



COMPUTER SCIENCE

ASSIGNMENT 2 CLASS XII

JULY 2026

Q1.

Consider a list named Nums which contains random integers. Write the following user defined functions in Python and perform the specified operations on a stack named BigNums.

(i) PushBig(): It checks every number from the list Nums and pushes all such numbers which have 5 or more digits into the stack, BigNums.

(ii) PopBig(): It pops the numbers from the stack, BigNums and displays them. The function should also display "Stack Empty" when there are no more numbers left in the stack.

For example: If the list Nums contains the following data:

Nums = [213, 10025, 167, 254923, 14, 1297653, 31498, 386, 92765]

Then on execution of PushBig(), the stack BigNums should store:

[10025, 254923, 1297653, 31498, 92765]

And on execution of PopBig(), the following output should be displayed:

92765 31498 1297653 254923 10025 Stack Empty

Q2.

A stack, named ClrStack, contains records of some colors. Each record is represented as a tuple containing four elements – ColorName, RED, GREEN, BLUE. ColorName is a string, and RED, GREEN, BLUE are integers. For example, a record in the stack may be ('Yellow', 237, 250, 68).

Write the following user-defined functions in Python to perform the specified operations on ClrStack:

(i) push_Clr(ClrStack, new_Clr): This function takes the stack ClrStack and a new record new_Clr as arguments and pushes this new record onto the stack.

(ii) pop_Clr(ClrStack): This function pops the topmost record from the stack and returns it. If the stack is empty, the function should display "Underflow".

Q3.

Write a Python program to accept 10 integers from the user. If the entered number is a three-digit even integer, push it onto a stack. After all inputs are taken, pop all elements and display them.

Q4.

You have a stack named BooksStack that contains records of books. Each book record is

represented as a list containing `book_title`, `author_name`, and `publication_year`. Write the following user-defined functions in Python to perform the specified operations on the stack `BooksStack`:

(I) `push_book(BooksStack, new_book)`: This function takes the stack `BooksStack` and a new book record `new_book` as arguments and pushes the new book record onto the stack.

(II) `pop_book(BooksStack)`: This function pops the topmost book record from the stack and returns it. If the stack is already empty, the function should display "Underflow".

(III) `peek(BooksStack)`: This function displays the topmost element of the stack without deleting it. If the stack is empty, the function should display 'None'.

Q5.

Write a function `Push_Cust()` to push customer names staying in 'Delux' room type in a stack, and `Pop_Cust()` to pop and display customer names.

Q6.

Write the following user-defined functions in Python:

(i) `push_trail(N, myStack)`: Here `N` and `myStack` are lists, and `myStack` represents a stack. The function should push the last 5 elements from the list `N` onto the stack `myStack`. For example, if the list `N` is `[1,2,3,4,5,6,7]`, then the function `push_trail()` should push the elements 3,4,5,6,7 onto the stack. Therefore the value of stack will be `[3,4,5,6,7]`. Assume that `N` contains at least 5 elements.

(ii) `pop_one(myStack)`: The function should pop an element from the stack `myStack`, and return this element. If the stack is empty, then the function should display the message 'Stack Underflow', and return `None`.

(iii) `display_all(myStack)`: The function should display all the elements of the stack `myStack`, without deleting them. If the stack is empty, the function should display the message 'Empty Stack'.

Q7.

A list contains a record of students in the form of sub-lists: `[Student_Name, Marks, MainSubject]`. Write the following user-defined functions in Python to perform the specified operations on a stack named `StudentInfo`:

(a) `Push_student()`: To push the `Student_Name` and `Marks` of all those students who have "Science" as `MainSubject`, into the stack `StudentInfo`.

(b) `Pop_student()`: To delete all items (one at a time) from the stack `StudentInfo` in LIFO order and display them. Also display "Empty Stack" when there are no items remaining in the stack.

For example, if the sample content of the list is:

```
[[ 'Akansha',98,"Mathematics"],[ "Priti",96,"Science"],[ "Garima",99,"Science"],[ "Ayushi",78,"English"]]
```

Q8.

Write function `push_even(N)` which accepts a list of integers in a parameter `N` and pushes all those integers which are even from the list `N` into a Stack named `EvenNumbers`.

Write function `pop_even()` to pop the topmost number from the stack and return it. If the stack is already empty, the function should display "Empty".

Write function `Disp_even()` to display all elements of the stack without deleting them. If the stack is empty, the function should display 'None'.

For example: If the integers input into the list `VALUES` are: [10, 5, 8, 3, 12]

Q9.

Each record (city, country, distance from Delhi) is stored as a nested list. Write the following user defined functions in Python to perform the specified operations on the stack named `travel`:

(i) `Push_element(NList)`: It takes the nested list as an argument and pushes a list object containing the name of the city and country, which are not in India and distance is less than 3500 km from Delhi.

(ii) `Pop_element()`: It pops the objects from the stack and displays them. Also, the function should display "Stack Empty" when there are no elements in the stack.

For example: If the nested list contains the following data:

```
NList=[["New York", "U.S.A.", 11734], ["Naypyidaw", "Myanmar", 3219], ["Dubai", "UAE", 2194], ["London", "England", 6693], ["Gangtok", "India", 1580], ["Columbo", "Sri Lanka", 3405]]
```

Q10.

Write a menu driven program in Python to implement a stack using a list and perform the following functions:

1. Push
2. Pop
3. Display
4. Exit

The Pop function should return "Underflow" when the stack is empty, and the program should keep running in a loop, displaying the menu, until the user chooses to exit.