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Lab 6b Programs and Lab Tasks

Program 1:

```cpp
#include <iostream>
using namespace std;

int main()
{
    int x = -1;
    //Some code
    cout<< "Before try \n";
    try {
        cout << "Im inside the try block\n ";
        if(x < 0)
        {
            cout << "-------------------------- \n";
            cout << "Condition inside if is  true lets throw an exception to the catch block \n";
            throw x;
            cout << "After throw (Never executed) \n";
        }
    }
    catch (int x){
         cout << "-------------------------- \n";
         cout << "Hey Exception Caught in catch block on integer number \n";
         cout << "The number is: "<<x<<endl;
    }
    cout << "After catch (Will be executed) \n";
    return 0;
}
```

Output:

```
Before try
Im inside the try block
 --------------------------
Condition inside if is  true lets throw an exception to the catch block
--------------------------
Hey Exception Caught in catch block on integer number
The number is: -1
After catch (Will be executed)

--------------------------------
Process exited after 0.1549 seconds with return value 0
Press any key to continue . . .
```

Program 2(without exception):

```cpp
#include <iostream>
using namespace std;
int main()
{
    try {
         int n=5;
    long factorial = 1;
    if (n<0)
    {
        throw 505;
    }
    else
    {
        for(int i =1; i <= n; ++i)
        {
            factorial *=i;
        }
        cout << "Factorial of " << n << " = " << factorial;
    }
}
catch(int n)
{
    cout << "Error! Factorial of a negative number doesnt exist."<<endl;
}
return 0;
}
```

Output:

```
Factorial of 5 = 120
--------------------------------
Process exited after 0.1317 seconds with return value 0
Press any key to continue . . .
```

Program 3(with exception):

```cpp
#include <iostream>
using namespace std;
int main()
{
    try {
        int n=-5;
    long factorial = 1;
    if (n<0)
    {
        throw 505;
    }
    else
    {
        for(int i =1; i <= n; ++i)
        {
            factorial *=i;
        }
        cout << "Factorial of " << n << " = " << factorial;
    }
}
catch(int n)
{
    cout << "Error! Factorial of a negative number doesnt exist."<<endl;
}
return 0;
}
```

Output:

```
Error! Factorial of a negative number doesnt exist.


--------------------------------
Process exited after 0.1633 seconds with return value 0
Press any key to continue . . .
```

Program 4:

```cpp
#include <iostream>
using namespace std;
int main()
{
    try {
         int age = 15;
    if (age >= 18)
    {
        cout << "Access granted - you areold enough. ";
    }
    else
    {
        throw 505;
    }
}
catch(int myNum)
{
    cout << "Access denied - You must be at least 18 years old.\n";
    cout << "Error number: " << myNum;
}
return 0;
}
```

Output :

```
Access denied - You must be at least 18 years old.
Error number: 505
--------------------------------
Process exited after 0.1419 seconds with return value 0
Press any key to continue . . .
```

Program 5:

```
1   #include <iostream>
2   using namespace std;
3   int main()
4   {
5       cout << "Hello world\n";
6       throw 10;
7       return 0;
8   }
```

Output:

```
Hello world
terminate called after throwing an instance of 'int'


--------------------------------
Process exited after 2.558 seconds with return value 3
Press any key to continue . . .
```

Lab Tasks

Task 1:

```cpp
#include <iostream>
using namespace std;
int main()
{
    try
    {
        cout << "Enter a string: ";
        string input;
        cin >> input;

        for (char ch : input)
        {
            if (ch == 'm' || ch == 'M')
            {
                throw runtime_error("Exception: Found 'm' or 'M' in the string.");
            }
        }

        cout << "No 'm' or 'M' found in the string." << endl;
    }
    catch (const exception& e)
    {
        cerr << e.what() << endl;
    }
    return 0;
}
```

Output:

```
Enter a string: saad
No 'm' or 'M' found in the string.


--------------------------------
Process exited after 2.786 seconds with return value 0
Press any key to continue . . .
```

Task 2:

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

    cout << "Enter the temperature in centigrade: ";
    cin >> temp;

    if (temp < 0) {
        cout << "Freezing weather." << endl;
    } else if (temp >= 0 && temp <= 10) {
        cout << "Very Cold weather." << endl;
    } else if (temp > 10 && temp <= 20) {
        cout << "Cold weather." << endl;
    } else if (temp > 20 && temp <= 30) {
        cout << "Normal in Temp." << endl;
    } else if (temp > 30 && temp <= 40) {
        cout << "It's Hot." << endl;
    } else {
        cout << "Its Very Hot." << endl;
    }
    return 0;
}
```

Output:

```
Enter the temperature in centigrade: 30
Normal in Temp.


--------------------------------
Process exited after 1.606 seconds with return value 0
Press any key to continue . . .
```