## Mathematics 1262 (C++ Programming) Hilary 2014

## Seventh assignment, due 28/3/14

*This assignment spans two weeks*, because of St. Patrick's day, although it is easy. The eighth assignment will also be due on 28/3/14.

Refer to the C++ reference for information about sorting with different comparison functions. Write code to read in pairs (x, y) of points (doubles), store them in a vector of *pairs* (ordinary C-style arrays will raise difficulties), and sort them by x-coordinate. Echo the points as they are read in, following the style given below. Example:

% a.out < 4pts

-----0.840188 0.394383 -----0.783099 0.79844 -----0.911647 0.197551 -----0.335223 0.76823 0.335223 0.76823 0.783099 0.79844 0.840188 0.394383 0.911647 0.197551

There is a file of 1000 random points in the data subdirectory.

**Indentation.** By 'indentation' means that the indenting of a line of code gives a hint of its place in the overall structure. I always increase the indentation by just 2 spaces each time, to avoid wide lines (it is best to keep lines <80 characters long). Here is the general idea.

```
#include <iostream>
using namespace std;
xxx ( int a )
{
  int b; // everything to the closing brace indented
         // at least 2 spaces.
         // Matching braces have same indentation.
         // Everything between matching braces
         // indented two spaces further.
  for ( b=0; b<a; ++b )</pre>
  {
    if ( b % 3 == 1 )
    {
      cout << "b is " << b << endl;</pre>
    }
    else
    {
      cout << "b is not congruent to 1 mod 3\n";</pre>
    }
  }
}
int main ()
{
  xxx ( 10 );
}
```

Marks will be deducted for poor indentation.

**Motivation.** Using the C++ online reference manual (there is a link on the course web page). Paying attention to indentation.

## Eighth assignment, due 28/3/14

*Note that the seventh and eighth assignments are due on the same day.* Write a program

• which takes a list of words from the command line.

Words are blank-separated strings. Unlike some examples in lectures, the words should not be reduced to alphanumeric characters.

- and a text file (redirected to cin)
- stores the words from the text file (not reduced to alphanumeric characters), *together with the number of occurrences of each word*, in a **map**
- and for each of the words on the command line, echoes the word and the number of times it occurs in the file.
- Indentation will be taken into account.

Example

```
%a.out honour honor wicket wicked lucky look window sorghum ladle < ladle
honour does not occur
honor occurs 5 times
wicket occurs 5 times
wicked does not occur
lucky occurs 1 times
look does not occur
window does not occur
sorghum occurs 1 times
ladle occurs 15 times
```

**Motivation.** Using maps and, again, using the C++ online reference manual.