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/*
write a c++ program using STL to add binary numbers(assume one as a one number),
use STL stack
*/
#include<iostream>
#include<stack>
using namespace std;
void display(stack<int> w);
int main()
{
  stack<int>q,q1,q2,q3,q4,q5;
  int op,bit;
  int a[20];
  int carry=0;
  int sum;
  do
   {
     cout<<"\nEnter"
         <<"\n1 :Addition"
         <<"\n2 :Exit"
         <<"\nChoice  ";
     cin>>op;
       switch(op)
        {
           case 1:{
                          {
                            cout<<"\nEnter no of bit: ";
                            cin>>bit;
                            cout<<"\nEnter first binary: ";
                            for(int i=0;i<bit;i++)
                              {
                                 cin>>a[i];
                                 q.push(a[i]);
                                 q3.push(a[i]);
                              }
                           while(!q3.empty())
                             {
                                q3.top();
                                q4.push(q3.top());
                                q3.pop();
                             }
                           cout<<"\nEntrered binary number: ";display(q4);
                          }cout<<endl;

                          {
                              cout<<"\nEnter no of bit: ";
                              cin>>bit;
                              cout<<"\nEnter second binary number: ";
                              for(int i=0;i<bit;i++)
                               {
                                 cin>>a[i];
                                 q1.push(a[i]);
                                 q3.push(a[i]);
                               }
                             while(!q3.empty())
                              {
                                q3.top();
                                q5.push(q3.top());
                                q3.pop();
                              }
                             cout<<"\nEntered Binary number: ";display(q5);
                          }

                               while(!q.empty()||!q1.empty())
                             {
                                int bit1=0,bit2=0;
```

```
                                if(!q.empty())
                                {
                                        bit1=q.top();
                                        q.pop();                //remove the item
from top
                                }
                                if(!q1.empty())
                                {
                                        bit2=q1.top();
                                        q1.pop();               //remove the item
from top
                                }

                                sum=(bit1+bit2+carry)%2;
                                carry=(bit1+bit2+carry)/2;
                                q2.push(sum);                   //add the item sum
from top
                           }
                         if(carry==1)
                                q2.push(1);
                        cout<<"\n\nAddition of binary numbers"<<endl<<"  ";
                        display(q4);
                        cout<<endl<<"+"<<endl<<"  ";
                        display(q5);
                        cout<<"\n**************\n ";
                        display(q2);
                       while(!q.empty())
                          q.pop();
                       while(!q1.empty())
                           q1.pop();
                      while(!q4.empty())
                          q4.pop();
                      while(!q5.empty())
                          q5.pop();
                      while(!q2.empty())
                          q2.pop();
            }break;


           case 2:break;
        }

   }while(op!=2);
  return 0;
}
void display(stack<int> w)
{
   while(!w.empty())
    {   int s=w.top();
      cout<<" "<<s;
      w.pop();
    }
}
/*
OUtPUT
 dell@ghe1de-saurabh16-12-99:~$ g++ binary_addoops.cpp
dell@ghe1de-saurabh16-12-99:~$ ./a.out

Enter
1 :Addition
2 :Exit
Choice  1

Enter no of bit: 4

Enter first binary: 1 1 0 0
```

```
Entrered binary number:  1 1 0 0

Enter no of bit: 4

Enter second binary number: 0 0 1 1

Entered Binary number:  0 0 1 1

Addition of binary numbers
   1 1 0 0
+
   0 0 1 1
**************
  1 1 1 1
Enter
1 :Addition
2 :Exit
Choice  1

Enter no of bit: 4

Enter first binary: 1 1 0 1

Entrered binary number:  1 1 0 1

Enter no of bit: 4

Enter second binary number: 1 0 1 1

Entered Binary number:  1 0 1 1

Addition of binary numbers
   1 1 0 1
+
   1 0 1 1
**************
  1 1 0 0 0
Enter
1 :Addition
2 :Exit
Choice  2
*/
```