Modern C++ Overview Part One Exercises

Universal Initialization

- Write a program that uses universal initialization to define the following variables
  - x, type int, initial value 7
  - s, type std::string, initial value "Let us begin"
  - y, type int, initial value 7.7
- Why does the definition of y not compile? Try again with the traditional form of initialization
- Print out the values of x, s, and y
- Test and run your program

Universal Initialization contd

- Still using universal initialization, add the following variables to your program
  - v, type std::vector of int, values 4, 2, 3, 5, 1
  - hello, type std::string, initial values 'H', 'e', 'l', 'l', 'o'
- Print out the values of v and hello
- Test and run your program

nullptr

- Describe the nullptr feature
- Write two overloaded functions, one taking an int by value and one taking pointer to int. Each function prints out the type of its argument
- Write a program which makes two calls to the function, one with argument NULL and one with argument nullptr
- Run your program. Explain your observations

std::chrono

- Using C++11 syntax, write down expressions which represent intervals of
  - 2 seconds
  - 20 milliseconds
  - 50 microseconds

std::chrono literals

- Repeat the previous exercise, using C++14 syntax

Automatic Type Deduction

- Briefly describe the auto keyword
- Write down an expression which uses the auto keyword to define a variable whose initial value is 6. What will be the type of this variable?
- Write down an expression which uses the auto keyword to define a variable whose initial value is an iterator to the first element in a vector of string
- Write down an expression which defines the same variable, using traditional syntax for the type

auto with qualifiers

- What happens when we want to use auto to create a variable which is const, or is a reference?

auto and for loops

- Write a program that creates a vector whose elements are 4, 2, 5, 3 and 1
- Using iterators with traditional syntax, write a loop that adds 2 to each element
- Using iterators with traditional syntax, write a loop that prints out each element
- Rewrite your program so that it uses auto for the iterator type instead of an explicit type

Range for loops

- Rewrite your program from the previous exercise to use range-for loops