

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 be formatted.*

Q1. 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.

Q2. 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

Q3 Write a menu driven program in PYTHON which accepts an integer list A from user and sort the list in ascending order using bubble sort. Also shuffle the list as per the given criteria:-Generate randomly the index no.(as per the size of the list) and swap first element with generated index no, keep doing it till you reach the end of the list.

Menu should be:-

- i) Sorting
 - a) Bubble Sort (Ask if ascending and descending order)
 - b) Insertion Sort
- ii) Display
- iii) Shuffle
- iv) exit

Q4 Write a Menu Driven program to store a matrix in list of size specified by the user(r x c)

Perform the following operations.

- a) Swap the first and the last row elements
- b) Swap the first and the last column elements
- c) Find the sum of middle row elements and middle column elements (if any)
- d) Sum the alternate elements of the list.(Move Row wise)
- e) Transpose of the matrix(only if it's a square matrix)
- f) Display of the matrix

(Note: Don't use another list for the list manipulation)

Use separate functions to implement each menu options.

Date of submission

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