Inline Variables Solutions

One Definition Rule (ODR)

- What is meant by the One Definition Rule?
  - A symbol can only be defined once in a program
  - Multiple definitions cause a compilation error

Inline Functions

- Give three ways in which a function can be defined in multiple source files without breaking the One Definition Rule
  - Global function which is declared inline
  - Member function which is written out in the class definition
  - Function which is constexpr

Inline Functions and Optimization

- "Declaring a function inline always makes the program faster, because it removes the overhead of the function call"
- Is this statement correct?
  - No
  - "inline" is a hint which the compiler can ignore

Extern Variables

- Write a program with a header file and two source files
  - The header file defines a global variable which is "extern"
  - The two source files include this header file
  - One source file initializes the global variable
  - The other source file has a main function which prints out the global variable's value

Drawbacks of Extern Variables

- Apart from the usual disadvantages of global variables, are there any drawbacks to making a variable extern?
  - An extern variable has to be initialized separately
  - An extern variable must be defined in one (and only one) source file
  - An extern variable cannot be made constexpr

C++17 Inline Variables

- Write a similar program to your earlier solution, but using C++17 inline variables instead of extern
- What are the advantages of inline variables?
  - Can be initialized in their declaration
  - Can be made constexpr
  - Do not require source files