

STACK

A stack is a linear data structure in python in which addition and deletion of elements can be done at one end only. A stack is known as LIFO (Last – In, First – Out) data structure in python. LIFO means the elements which are added in the last would be the first one to remove. Examples of stack are pile of books, pile of plates or stack of carom coins.

Operations on Stack:

There are two main operations on Stack:

1. Addition of element on the Top of the Stack is called PUSH.
2. Removal of elements from the top of the Stack is called POP.

Working with Stack using List:

The implementation of stack using list is a simple process as there are inbuilt function which we used during working with stack. Basic operations that we should know are :

1. Creating an Empty Stack : An empty stack can be created by using the following code

```
st = [ ] or st = list( )
```

NOTE : Working with stack is similar to working with list (we can add element by `append()`, we can remove element by `pop()` and we can display element by using index value)

2. Adding an element to a Stack : We can add element in a stack by using `append()` function as shown below

```
st.append(5)
```

Here element '5' is added into a stack named 'st'

NOTE : We can add element only at the end of the list as we are implementing list as stack.

3. Deleting elements from the stack : We can delete elements from the stack as shown below :

```
st.pop( )
```

NOTE : We can remove or delete element only from the end of the list as we are implementing list as stack.

4. Displaying all elements of the stack : We can display all elements in stack as shown below :

```
L = len(st)
```

```
for i in range(L-1, -1, -1) : #As we have to display elements in reverse order
```

```
print(st[i])
```

5. How to check for empty stack?

```
if (st == [ ]):  
    print("stack is empty")
```

- 1. Write a function push(student) and pop(student) to add a new student name and remove a student name from a list student, considering them to act as PUSH and POP operations of stack Data Structure in Python.**
- 2. Write a function push(number) and pop(number) to add a number (Accepted from the user) and remove a number from a list of numbers, considering them act as PUSH and POP operations of Data Structure in Python.**
- 3. Write a menu based program to add, delete and display the record of hostel using list as stack data structure in python. Record of hostel contains the fields : Hostel number, Total Students and Total Rooms.**