Homework - 7

IC100 Introduction To Programming

Question 1

Write a structure to store the roll no., name, age (between 11 to 14) and address of students (more than 10). Store the information of the students.

1 - Write a function to print the names of all the students having age 14.

2 - Write another function to print the names of all the students having even roll no.

3 - Write another function to display the details of the student whose roll no is given (i.e. roll no. entered by the user).

Question 2

A stack is a linear data structure that follows the Last in, First out principle (i.e. the last added elements are removed first).

Mainly, following are the four basic operations on the Stack

1. Push: Add an element to the top of a stack
2. Pop: Remove an element from the top of a stack
3. IsEmpty: Check if the stack is empty
4. Peek: Get the value of the top element without removing it

Implement the stack data structures. The element of stack is of type integer.

Use the following definition for stack

struct stack {

int size;// size of the stack, empty stack should have size = 0

int items[100];// holds the contents of the stack

}

You have to implement following four functions

void push(struct stack *pt, int x)// add an element 'x' to the stack

int pop(struct stack *pt)// pop the top element from the stack

int peek(struct stack *pt)// get the top element of the stack

int isEmpty(struct stack *pt)// check if the stack is empty or not

Input format:

• First line contains number N denoting the no. of operations

• Next N line contains one operation each. Operations can be "push val", "pop",

"peek" and "isEmpty".
If the operation is "push" then the value to be pushed is supplied after space.

Output format:
• For each "pop" operation, print the popped value in a new line.
• For each "peek" operation, print the peeked value in a new line.
• For each "isEmpty" operation, print "Empty" if the stack is empty. Otherwise print "Not Empty"
• For "push" operation, don't print anything

Example Input: 5 push 1 push 2 pop peek isEmpty Output: 2 1 Not Empty

Submission

Please submit your homework in piazza under hw7 folder and make it a private submission to the instructors. Zip all the codes and name the zip as yourname_rollno
Submission deadline is 8:00pm Jan 22.