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VIDYAVIHAR

K J Somaiya Institute of Technology

An Autonomous Institute Permanently Affiliated to the University of Mumbai

DEPARTMENT OF INFORMATION TECHNOLOGY

Course Name and Code: Data Structures Lab (ITL302)

Semester: III (SYIT)

Academic Year: 2023-24 (Odd Semester)

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Experiment No. 01

Aim: Implementation of Stack using an array for real-world application.

Objectives:

1. To introduce the concepts of data structures and analysis procedure.
2. To conceptualize linear data structures and its implementation for various real-world applications.

Program :

```
#include<iostream>
```

```
using namespace std;
```

```
int stack[100], n=100, top=-1;
```

```
void push(int val)
```

```
{  
    if(top>=n-1)  
        cout<<"All tables are full!"<<endl;  
    else  
    {  
        top++;  
        stack[top]=val;  
    }  
}
```

```
void pop()
```

```
{  
    if(top<=-1)  
        cout<<"No current reservation"<<endl;  
    else  
    {  
        cout<<"The removed reservation is "<< stack[top] <<endl;  
        top--;  
    }  
}
```



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```
void display()
{
    if(top>=0)
    {
        cout<<"Booked reservations are : ";
        for(int i=top; i>=0; i--)
            cout<<stack[i]<<"pm ";
        cout<<endl;
    }
    else
        cout<<"There are no reservations";
}

int main()
{
    int ch, val;
    cout<<"1) Reserve a table"<<endl;
    cout<<"2) Cancel a reservation"<<endl;
    cout<<"3) Display reservations"<<endl;
    cout<<"4) Exit"<<endl;
    do
    {
        cout<<"Select option : "<<endl;
        cin>>ch;
        switch(ch)
        {
            case 1:
            {
                cout<<"Enter reservation timings (in PM) : "<<endl;
                cin>>val;
                push(val);
                break;
            }
            case 2:
            {
                pop();
                break;
            }
            case 3:
            {
                display();
                break;
            }
            case 4:
```



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```
{
    cout<<"Thanks for making the reservations!"<<endl;
    break;
}
default:cout<<"Invalid Choice"<<endl;
}
}
while(ch!=4);

return 0;
}
```

Output:

Output

Clear

```
7 Compiler Output
1) Reserve a table
2) Cancel a reservation
3) Display reservations
4) Exit
Select option :
1
Enter reservation timings (in PM) :
3
Select option :
1
Enter reservation timings (in PM) :
4
Select option :
1
Enter reservation timings (in PM) :
5
Select option :
2
The removed reservation is 5
Select option :
3
Booked reservations are : 4pm 3pm
Select option :
4
Thanks for making the reservations!

=== Code Execution Successful ===
```