I/O in C^{++}

Reading:

- Appropriate sections of your C^{++} book. E.g., Lippman, chapter 20, or Stroustrop chapter 21


```
#include <fstream>
#include <string>

int main(void)
{
   // Output to "the standard output".
   cout << "Hello.\nHow old are you? ";

   // Input from "the standard input".
   int age;
   cin >> age;
   cout << "Wow, " << age << ".  You're that old?\n";


   // Output to a file (as text).
   fstream fs;
   fs.open ("outfile", ios::out);
   fs << age;
   fs.close();

   // Input from a file (as text).
   int num;
   fs.open ("infile", ios::in);
   fs >> num;
   cout << "I just read from a file: " << num << ".\n";
   fs.close();
```

```
// Output to a file (binary).
fs.open ("binfile", ios::out | ios::bin);
char c = 'A';
fs.write (&c, sizeof(char));

for (int i=0; i < 10; i++)
     fs.write (&i, sizeof(int));
fs.close();

// Input from a file (binary).
fs.open ("binfile", ios::in | ios::bin);
fs.read (&c, sizeof(char));
cout << "I read the character: " << c << "." << endl;
fs.read (&num, sizeof(int));
cout << "I read the integer: "
     << num << ".\n";
cout << "The rest of the binary file contains:\n";
fs.read (&num, sizeof(int));
// Input until end of file.
while (!fs.fail()) {
     cout << "   " << num << endl;
     fs.read (&num, sizeof(int));
}

cout << "For the record, sizeof(int) is "
     << sizeof(int) << "." << endl;
cout << "For the record, sizeof(char) is "
     << sizeof(char) << "." << endl;

return 0;
```



```
qew.cs 1% cat infile
12345
Hello, here's a line
and here is another line.
Let's put some more
stuff in here so that
we don't hit end-of-file before we're
doing trying to read input.
qew.cs 2% a.out
Hello.
How old are you? 3
Wow, 3.  You're that old?
I just read from a file: 12345.
I read the character: A.
I read the integer: 0.
The rest of the binary file contains these integers:
   1
   2
   3
   4
   5
   6
   7
   8
   9
For the record, sizeof(int) is 4.
For the record, sizeof(char) is 1.

dvp.cs 96% cat outfile
3
```

```
qew.cs 4% od -b binfile
0000000 101 000 000 000 000 000 000 000 001 000 000 000 002 0(
0000020 003 000 000 000 004 000 000 000 005 000 000 000 006 0(
0000040 007 000 000 000 010 000 000 000 011
0000051
```



```
#include <fstream>
#include <string>

int main(void)
{
  // Input from a file (text), grabbing a line
  // at a time.
  fstream in;
  in.open ("infile", ios::in);

  for (int i = 1; i<=5; i++) {
     char a[100];                    // Yuk: magic numbers.
     in.getline(a, 100, '\n');
     cout << "As a C-style string: " << a << "\n";

     // Making a C++ string out of this C-style string a.
     string s(a, 0, 99);
     cout << "As a C++ string    : " << s << "\n";
  }
  return 0;
}
```

```
qew.cs 849% cat infile
12345
Hello, here's a line
and here is another line.
Let's put some more
stuff in here so that
we don't hit end-of-file before we're
doing trying to read input.


qew.cs 850% a.out
As a C-style string: 12345
As a C++ string    : 12345
As a C-style string: Hello, here's a line
As a C++ string    : Hello, here's a line
As a C-style string: and here is another line.
As a C++ string    : and here is another line.
As a C-style string: Let's put some more
As a C++ string    : Let's put some more
As a C-style string: stuff in here so that
As a C++ string    : stuff in here so that
```