Basic input and output

Aim

In this assignment you will learn how to write a basic C++ program skeleton, how to produce output from the program to the user, and how to recieve input from the user to the program (I/O for short).

It is of special importance to understand the I/O buffer. For this reason you are only allowed to use one variable of each type (`char`, `int`, `double`, `std::string`) and you are not allowed to use any control statements (`if`, `while`, `for`) that you happen to know. You are expected to solve the assignment using only sequential instructions.

Reading Instructions

- Writing a program skeleton (main program)

- Compilation and running

- Using comments (`// C++ comment to end of line, /* C block comment */`)

- Including libraries (`#<include>`)

- Using the standard namespace (`using namespace std;` or `std::`)

- Data types (`int`, `char`, `float`, `double`, `std::string`)

- Literal types and escape sequences

- Variable declarations and assignment (`=`)

- Direct input (`istream::get`, `istream::ignore`, `std::getline`)

- Formatted input (`std::cin`, `operator>>`)

- Formatted output (`std::cout`, `operator<<`)

- Output manipulation (`<iomanip>` library)

Assignment

Write a program that behaves as the program in example 1 on the next page. It is important to establish a good work process. Write an empty program skeleton that does nothing. Compile it. Run it. Add the first line of output. Compile and run. *Do as little as possible between each compilations and you will pinpoint errors much easier and faster.*

In the examples we have outlined text entered by the user in bold font. This is to help you distinguish user input from program output.

When you run your program you should test different inputs and observe what happens. Also try different amount of spaces before and/or after your input. Once your program work for example 1, with attention to details such as different kinds of quotes and alignment, you should move on to example 2. Your final program should handle both examples, and any similar example, without problems. You are *not* expected to handle the situation that occurs when the program expects a number but the user enters a string.

Remember you are limited to one variable each of the types `char`, `int`, `double` and `std::string`. You are not allowed to use any control statements.

Be careful if you paste text from the instructions. Special characters (for example quotes) tend to be in a special typesetting version not recognized by the compiler.

Example 1

```
Enter one integer: 123
You entered the number: 123

Enter four integers: 12 34 56 78
You entered the numbers: 12 34 56 78

Enter one integer and one real number: 4711 3.14159265
The real is:        3.142
The integer is:     4711

Enter one real and one integer number: 2.71828183 1392
The real is: ......2.718
The integer is: ....1392

Enter a character: a
You entered: a

Enter a word: Calvin
The word 'Calvin' has 6 character(s).

Enter an integer and a word: 32 students
You entered '32' and 'students'.

Enter an character and a word: Q garden
You entered the string "garden" and the character 'Q'.

Enter a word and real number: three .14
You entered "three" and "0.140".

Enter a text-line: The quick brown fox jumps over the lazy dog.
You entered: "The quick brown fox jumps over the lazy dog."

Enter a second line of text: That was a pangram phrase.
You entered: "That was a pangram phrase."

Enter three words: Testing One Two
You entered: 'Testing One Two'
```

Example 2

```
Enter one integer: 123.4
You entered the number: 123


Enter four integers:     -12 100034      56              0
You entered the numbers: -12 100034 56 0


Enter one integer and one real number:              4711
  3.14159265 messing up
The real is:       3.142
The integer is:      4711


Enter one real and one integer number: 1396          2.71828183
The real is: ...1396.000
The integer is: .......2


Enter a character: abcd
You entered: a


Enter a word: 124calvin
The word '124calvin' has 9 character(s).


Enter an integer and a word: 24students here
You entered '24' and 'students'.


Enter an character and a word: Qgarden 34
You entered the string "garden" and the character 'Q'.


Enter a word and real number: three.14 16.17.18
You entered "three.14" and "16.170".


Enter a text-line:    AND IT D03S NOT rea11y matter.
You entered: "    AND IT D03S NOT rea11y matter."


Enter a second line of text:     Frogs are green  and Resistance  is  blue.
You entered: "     Frogs are green  and Resistance  is  blue."


Enter three words: Testing    One     Two three
You entered: 'Testing One Two'
```