

MODULE 6q - Exceptions

THE TRY-CATCH CONSTRUCT

Three different exceptions are referred to in the program below. They are the `ArrayIndexOutOfBoundsException` which is built-into Java and two others, `BadLuckException` and `BadZeroException`, which are declared (as classes) in the program.

```
public class TryCatch
{ private static int[] a = {12,22,0,19,13,29};
  private static int p=0;

  public static void main(String[] args)
  { while (true)
    { try
      { System.out.println(read());
      }
      catch(ArrayIndexOutOfBoundsException e)           // catch 1
    { System.out.println("Finished");
      break;
    }
      catch(BadLuckException e)                         // catch 2
    { System.out.println("---> " + e.getMessage());
      continue;
    }
  }
}

private static int read() throws ArrayIndexOutOfBoundsException,
                                BadLuckException

{ int n=0;
  try
  { n = a[p++];
    if (n==0)
      throw new BadZeroException();
    if (n==13)
      throw new BadLuckException();
  }
  catch(BadZeroException e)                             // catch 3
  { System.out.print("---> ");
```

```

        }
        return n;
    }
}

class BadLuckException extends Exception
{ public String getMessage()
  { return "unlucky thirteen";
  }
}

class BadZeroException extends Exception
{ public String getMessage()
  { return "Zero";
  }
}

// This yields:
//
// 12
// 22
// ---> 0
// 19
// ---> unlucky thirteen
// 29
// Finished

```

TRY IT OUT

Key the program in, compile it and run it. It ought to give the results which appear as comments at the end of the program.

Next see what happens if, in turn, the `catch 1` clause is omitted, the `catch 2` clause is omitted and the `catch 3` clause heading is changed to

```
catch(BadLuckException e)
```

Note also what happens if the `throws` clause is, in turn, changed to

```
throws ArrayIndexOutOfBoundsException
and to
throws BadLuckException
```

THE TRY-CATCH-FINALLY CONSTRUCT

An adapted version of the above program is given here. It refers to the same three exceptions but includes a try-catch-finally construct.

```
public class TryFinally
{ private static int[] a = {12,22,0,19,13,29};
  private static int p=0;
  private static int totup=0;

  public static void main(String[] args)
  { while (true)
    { try
      { System.out.println(read());
      }
      catch(ArrayIndexOutOfBoundsException e)
    { System.out.println("Finished");
      break;
    }
      catch(BadLuckException e)
    { System.out.println("---> " + e.getMessage());
      continue;
    }
    }
    System.out.println("Read entered " + totup + " times");
  }

  private static int read() throws ArrayIndexOutOfBoundsException,
                                  BadLuckException
  { int n=0;
    try
    { n = a[p++];
      if (n==0)
        throw new BadZeroException();
      if (n==13)
        throw new BadLuckException();
    }
  }
```

```

        catch(BadZeroException e)
        { System.out.print("---> ");
        }
        finally
        { totup++;
        }
        return n;
    }
}

class BadLuckException extends Exception
{ public String getMessage()
  { return "unlucky thirteen";
  }
}

class BadZeroException extends Exception
{ public String getMessage()
  { return "Zero";
  }
}

// This yields:
//
// 12
// 22
// ---> 0
// 19
// ---> unlucky thirteen
// 29
// Finished
// Read entered 7 times

```

TRY IT OUT

Edit the previous program so that it appears as this new version, compile it and run it. It ought to give the results shown.

TRY THIS JIFFY PROGRAM TOO

```
public class HelloC
{ public static void main(String[] args) throws InterruptedException
  { System.out.println("Hello");
    Thread.sleep(3000L);
    System.out.println("World");
  }
}
```