sample Run:

7 4 7 3 4 6 6 7 3 5

7 = 7

7 4 = 11

7 4 7 = 18

7 4 7 3 = 21

7 4 7 3 4 = 25

7 4 7 3 4 6 = 31

7 4 7 3 4 6 6 = 37

7 4 7 3 4 6 6 7 = 44

7 4 7 3 4 6 6 7 3 = 47

7 4 7 3 4 6 6 7 3 5 = 52

Task 07: Declare a list of 20 elements to store the ages of 20 individuals. Initialize the ages at random in the range 1-100. The goal is to categorize individuals into different age groups (child, adult, senior). Perform the following tasks:

-Initialize ages and print them in a single line.

-Print the ages in a single line.

-Count the number of children (ages 1-12).

-Count the number of adults (ages 13-64).

-Count the number of seniors (ages 65 and above).

-Print the ages of children in a single line.

-Print the ages of adults in a single line.

-Print the ages of seniors in a single line.

Sample Run:

Ages: 18 40 3 16 18 46 83 42 46 73 4 56 7 91 95 8 70 4 24 18

Ages of children: 3 4 7 8 4

Ages of adults: 18 40 16 18 46 42 46 56 24 18

Ages of seniors: 83 73 91 95 70

Task 08: Declare two lists, list1 and list2, each containing 15 elements with random integer values. Your goal is to perform various operations on these lists:

-Print both lists in a single line.

-Calculate the sum of elements in each list.

-Find and print the maximum value in each list.

-Create a new list, *common*, containing the elements that are common between both lists.

-Print the elements of *common* in a single line.

Sample Run:

List1: 21 65 42 23 31 42 22 4 34 36 86 59 12 36 8

List2: 27 44 23 52 66 93 60 11 40 18 34 54 79 55 89

Sum of elements in List1: 521

Sum of elements in List2: 745

Maximum value in List1: 86

Maximum value in List2: 93

Common elements: 23 34