Modern C++ Overview
Part Four Exercises

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Rvalue references and overloading

- Write a function which takes an int by const reference and an overloaded version which takes an int by rvalue reference
  - Each function displays its argument type
- Write a program which calls the overloaded function and passes
  - An int variable
  - The result of calling std::move() on an int variable
  - An integer literal
- Explain your results

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Move-only types

- What is meant by a move-only type? Give an example of a move-only type
- Why are move-only types useful?

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Pass by move

- What property must a class have in order that objects of that class can be passed by move?

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Move operators

- Write down the prototypes of the move constructor and move assignment operator of a class called "Test"

```
Test(Test && other) noexcept;                    // Move constructor
Test& operator=(Test && other) noexcept;         // Move assignment operator
```

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Deleted and Defaulted Operators

- Describe what effect the "delete" and "default" keywords have in the following statements

```
Test(const Test& other) = delete;
Test(const Test& other) = default;
```

- Why are these keywords useful?

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Class which can be Moved but not Copied

- Write a class which can be moved but not copied, using the "delete" and "default" keywords where appropriate
- Write a program which creates objects of this class. Demonstrate that move operations are allowed, but copying objects is not

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Pass by value... or by move?

- Write a function which takes a vector of std::string by value and prints out the number of elements in the vector
- Write a program which creates a vector of std::string and passes it to the function
- Display the number of elements in the vector
  - Before making the call
  - After returning from the call
- Modify your program so that the vector is passed as an rvalue
- Explain your results

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