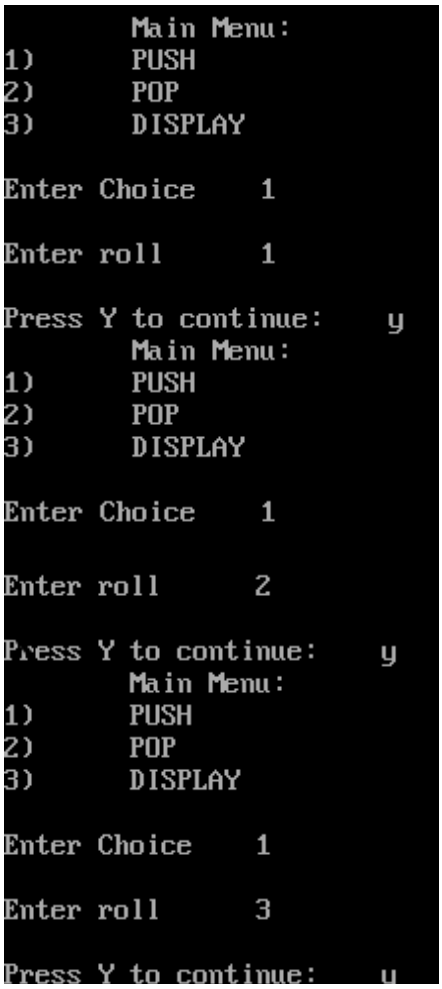
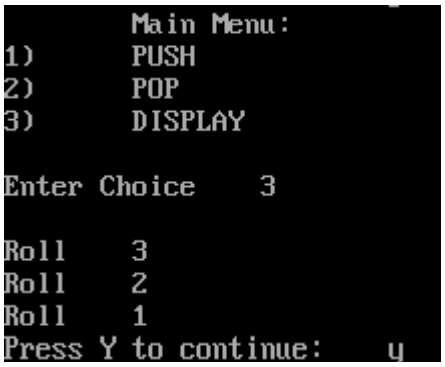
```
/*****************************************************************************/
/************************** Name:- Divesh Uttamchandani **********************/
/************************** Class :- XII  A ***********************************/
/************************** Date  :- 11 October 2014 *************************/
/************************** Q-17):- Stacks ***********************************/
/*****************************************************************************/

-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-. Stacks1/ Without OOPS/ Dynamically .-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.-.
#include<iostream.h>
#include<conio.h>
#include<ctype.h>

////////////////////////////////////////////////Declaration & Definition of Node/////////////////////////////////////////////////
struct node
{
  int roll;
  node *next;
};

node *TOP=NULL;
//////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////


////////////////////////////////////////////////Declaration & Defination of Functions/////////////////////////////////////////////
//_____________________________________________________________________________________________//
node *create_node()
{
  node *nn;
  nn=NULL;
  nn=new node;
  if(nn)
  {
  cout<<"\nEnter roll\t";
  cin>>nn->roll;
  nn->next=NULL;
  }
  return nn;
}
//_____________________________________________________________________________________________//
void PUSH()
{
 node*nn;
 nn=create_node();
  if(nn)
   {
     nn->next=TOP;
     TOP=nn;
   }
  else
   cout<<"\noverflow";
}
//_____________________________________________________________________________________________//
```

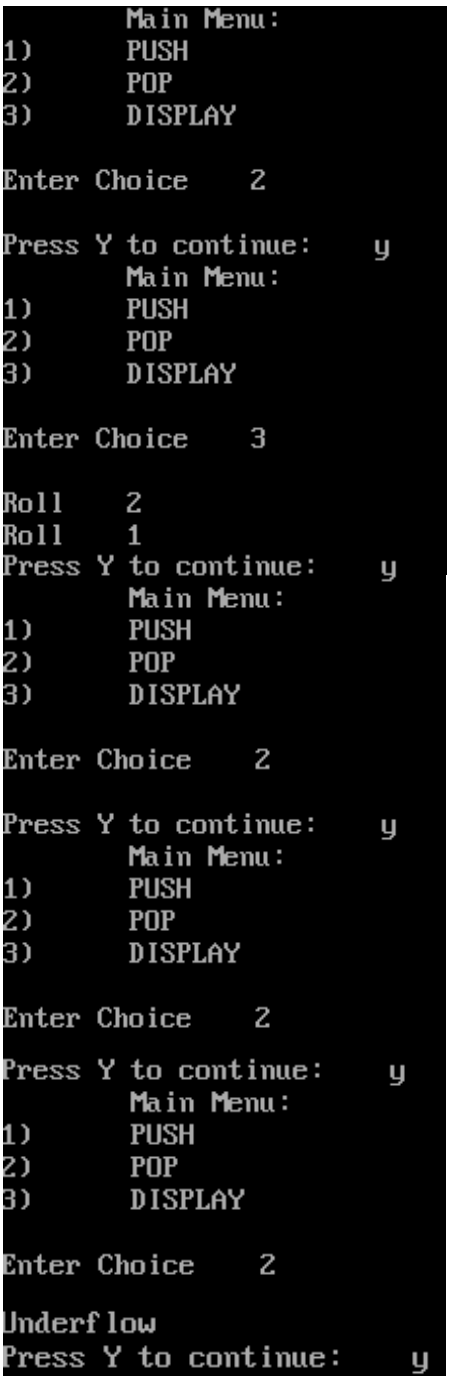
```
//_____________________________________________________________________________//
void POP()
{
  node*nn;
  nn=new node;
  if(TOP==NULL)
    cout<<"\nUnderflow";
  else
  {
   if(nn)
    {
     nn=TOP;
     TOP=TOP->next;
     delete nn;
    }
   else
    cout<<"\nError Temp Node Cannot Be Created";
  }
}
//_____________________________________________________________________________//
void display()
{
 node *ptr;
 ptr=new node;
 ptr=TOP;
 if(TOP==NULL)
  cout<<"\nUnderflow";
 else
  {
    while(ptr)
    {
     cout<<"\nRoll\t"<<ptr->roll;
     ptr=ptr->next;
    }
  }
}
//_____________________________________________________________________________//
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

//**********************************Void Main()*********************************//
void main()
{
clrscr();
int ch;

do
 {
  cout<<"\n\tMain Menu:"
      <<"\n1)\tPUSH"
      <<"\n2)\tPOP"
      <<"\n3)\tDISPLAY";
  cout<<"\n\nEnter Choice\t";          cin>>ch;
```

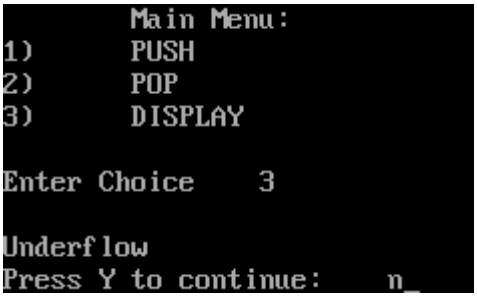
```
  switch(ch)
   {
   case 1:
         PUSH();
         break;
   case 2:
         POP();
         break;
   case 3:
         display();
         break;
   default:
         cout<<"Invalid Choice";
   }
  cout<<"\nPress Y to continue:\t";
 }while(toupper(getche())=='Y');
}
//**********************************End Of Main*********************************//
```

OUTPUT 1




Main Menu:
1) PUSH
2) POP
3) DISPLAY
Enter Choice 3
Roll 3
Roll 2
Roll 1
Press Y to continue: y


Main Menu:
1) PUSH
2) POP
3) DISPLAY
Enter Choice 2
Press Y to continue: y
Main Menu:
1) PUSH
2) POP
3) DISPLAY
Enter Choice 3
Roll 2
Roll 1
Press Y to continue: y
Main Menu:
1) PUSH
2) POP
3) DISPLAY
Enter Choice 2
Press Y to continue: y
Main Menu:
1) PUSH
2) POP
3) DISPLAY
Enter Choice 2
Press Y to continue: y
Main Menu:
1) PUSH
2) POP
3) DISPLAY
Enter Choice 2
Underflow
Press Y to continue: y



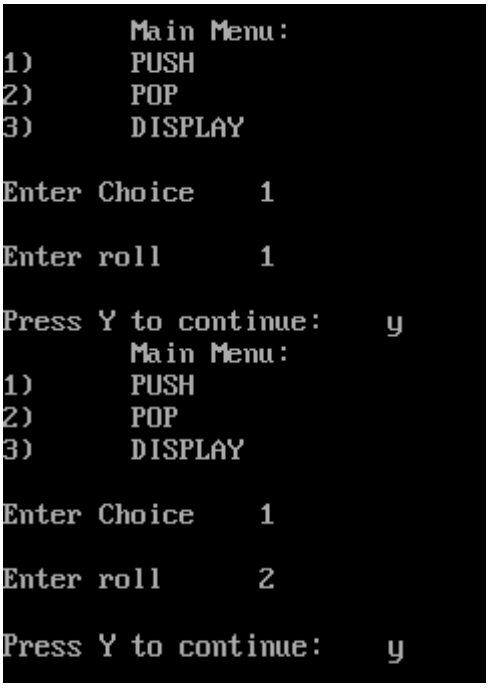
-. Stacks2/ With OOPS/ Dynamically -.-

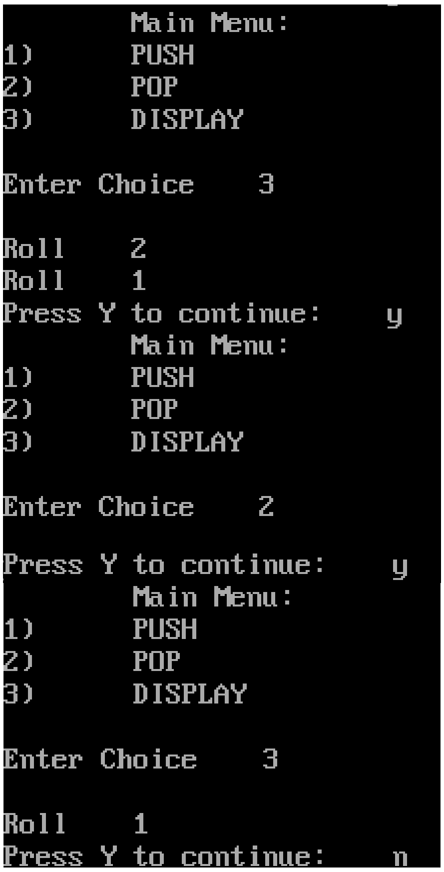
```
#include<iostream.h>
#include<conio.h>
#include<ctype.h>
////////////////////////////////////////////////Declaration & Definition of Node//////////////////////////////////////////////////
struct node
{
  int roll;
  node *next;
};
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
node *create_node()
{
  node *nn;
  nn=NULL;
  nn=new node;
  if(nn)
   {
  cout<<"\nEnter roll\t";
  cin>>nn->roll;
  nn->next=NULL;
   }
  return nn;
}
////////////////////////////////////////// Declaration & Definition of Class Stack ////////////////////////////////////////////
class stack
{
node *TOP;

public:
 stack()
 {
  TOP=NULL;
 }
//_____________________________________________________________________________________________//
 ~stack()
 {
  while(TOP)
    {
   POP();
    }
 }
//_____________________________________________________________________________________________//
```

```
 void PUSH()
 {
  node*nn;
  nn=create_node();
   if(nn)
    {
     nn->next=TOP;
     TOP=nn;
    }
   else
    cout<<"\noverflow";
 }
//_____________________________________________________________________________//
 void POP()
 {
   node*nn;
   nn=new node;
   if(TOP==NULL)
     cout<<"\nUnderflow";
   else
   {
    if(nn)
     {
      nn=TOP;
      TOP=TOP->next;
      delete nn;
     }
    else
     cout<<"\nError Temp. Node Cannot Be Created";
   }
 }
//_____________________________________________________________________________//
 void display()
 {
  node *ptr;
  ptr=new node;
  ptr=TOP;
  if(TOP==NULL)
   cout<<"\nUnderflow";
  else
   {
    while(ptr)
     {
      cout<<"\nRoll\t"<<ptr->roll;
      ptr=ptr->next;
     }
   }
 }
//_____________________________________________________________________________//
};
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
```

```
//**********************************Void Main()**********************************//
void main()
{
 clrscr();
 int ch;
 stack S;

 do
 {
  cout<<"\n\tMain Menu:"
     <<"\n1)\tPUSH"
     <<"\n2)\tPOP"
     <<"\n3)\tDISPLAY";
  cout<<"\n\nEnter Choice\t";          cin>>ch;
   switch(ch)
    {
    case 1:
          S.PUSH();
          break;
    case 2:
          S.POP();
          break;
    case 3:
          S.display();
          break;
    default:
          cout<<"Invalid Choice";
    }
  cout<<"\nPress Y to continue:\t";
 }while(toupper(getche())=='Y');
}
//**********************************End Of Main**********************************//
```

OUTPUT 2





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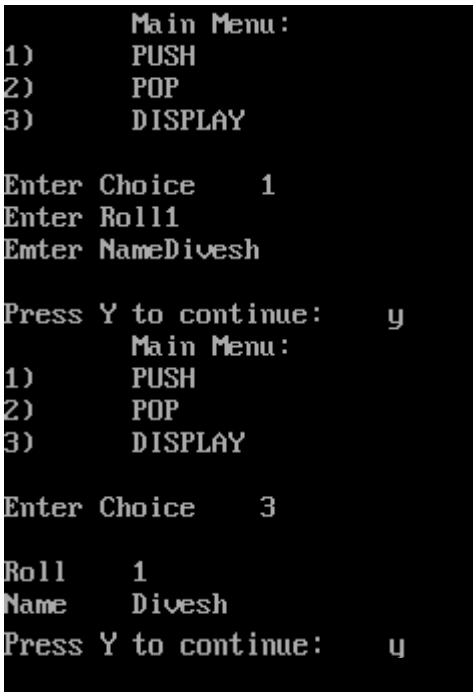
-. Stacks3/ Without OOPS/ Statically -.-

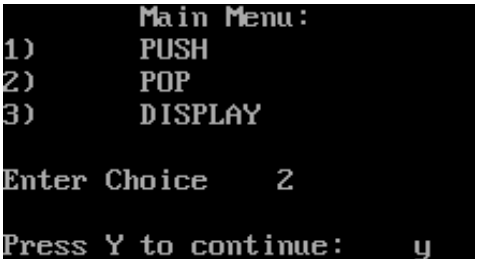
```
#include<iostream.h>
#include<conio.h>
#include<ctype.h>

const int N=100;

/////////////////////////////////////////////Declaration & Definition of Struct/////////////////////////////////////////////
struct student
{
  int roll;
  char nm[20];
};
//////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////


///////////////////////////////////////////// Declaration of Global Variables /////////////////////////////////////////////
student s[N];
int TOP=-1;
//////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
```

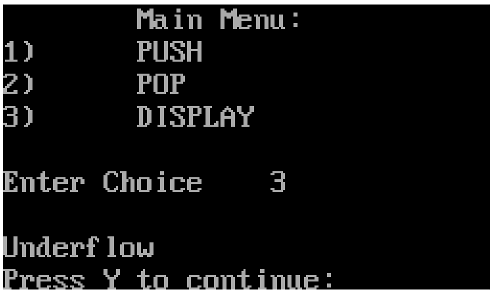
```
//////////////////////////////////////////Declaration & Defination of Functions//////////////////////////////////////////
//_____________________________________________________________________________________________________________//
 void PUSH()
 {
  if(TOP==N-1)
  cout<<"\nOverflow";
  else
   {
   TOP++;
     cout<<"Enter Roll";        cin>>s[TOP].roll;
     cout<<"Emter Name";     cin>>s[TOP].nm;
   }
 }
//_____________________________________________________________________________________________________________//
 void POP()
 {
  if(TOP==-1)
    cout<<"\nUnderflow";
  else
  {
   TOP--;
  }
 }
//_____________________________________________________________________________________________________________//
 void display()
 {
 if(TOP==-1)
  cout<<"\nUnderflow";
 else
  {
    for(int i=TOP;i>=0;i--)
    {
     cout<<"\nRoll\t"<<s[i].roll;
     cout<<"\nName\t"<<s[i].nm;
    }
  }
 }
//_____________________________________________________________________________________________________________//
//////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

//**********************************Void Main()*********************************//
void main()
{
 clrscr();
 int ch;

 do
 {
  cout<<"\n\tMain Menu:"
     <<"\n1)\tPUSH"
     <<"\n2)\tPOP"
     <<"\n3)\tDISPLAY";
```

```
 cout<<"\n\nEnter Choice\t";cin>>ch;
  switch(ch)
   {
   case 1:
         PUSH();
         break;
   case 2:
         POP();
         break;
   case 3:
         display();
         break;
   default:
         cout<<"Invalid Choice";
   }
  cout<<"\nPress Y to continue:\t";
 }while(toupper(getche())=='Y');
}
//**********************************End Of Main*********************************//
```

OUTPUT 3







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-. Stacks4/ With OOPS/ Statically -.-

```
#include<iostream.h>
#include<conio.h>
#include<ctype.h>

///////////////////////////////////////////////// Declaration of Global Variables /////////////////////////////////////////////////
const int N=100;
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////


///////////////////////////////////////////////Declaration & Definition of Struct///////////////////////////////////////////////
struct student
{
 int roll;
 char nm[20];
};
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

///////////////////////////////////////////////Declaration & Definition of Class/////////////////////////////////////////////////
class stack
{
student s[N];
int TOP;

public:
 stack()
 {
  TOP=-1;
 }

  ~stack()
 {
  TOP=-1;
 }
//________________________________________________________________________________//
```

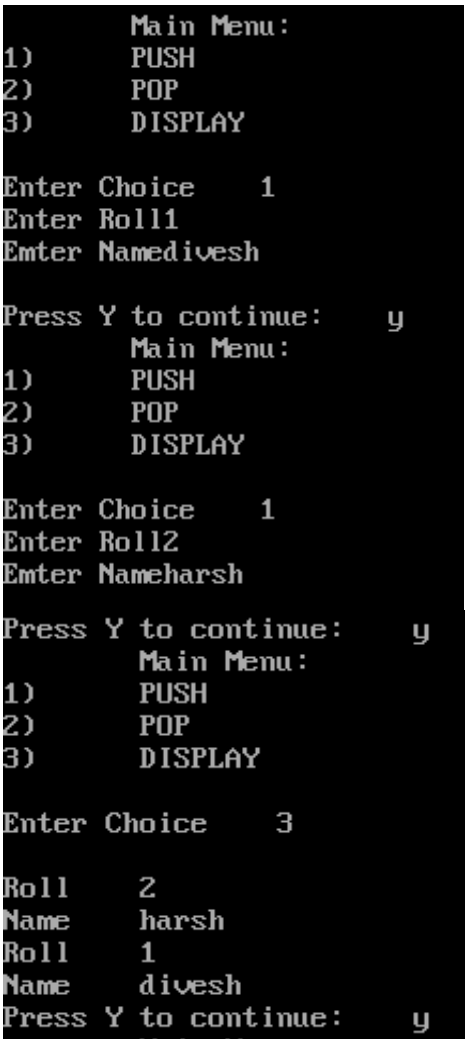
```
void PUSH()
 {
  if(TOP==N-1)
  cout<<"\nOverflow";
  else
   {
   TOP++;
     cout<<"Enter Roll";        cin>>s[TOP].roll;
     cout<<"Emter Name";     cin>>s[TOP].nm;
   }
 }
//_____________________________________________________________________________//
 void POP()
 {
  if(TOP==-1)
    cout<<"\nUnderflow";
  else
   {
   TOP--;
   }
 }
//_____________________________________________________________________________//
 void display()
 {
 if(TOP==-1)
  cout<<"\nUnderflow";
 else
  {
    for(int i=TOP;i>=0;i--)
    {
     cout<<"\nRoll\t"<<s[i].roll;
     cout<<"\nName\t"<<s[i].nm;
    }
  }
 }
//_____________________________________________________________________________//
};
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

//**********************************Void Main()*********************************//
void main()
{
 clrscr();
 int ch;
 stack S;

 do
 {
  cout<<"\n\tMain Menu:"
     <<"\n1)\tPUSH"
     <<"\n2)\tPOP"
     <<"\n3)\tDISPLAY";
```

```
 cout<<"\n\nEnter Choice\t";cin>>ch;
  switch(ch)
   {
   case 1:
         S.PUSH();
         break;
   case 2:
         S.POP();
         break;
   case 3:
         S.display();
         break;
   default:
         cout<<"Invalid Choice";
   }
  cout<<"\nPress Y to continue:\t";
 }while(toupper(getche())=='Y');
}
//**********************************End Of Main*********************************//
```

OUTPUT 4



```
        Main Menu:
1)      PUSH
2)      POP
3)      DISPLAY

Enter Choice    2

Press Y to continue:    y
        Main Menu:
1)      PUSH
2)      POP
3)      DISPLAY

Enter Choice    3

Roll    1
Name    divesh
Press Y to continue:    _
```