Code Examples: cin98.cpp, cin_getline.cpp, cin_getline_Notes.cpp,
                         cout_width.cpp, cout_fixed.cpp,
                         cout_left.cpp, cout_precision.cpp,
                         cout_iomanip.cpp, cin_validate.cpp,
                         filestream1.cpp, filestream2.cpp

1. The iostream library
    a) #include <iostream>
        using namespace std;

2. the istream class
    a) the cin object
    b) operator >>
    c) member functions
        ignore(…): discard a character or a sequence of characters from the input buffer
        get(…): get a character or a string from the input buffer; the delimiter is NOT extracted!
        getline(…): get a line of characters from the input buffer; the delimiter is also extracted!

3. the ostream class
    a) the cout objcet
    b) operator <<
    c) member functions

4. Input/Output Manipulators (Optional)
    a) #include <iomanip>
        using namespace std;

    b) helper functions, used as the operands for the extraction and insertion operators
        e.g.

```
cout << fixed << left << setw(5) <<
       setprecision(1) << 12.376 <<
       setprecision(5) << 12.376 <<
       endl;
```

c) example: cout_iomanip.cpp

5. The <u>states</u> of istream and ostream objects
   a) member functions (the Course Notes)

   - **good()** - the next operation might succeed
   - **fail()** - the next operation will fail
   - **eof()** - end of data has been encountered
   - **bad()** - the data may be corrupted
   - **clear()** - reset the state to good

   b) Robust Validation (cin_vaidate.cpp)

6. File Stream Classes (Optional)
   a) the fstream library
      #include <fstream>
      using namespace std;

   b) three fstream classes
      - ifstream
      - ofstream
      - fstream

   c) operator<<, operator>>

   d) examples: filestream1.cpp, filestream2.cpp

   e) Further Reading: http://www.cplusplus.com/doc/tutorial/files/

   f) API (Class Documentation)
      http://www.cplusplus.com/reference/fstream/ifstream/ifstream/
      http://www.cplusplus.com/reference/fstream/ofstream/
      http://www.cplusplus.com/reference/fstream/fstream/

7. Course Notes (with Examples)
https://ict.senecacollege.ca/~btp200/pages/content/basic.html
https://ict.senecacollege.ca/~oop244/pages/content/basic.html

8. Video Lessons (Three Parts)