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Data Structures and algorithms (CS09203)

Lab Report

Name: Irtaza Kashir Raja
Registration #: SEU-F16-127
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Submitted To: Mr. Usman Ahmed

The University of Lahore, Islamabad Campus
Department of Computer Science & Information Technology

Experiment # 3

Stack with Array implementation

Objective

The objective of this session is to understand the various operations on stack using arrays structure in C++.

Software Tool

1. Code Blocks with GCC compiler.

1 Theory

Stacks are the most important in data structures. The notation of a stack in computer science is the same as the notion of the Stack to which you are accustomed in everyday life. For example, a recursion program on which function call itself, but what happens when a function which is calling itself call another function. Such as a function A call function B as a recursion. So, the firstly function B is call in A and then function A is work. So, this is a Stack. This is a Stack is First in Last Out data structure.

Insertions in Stack: In Stacks, we know the array work, sometimes we need to modify it or add some element in it. For that purpose, we use insertion scheme. By the use of this scheme we insert any element in Stacks using array. In Stack, we maintain only one node which is called TOP. And Push terminology is used as insertions.

Deletion in Stack: In the deletion process, the element of the Stack is deleted on the same node which is called TOP. In stacks, its just deleting the index of the TOP element which is added at last. In Stacks Pop terminology is used as deletion.

Display of Stack: In displaying section, the elements of Stacks are being display by using loops and variables as a reverse order. Such that, last element is display at on first and first element enters display at on last.

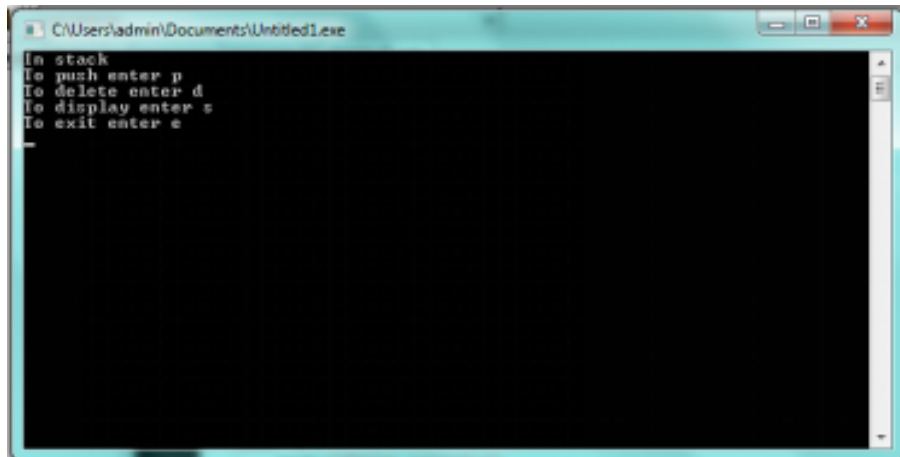


Figure 1: stack

2 Task

2.1 Task 1

1. Insertion in stack 2. Deletion in stack 3. Display the stack

2.2 Procedure: Task 1

```
#include<iostream>
using namespace std;

int main(){
    int a=-1,y;
    int array[100];
    char op;
    cout<<"To push enter p";
    cout<<"\nTo delete enter d";
    cout<<"\nTo display enter s";
    cout<<"\nTo exit enter e\n";
    line:
    cin>>op;
    switch (op){
```

```

        case 'p':
            cout<<"enter no to push\n";
            a++;
            cin>>array[a];
            cout<<"pushed at "<<a<<"\n";
            break;
        case 'd':
            cout<<"dlting current\n";
            a--;
            break;
        case 's':
            for (int b=0;b<=a;b++){
                cout<<array[b]<<endl;
            }
            break;
        case 'e':
            exit;
    }
    goto line;
}

```