

std::exception Subclasses Solutions

std::exception Subclasses

- Give some examples of when C++ standard library functions throw a subclass of std::exception
 - bad_alloc when memory allocation fails
 - out_of_range when vector::at() is given an out-of-bounds index
 - invalid_argument when stoi() is called with a string that cannot be converted to a number

C++ Standard Library and Exceptions

- There are many situations where the standard library could usefully throw these subclass exceptions but does not. Why is this?
 - Exceptions require extra code
 - This would add too much overhead, for a general purpose library that has to be efficient in all situations
- Why is it useful to learn about these subclass exceptions?
 - They may be used in third-party code
 - We can use them in our own code

C++ Standard Library and Exceptions

- Write a program that executes `sqrt(-1)` in a try block which has a catch handler for `std::exception()`
- Explain your results
 - `sqrt()` does not throw `std::domain_error` when given -1 as an argument
 - Instead, it returns the value NaN ("Not a Number")

C++ Standard Library and Exceptions

- Why do C++ streams not throw exceptions by default?
 - It is usually simpler to handle errors by checking the stream state
- Write a simple program in which stream operations throw an exception when an error occurs