INDIAN SCHOOL AL WADI AL KABIR

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| **Class: XII Comp. Sci.** | **Department: Computer Science** | **Date of Submission: 22/08/2023** |
| **Worksheet No: 5** | **Topic: Data Structure- STACK and its implementation using List** | **Note:** |

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| 1 | What is Stack? What basic operations can be performed on them? |
| 2 | Given a bounded stack of capacity 4 which is initially empty, write the stack content after each step:  a) Push ‘1’ b) Push ‘2’ c) Push ‘3’ d) Push ‘4’ e) Pop f) Pop  g) Push(‘5’) h)Pop i)Pop j)Pop |
| 3 | A list, NList contains following record as list elements:  [City, Country, distance from Delhi]  Each of these records are nested together to form 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 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], 3 [12] ["Gangtok", "India", 1580], ["Columbo", "Sri Lanka", 3405]]  The stack should contain:  ['Naypyidaw', 'Myanmar'], ['Dubai', 'UAE'], ['Columbo', 'Sri Lanka']  The output should be:  ['Columbo', 'Sri Lanka']  ['Dubai', 'UAE']  ['Naypyidaw', 'Myanmar']  Stack Empty |
| 4 | Consider STACK=[‘a’,’b’,’c’,’d’]. Write the STACK content after each operation:  a) STACK.pop( )b) STACK.append(‘e’) c) STACK.append(‘f’) d) STACK.pop( ) |
| 5 | Write a program to implement a stack for the students (studentno, name). Just implement Push.  def add(stk,item):  stk.append(item)  def display(stk):  top = len(stk)  for a in range(top-1,-1,-1):  print(stk[a])  stack=[]  while True:  print("STACK OPERATION:")  print("1.ADD student")  print("2.Display stack")  ch = int(input("Enter your choice(1-4):"))  if ch==1:  rno = int(input("Enter Roll no to be inserted :"))  sname = input("Enter Student name to be inserted :")  item = [rno,sname]  add(stack,item)  elif ch==2:  display(stack)  else:  print("invalid choice") |
| 6 | Find the output of the following code:  result=0  numberList=[10,20,30]  numberList.append(40)  result=result+ numberList.pop()  result=result+ numberList.pop()  print(result)  print(numberList) |
| 7 | Julie has created a dictionary containing names and marks as key value pairs of 6 students. Write a program, with separate user defined functions to perform the following operations:  ● Push the keys (name of the student) of the dictionary into a stack, where the corresponding value (marks) is greater than 75.  ● Pop and display the content of the stack.  For example: If the sample content of the dictionary is as follows:  R= {"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90, "TOM":82}  The output from the program should be: TOM ANU BOB OM  R= {"OM":76, "JAI":45, "BOB":89, "ALI":65, "ANU":90, "TOM":82}  stack=[]  def dpush(d):  for i in d:  if d[i]>72:  stack.append(i)  def dpop():  while True:  if stack==[]:  print("stack is empty")  break  else:  print(stack.pop())  dpush(R)  dpop() |
| 8 | Write a function in python, PushEl(e) to add a new element and PopEl(e) to delete an element from a List, considering them to act as push and pop operations of the Stack data structure. |
| 9 | Write a function POP(Book) in Python to delete a Book from a list of Book titles, considering it to act as a pop operation of the Stack data structure. |