ASSIGNMENT 8

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// assignment 8 program 1
/*
"Declare a template class called exam having an array of generic type as a data member, named elements[10].
Define following generic (template) member functions:
- sort to arrange elements in ascending order
- find_max to find and return maximum from the array
Define main to illustrate usage of these functions to process two different types of data."
*/
#include<iostream>
#include<conio.h>
using namespace std;
template <class T>
class exam{
   public:
      T elements[1000];
      int size;
      void get(int size){

         for(int i=0;i<size;i++){
            cout << "\n Enter an element in the array : ";
            cin >> elements[i];
         }
      }
         T findmax(int size){
            T max=0;
            for(int i=0;i<size;i++){
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        if(max<elements[i])
           {
           max=elements[i];
        }
    }
        return max;
}
void sort(int size){

    for(int i=0;i<size;i++)
        {

           for(int j=i+1;j<size;j++){

           if(elements[i]>elements[j])
              {
                 T temp=elements[i];
                 elements[i]=elements[j];
                 elements[j]=temp;

              }
           }
        }

}
void display(int size){
    for(int i=0;i<size;i++){
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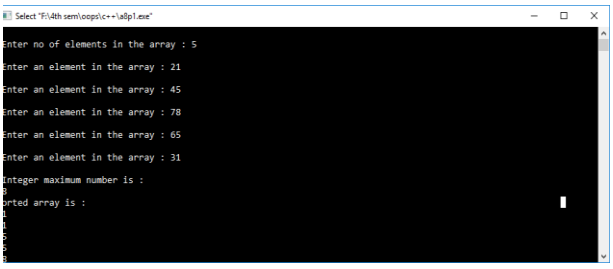
            cout << elements[i] << endl;


        }
    }
};
int main(){


    int n;
    cout << "\n Enter no of elements in the array : ";
      cin >> n;
      exam<int> i;
      i.get(n);
      int max;
      cout << "\n Integer maximum number is : ";
       max=i.findmax(n);
       cout << endl << max;
      cout << "\nsorted array is : " << endl;
      i.sort(n);
      i.display(n);
      getch();
      return 0;
}
```



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// assignment 8 program 2
/*
Write a function template for finding the minimum value contained in an array
*/
#include<iostream>
#include<conio.h>
using namespace std;
// template <class x>
// x fun_name(x ar1,x  ar2.....)
template <class t>
t minimum(t a[],int n);
template <class t>
t minimum(t a[],int n)
{

      t min=a[0];
         for(int i=0;i<n;i++){
            if(a[i]<min){
               min=a[i];
            }
         }
         return min;

}
int main(){
```

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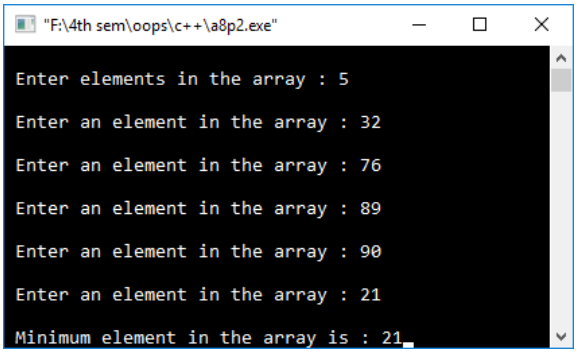
    int arr[1000];
    int n;
    cout << "\n Enter elements in the array : ";
       cin >> n;
       for(int i=0;i<n;i++){
          cout << "\n Enter an element in the array : ";
             cin >> arr[i];
       }
       int min=minimum(arr,n);
       cout << "\n Minimum element in the array is : " << min;
       getch();
       return 0;
}
```



// assignment 8 program 3

```
/*
Create a generic class stack using template and implement common Push and Pop operations
for different data types.
*/
#include<iostream>
#include<conio.h>
using namespace std;
template <class T>
class stack{

public:
   T stack[1000];
   int top=-1;
   int size;
   void push(T val){
      if(top==size-1){
         cout << "\n Stack overflow : ";
      }
      else{
         top++;
         stack[top]=val;
      }
   }
   T pop(T val){
            if(top==-1){
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            cout << "\n Stack underflow : ";
            return 0;
        }
        else{

            val=stack[top];
            top--;
            return val;

        }


    }
    void display(){

        for(int i=top;i>=0;i--){
            cout << stack[i] << endl;
        }

    }


};
    int main(){
```

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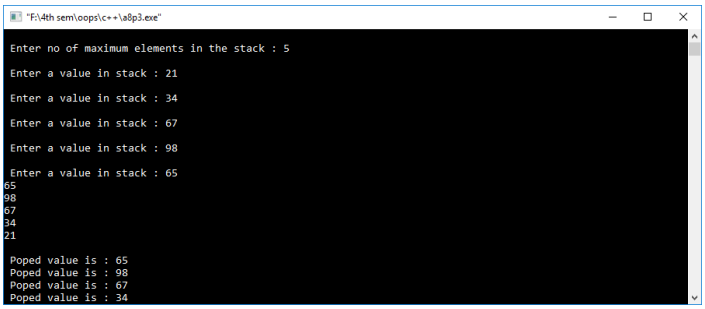
    int n,val;
    cout << "\n Enter no of maximum elements in the stack : ";
      cin >> n;
      stack<int>i;
      for(int j=0;j<n;j++){
        cout << "\n Enter a value in stack : ";
          cin >> val;
              i.push(val);
      }
      i.display();
        for(int j=0;j<n;j++){
          int pop_val=i.pop(val);
          cout << "\n Poped value is : " << pop_val;
        }
        cout << endl ;
        i.display();
      return 0;
  }
```

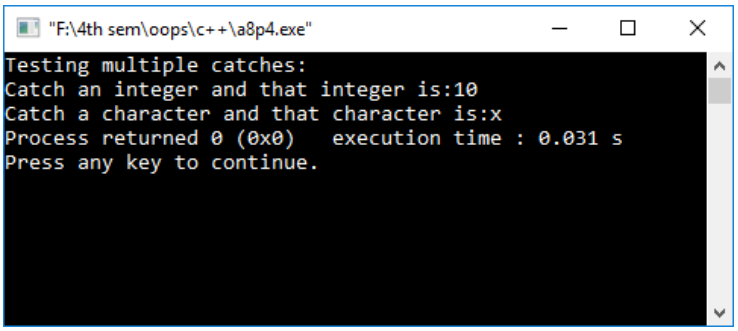


// assignment 8 program 4

/*

WAP that illustrates the application of multiple catch statements

*/



```
// assignment 8 program 5
/*
W.A.P. that throws an arithmetic exception whenever the result of arithmetic computation becomes divisible by 3.
*/
#include<iostream>
using namespace std;
int main(){
int n1,n2;
int ans;
cout << "\n Enter two numbers :";
cin >> n1 >> n2;
      try{
         if((n1-n2)%3==0){
            throw (n1-n2);
         }
         else{
            cout << "\n Answer is : " << n1/n2;
         }

      }

         catch(int ans){
            cout << "\n Catched answer is : " << ans;
         }
```

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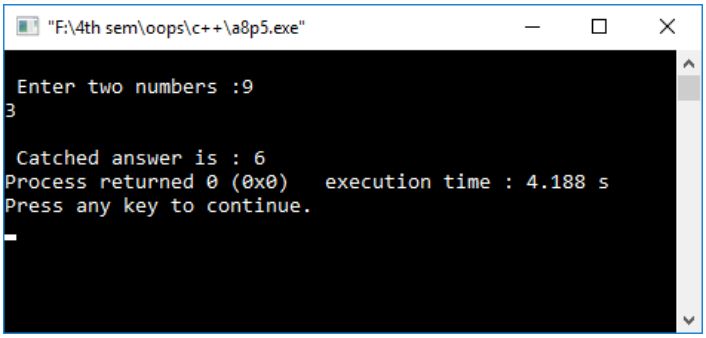
        return 0;
}
```


"F:\4th sem\oops\c++\a8p5.exe"
Enter two numbers :9
3
Catched answer is : 6
Process returned 0 (0x0)   execution time : 4.188 s
Press any key to continue.