

Exception Mechanism Solutions

Exception throwing

- When an exception is thrown in a try block, describe what happens to:
- The thrown object
 - The thrown object is copied into a special area of memory managed by the compiler
- The local variables in the try block
 - All the local variables in the try block are destroyed
- The program control flow
 - The program flow leaves the try block without executing any more instructions. It then tries to find a suitable catch handler

Stack Unwinding

- Explain what is meant by the term "stack unwinding"
 - The program will look for a suitable catch block immediately following the try block
 - If it cannot find one, it will exit the current scope, destroying all local variables, and look in the enclosing scope
 - This continues until it finds a suitable handler. If it reaches main() without finding one, the program terminates (by default)

Rethrowing an Exception

- A catch block can throw its exception object again. What is the syntax for doing this?
 - `throw;` // Rethrows the exception object
 - `throw(e);` // Throws a copy of the exception object
 - `throw SomeExceptionType(e);` // Converts the exception object to
// `SomeExceptionType` and throws the result
- How is the rethrown exception handled?
 - It is regarded as a new exception
 - A fresh process of stack unwinding begins

Rethrow Example

- Write a simple program in which an exception is caught and rethrown

Applications of rethrowing

- Give an example where this would be useful
 - Logging the details of an error condition at the point where it happens
 - Adding extra information to the exception object
 - Converting the exception object to a higher level type