C++ Exception Handling

**An exception is a problem that arises during the execution of a program. A C++ exception is a response to an exceptional circumstance that arises while a program is running, such as an attempt to divide by zero.**

**Exceptions provide a way to transfer control from one part of a program to another. C++ exception handling is built upon three keywords: try, catch,and throw.**

* **throw** − A program throws an exception when a problem shows up. This is done using a **throw** keyword.
* **catch** − A program catches an exception with an exception handler at the place in a program where you want to handle the problem. The **catch** keyword indicates the catching of an exception.
* **try** − A **try** block identifies a block of code for which particular exceptions will be activated. It's followed by one or more catch blocks.

syntax for using try/catch as follows –

try

{

// protected code

}

catch( ExceptionName e1 )

{

// catch block

}

catch( ExceptionName e2 )

{

// catch block

}

catch( ExceptionName eN )

{

// catch block

}

#include <iostream>

using namespace std;

int main()

{

double x,y,z;

cout<<"Enter Two Numbers ";

cin>>x>>y;

try

{

if(y==0)

{

throw "Division by zero Not Possible!";

}

z=x/y;

cout<<"z= "<<z<<endl;

}

catch (const char\* msg)

{

cerr << msg << endl;

}

cout<<"End Of Program"<<endl;

return 0;

}

#include <iostream>

using namespace std;

double calculation(double a, double b)

{

if(b==0)

{

throw "Division by zero Not Possible!";

}

return (a/b);

}

int main()

{

double x,y,z;

cout<<"Enter Two Numbers ";

cin>>x>>y;

try

{

z=calculation(x,y);

cout<<"z= "<<z<<endl;

}

catch (const char\* msg)

{

cerr << msg << endl;

}

cout<<"End Of Program"<<endl;

return 0;

}

Multiple catch

#include <iostream>

using namespace std;

int main()

{

int num[]={10,20,30,40,50};

double x,y,z;

int index;

cout<<"Enter Two Numbers ";

cin>>x>>y;

try

{

if(y==0)

{

throw "Division by zero Not Possible!";

}

z=x/y;

cout<<"z= "<<z<<endl;

cout<<"Enter Index Number";

cin>>index;

if(index<0||index>4)

throw index;

cout<<"Value Is= "<<num[index]<<endl;

}

catch (const char \*msg)

{

cerr << msg << endl;

}

catch (int n)

{

cerr << "Invalid index number" << endl;

}

cout<<"End Of Program"<<endl;

return 0;

}

**There is a special catch block called ‘catch all’ catch(…) that can be used to catch all types of exceptions.**

#include <iostream>

using namespace std;

double calculation(double a, double b)

{

if(b==0)

{

throw "Division by zero Not Possible!";

}

return (a/b);

}

void showvalue(int num[],int index)

{

if(index<0||index>4)

throw index;

cout<<"Value Is= "<<num[index]<<endl;

}

int main()

{

int num[]={10,20,30,40,50};

double x,y,z;

int index;

cout<<"Enter Two Numbers ";

cin>>x>>y;

try

{

z=calculation(x,y);

cout<<"z= "<<z<<endl;

cout<<"Enter Index Number";

cin>>index;

showvalue(num,index);

}

catch (const char \*msg)

{

cerr << msg << endl;

}

catch (...)

{

cerr << "Invalid index number" << endl;

}

cout<<"End Of Program"<<endl;

return 0;

}