Agnim Gupta

2028083

A23, CSSE

Question 1

```cpp
//1. Write a program that throws and catches an integer exception.
// Handle the exception and print its value.

#include <iostream>
using namespace std;

int main()
{
    int n{0};
    cout<<"n: ";
    cin>>n;

    try
    {
        if(n<5)
        {
            throw n;
        }
    }
    catch(int x)
    {
        printf("Exception caught! (n=%d)\n", x);
    }
    return 0;
}
```

Output

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights res
erved.

Install the latest PowerShell for new features and
improvements! https://aka.ms/PSWindows

PS C:\Users\KIIT\Documents\coding> cd "c:\Users\KII
T\Documents\coding\3rd semister\OOP lab\class 10\"
; if ($?) { g++ class10_q1.cpp -o class10_q1 } ; if
 ($?) { .\class10_q1 }
n: -4
Exception caught! (n=-4)
PS C:\Users\KIIT\Documents\coding\3rd semister\OOP
lab\class 10>
```

Question 2

```cpp
//2. Write a program that can throw integer and double exceptions in the same try
block.
//Implement the exception handling blocks for both exceptions.

#include <iostream>
using namespace std;
int main()
{
    int a;
    double b;

    cin >> a;
    cin >> b;

    try
    {
        cout << "In try block " << endl;

        if (a != 0)
            cout << 5 / a;
        else
            throw (a);

        if (b != 0.0)
            cout << 5.0 / b;
        else
```

```
            throw (b);
    }

    catch (int a)
    {
        cout << "exception caught of int data type" << endl;
    }
    catch (double b)
    {
        cout << "exception caught of double data type" << endl;
    }
    return 0;
}
```

Output

```
PS C:\Users\KIIT\Documents\coding\3rd semister\OOP
lab\class 10> cd "c:\Users\KIIT\Documents\coding\3r
d semister\OOP lab\class 10\" ; if ($?) { g++ class
10_q2.cpp -o class10_q2 } ; if ($?) { .\class10_q2
}
Program begins.
Test input: (1)
Exception caught an integer
End of Try-Catch block.
Test input: (-1)
Exception caught a float
End of Try-Catch block.
PS C:\Users\KIIT\Documents\coding\3rd semister\OOP
lab\class 10>
```

Question 3

```
//3. Write a program to sort an array of integers using function pointer in
descending
//order and resort this array in ascending order using virtual function.

#include <iostream>
using namespace std;

class base
{
public:
    void disOrder(int *arr, int size)
    {
```

```
        cout << "Descending Order of base class\n";
        int a;
        for (int i = 0; i < size; ++i)
        {
            for (int j = i + 1; j < size; ++j)
            {
                if (arr[i] < arr[j])
                {
                    a = arr[i];
                    arr[i] = arr[j];
                    arr[j] = a;
                }
            }
        }
    }

    virtual void asOrder(int *arr, int size)
    {
        cout << "Virtual function for Ascending Order of base class\n";
    }
};

class derived : public base
{
public:
    void asOrder(int *arr, int size)
    {
        cout << "Ascending Order of derived class\n";
        int a;
        for (int i = 0; i < size; ++i)
        {
            for (int j = i + 1; j < size; ++j)
            {
                if (arr[i] > arr[j])
                {
                    a = arr[i];
                    arr[i] = arr[j];
                    arr[j] = a;
                }
            }
        }
    }

    void disOrder(int *arr, int size)
    {
```

```
        cout << "Descending Order of derived class\n";
    }
};

int main()
{
    base *a;
    int arr[5] = {1, 2, 3, 4, 5};
    derived b;
    a = &b;
    a->disOrder(arr, 5);
    for (int i = 0; i < 5; i++)
        cout << arr[i];
    cout << "\n";
    a->asOrder(arr, 5);
    for (int i = 0; i < 5; i++)
        cout << arr[i];
    cout << "\n";
    return 0;
}
```

Output

```
PS C:\Users\KIIT\Documents\coding> cd "c:\Users\KII
T\Documents\coding\3rd semister\OOP lab\class 10\"
; if ($?) { g++ class10_q3.cpp -o class10_q3 } ; if
 ($?) { .\class10_q3 }
Descending Order of base class
54321
Ascending Order of derived class
12345
PS C:\Users\KIIT\Documents\coding\3rd semister\OOP
lab\class 10>
```

Question 4

```
//4. Write a program to accept 10 integers in an array . Check all numbers in the
array.
//When any negative number is found , throw an exception.

#include <iostream>
using namespace std;
int main()
{
```

```
    int input[10], n;
    try
    {
        cout << "How many elements do you want to input? ";
        cin >> n;
        string s = "Array out of bounds Exception Caught";
        if(n > 10)
        {
            throw (s);
        }
        else
        {
            cout << "Input elements\n";
            for (int i = 0; i < n; i++)
            {
                cin >> input[i];
            }

            for (int i = 0; i < n; i++)
            {
                if (input[i] < 0)
                {
                    throw (input[i]);
                }
            }
        }
    }

    catch (int i)
    {
        cout << "Negative Number Exception Caught:"<<i;
    }


    return 0;
}
```

Output

```
PS C:\Users\KIIT\Documents\coding> cd "c:\Users\KII
T\Documents\coding\3rd semister\OOP lab\class 10\"
; if ($?) { g++ class10_q4.cpp -o class10_q4 } ; if
 ($?) { .\class10_q4 }
How many elements do you want to input? 5
Input elements
1
-2
3
4
5
Negative Number Exception Caught:-2
PS C:\Users\KIIT\Documents\coding\3rd semister\OOP
lab\class 10>
```