Comparison of Exception Handling in C++ and Java

Both languages use *try*, *catch* and *throw* keywords for exception handling, and meaning of *try*, *catch* and *free* blocks is also same in both languages. Following are the differences between Java and C++ exception handling.

1) In C++, all types (including primitive and pointer) can be thrown as exception. But in Java only throwable objects (Throwable objects are instances of any subclass of the Throwable class) can be thrown as exception. For example, following type of code works in C++, but similar code doesn't work in Java.

```
#include <iostream>
using namespace std;
int main()
{
   int x = -1;

   // some other stuff
   try {
      // some other stuff
      if( x < 0 )
      {
         throw x;
      }
   }
   catch (int x ) {
      cout << "Exception occurred: thrown value is " << x << endl;
   }
   getchar();
   return 0;
}
```

Output:

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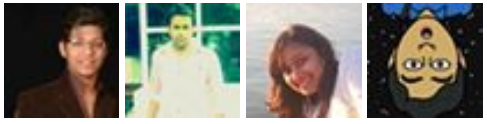

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Exception occurred: thrown value is -1

2) In C++, there is a special catch called “catch all” that can catch all kind of exceptions.

```
#include <iostream>
using namespace std;
int main()
{
   int x = -1;
   char *ptr;

   ptr = new char[256];

   // some other stuff
   try {
      // some other stuff
      if( x < 0 )
      {
         throw x;
      }
      if(ptr == NULL)
      {
         throw " ptr is NULL ";
      }
   }
   catch (...) // catch all
   {
      cout << "Exception occurred: exiting "<< endl;
      exit(0);
   }

   getchar();
   return 0;
}
```

Output:
Exception occurred: exiting

In Java, for all practical purposes, we can catch Exception object to catch all kind of exceptions. Because, normally we do not catch Throwable(s) other than Exception(s) (which are Errors)

```
catch(Exception e){
   ……
}
```

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3) In Java, there is a block called *finally* that is always executed after the try-catch block. This block can be used to do cleanup work. There is no such block in C++.

```
// creating an exception type
class Test extends Exception { }

class Main {
   public static void main(String args[]) {

      try {
         throw new Test();
      }
      catch(Test t) {
         System.out.println("Got the Test Exception");
      }
      finally {
         System.out.println("Inside finally block ");
      }
  }
}
```

Output:
Got the error
Inside finally block

4) In C++, all exceptions are unchecked. In Java, there are two types of exceptions – checked and unchecked. See this for more details on checked vs Unchecked exceptions.

5) In Java, a new keyword *throws* is used to list exceptions that can be thrown by a function. In C++, there is no *throws* keyword, the same keyword *throw* is used for this purpose also.

Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.

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Manish • 3 years ago

There is more to point 4 than mentioned here. There is a reason why C++ doe doesn't need it. Finally is required by languages in which objects dont have de not determined by scope. In Java objects are garbage-collected so their life-tin their scope.If an exception occurs and object goes out of scope , no gurantees that object encapsulates a scarce resource , this means that no gurantee can resource , which is bad. So in Java we have finally block you can free the unde goes out-of-scope. Compiler gaurantees that finally block will always be called variables we have lifetime determined by scope and so if we create the object its cleanup as soon as object goes out of scope. This technique is also called

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Venki ➚ Manish • 3 years ago

Is it Manish Jain? Good explanation. Thanks.

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manish ➚ Venki • 3 years ago

thanks...No I am not Manish Jain..My name is Manish Jawa

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Agraj • 3 years ago

Point 2 is incorrect. In Java, for all practical purposes, you can use

```
catch(Exception e){
.....
}
```

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for catch all idiom.

Coz, normally we do not catch Throwable(s) other than Exception(s) (which a

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GeeksforGeeks ➚ Agraj • 3 years ago

@Agraj: Thanks for pointing this out. We have added the above info to

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