NATIONAL PUBLIC SCHOOL, HSR, BENGALURU
COMPUTER SCIENCE ASSIGNMENT 4-DATA STRUCTURE

Instructions:-

- ***The programs should be user friendly.***
- ***Each program should have comment at the top saying the aim of the program.***
- ***Program should be documented properly with necessary comments.***
- ***The program outputs should formatted.***

Q1 Write a Menu Driven program in Python which accepts an integer list of the size given by user

a) Sort the list (as per the user choice in ascending or descending)

- Bubble Sort
- *Selection Sort*
- Insertion Sort

b) Shuffle the list (Pick an element randomly and swap it with the first element and carry on.)

c) Display the list

d) Exit

Q2. Write a Menu Driven program to read a nested integer list of size specified by the user.

Print the following report:-

Row/column/diagonal having the maximum sum (sum of all elements in that row/column/diagonal)

Row/column/diagonal having the maximum product (multiplication of all elements in that row/column/diagonal)

Note:-Don't use list functions sum and max

1	2	3	4
5	6	7	8
4	0	9	3
7	5	1	2

The output should be- The maximum sum is 26 of row 2 having elements (5, 6, 7, 8)

Q3. Write a menu driven python program to store the given set of data in a stack of **Magazines** (MagName, type, Frequency, Price). Perform all stack operation (PUSH, POP, PEEK, and DISPLAY)

Sample Data MagName="ABC Auto", type= Trade, Frequency=Monthly, price=250

Use separate functions to implement each menu options.

Q4. Write a Menu Driven program in Python to implement a Queue of cars (brand, cname, price) using list. The menu options are:-

i) Add
ii) Remove
iii) Show
iv) Search # Search for a particular car whose cname is given by user
v) Number of cars in the Queue
vi) Exit

Use separate functions to implement each menu options.

Q5. Write a Menu Driven program in Python to implement Stack operations for preparing of Selection List of a college Entrance.

No. of seats available are 7 (Stack size)

A dictionary M_List contains RegNo as Key and Marks as Value

Push the keys (RegNo) of the dictionary into a stack S_List, where the corresponding value (marks) is greater than 98.5.

Write menu to perform following options

a) Add Element to M_List
b) Refresh S_ List – Push element from the dictionary (Reg No & Mark)t to S_List if it is meeting the required condition (Overflow to be checked) – After adding it to the S_List, remove the element from M_List
c) Show Selection List
d) Search for a Candidate's Result (in STACK)
e) Withdraw the admission – POP from stack
f) Exit

Use separate functions to implement each menu options.

Date of submission

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