Modern C++ Overview
Part Two Exercises

Lambda Expression

- Briefly describe what is meant by a lambda expression

Defining a lambda expression

- Briefly describe the syntax for writing a lambda expression
- Write down a lambda expression that takes an int argument and returns double the value of the argument

Example of lambda expression usage

- The C++ standard algorithm function count_if takes three arguments: the begin and end of an iterator range, and a predicate function which returns a boolean
- It calls the predicate function on every element in the iterator range
- Use count_if() to write a program which prints out the number of odd elements in a vector of int, using
  - A function pointer for the predicate
  - A suitable lambda expression

Capture

- Briefly explain what is meant by "capture" in a lambda expression and how to implement it

Capture

- Write down lambda expressions which capture a local variable x
  - By value
  - By reference

Capture all local variables

- Write down lambda expressions which capture all local variables
  - By value
  - By reference

Capture and objects

- Write down lambda expressions which could be used in a member function to capture the data members of the object
- How does this differ from capturing local variables?

Example of lambda expression with capture

- Alter the earlier count_if example so that it finds the number of exact multiples of any integer (instead of the hard-coded value 2)
- The integer will be a local variable which is captured by the lambda expression
- Write a program that uses this lambda expression to find the number of exact multiples of 3