OOP LABORATORY 14

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1. **WAP to throw and handle 'division by zero' exception.**

PROGRAM CODE:

```cpp
#include<iostream>

using namespace std;

int main()
{
        int x,y;
        float z;
        cout<<"Enter x and y to perform x/y\n";
        cin>>x>>y;
        try
        {
                if(y!=0)
                {
                        z=x/(y*1.0);
                        cout<<x<<" / "<<y<<" = "<<z;
                }
                else
                        throw y;
        }
        catch(int y)
        {
                cout<<"Division by zero exception occured\n";
           cout<<"Value of y is entered as "<<y;
        }
        return 0;
}
```

OUTPUT:

```
Enter x and y to perform x/y
5 0
Division by zero exception occured
Value of y is entered as 0
```

2. WAP to throw and handle' array out of bound' exception

PROGRAM CODE:

```cpp
#include<iostream>

using namespace std;

int main()
{
        int i,arr[5],x;
        cout<<"Size of array is 5\nEnter 5 elements for array\n";
        for(i=0;i<5;i++)
                {
                cin>>arr[i];
                }
        cout<<"\nEnter an index to display the number from array\n";
        cin>>x;

        try
        {
                if(x>=0&&x<5)
                {
                        cout<<arr[x]<<" is at index "<<x;
                }
                else
                        throw x;
        }

        catch(int x)
        {
                cout<<"Array out of bounds exception\n";
           cout<<"Value of x is entered as "<<x<<" which is not between 0 and 4";
        }
        return 0;
}
```

OUTPUT:

```
Size of array is 5
Enter 5 elements for array
1 3 5 7 9

Enter an index to display the number from array
10
Array out of bounds exception
Value of x is entered as 10 which is not between 0 and 4
```

3. WAP to input a mail_id . Check the validity of the input given as per the following rules
- The mail should contain the character '@' anywhere in the string, expect for the first character.
-The mail id should end with ".kiit.ac.in"
If the entered string is not valid, throw an exception and display appropriate message. The string input should be taken in main. The exception is thrown in a function called from main. Exception handling code should be in main as well as in the called function. [Hint: Rethrow the exception]

PROGRAM CODE:

```
#include<iostream>
#include<string.h>

using namespace std;

int stringCheck(string str)
{   int i; int f=0;

        for(i=0;str[i]!='\0';i++)
        {

                if(str[i]=='@')
                {
                        f=1;
                        break;
                }

        }
        return f;
}

void throwException(string str)
{
        try
        {   int test=stringCheck(str);


                if(test==0)
                 throw (test);

                if(str[0]=='@')
                 throw(str[0]);

                int len= str.length();
        string test2="kiit.ac.in";
        if(len>10){

        string sub = str.substr(len-10,len-1);
```

```cpp
            if(sub!="kiit.ac.in")
                    throw ("kiit.ac.in");}

            else
             throw ("kiit.ac.in");

        }
        catch(int a)
        {
                cout<<"\nException Caught...\nInvalid Email Id!!! "<<endl;
                throw;
        }
        catch(char ch)
        {
                cout<<"\nException Caught...\nInvalid Email Id!!! "<<endl;
                throw;
        }
        catch(char const*)
        {
                cout<<"\nException Caught...\nInvalid Email Id!!! "<<endl;
                throw;
        }
}

int main()
{

        string str1;

        cout<<"\nEnter Email Id: ";
        cin>>str1;

    throwException(str1);

    cout<<"\nEmail Id is Valid";


return 0;
}
```

OUTPUT:


```
Enter Email Id : 2005643@kiit.ac.in

Email Id is Valid.
```

4. WAP to take input a URL(website address). The input has to be validated as per the following rules:-

- **The url should start with www.**
- **Following characters should not be there : underscore(_) , hyphen(-) , equals (=),   spaces .**
- **Maximum length should be 2048 characters.**

The program should throw separate exception object with an error code and error message as data member, for each of the rule, and display the appropriate message. Include a catch all block. If no exception occurs, then the program displays the URL.

PROGRAM CODE:

```cpp
#include<iostream>
#include<string.h>
using namespace std;

int stringCheck(string str)
{   int i; int f=1;
        for(i=0;str[i]!='\0';i++)
        {
                if(str[i]=='-'||str[i]=='_'||str[i]=='=')
                {
                        f=0;
                        break;
                }
        }
        return f;
}

void throwException(string str)
{
        try
        {   int test=stringCheck(str);

                if(test==0)
                 throw (test);

                if(str[0]!='w'||str[1]!='w'||str[2]!='w')
                 throw("z");

                int len= str.length();

            if(len>2048){
                throw ('y');
                }
        }

        catch(int a)
        {
                cout<<"\nThe URL is invalid"<<endl;
                throw;
```

```cpp
        }
        catch(char ch)
        {
                cout<<"\nThe URL is invalid"<<endl;
                throw;
        }
        catch(char const*)
        {
                cout<<"\nThe URL is invalid "<<endl;
                throw;
        }
        cout<<"\nThe URL is valid";
}

int main()
{

        string str;
        cout<<"Enter a url: ";
        cin>>str;

    throwException(str);


return 0;
}
```

OUTPUT: