# Character Functions Solutions

# Character Functions

- Give some examples of the character functions defined by the C++ standard library
  - isdigit, islower, isupper, isspace, ispunct
- Which header file needs to be included to use them?
  - <cctype>

# Example of Character Functions

- Write a program which creates a string, iterates over its characters and identifies each character as upper case, lower case, punctuation or whitespace
- Check that your program gives the expected output

# Case Sensitivity and String Comparisons

- What is the easiest way to work with strings without having to worry about case sensitivity?
  - Convert all strings to a single case (if a string contains important data, make a copy instead of overwriting it)
- Which two functions can be used to change the case of a character?
  - toupper and tolower

# Case Sensitivity and String Comparisons

- Some compilers provide functions which do case-insensitive string comparisons. What are the drawbacks of these functions?
  - They are not standard, not portable and do not directly support std::string

# equal_strings function

- Add comments to the code on the following slide, to explain how it works
- What is the purpose of this test?

```
if (lit == lhs.end() && rit == rhs.end())
```

  - It checks if we have reached the end of either string
- Why is this function called equal_strings and not the == operator?
  - The == operator for std::string is already defined in the Standard Library
  - The One Definition Rule (ODR) means we cannot define it again
- Write a program to test the code

# equal_strings function

```
bool equal_strings(const string& lhs, const string& rhs) {
   if (lhs.size() != rhs.size())
      return false;

   auto lit=lhs.cbegin();
   auto rit = rhs.cbegin();

   while (lit != lhs.cend() && rit != rhs.cend()) {
   if (toupper(*lit) != toupper(*rit))
      return false;
      ++lit;
      ++rit;
   }

   return true;
}
```