WESTERN SYDNEY
UNIVERSITY

File Input / Output (I/O)

ELEC1006: ENGINEERING COMPUTING

Basic File Input and Output

WESTERN SYDNEY UNIVERSITY

- Can use files for program input and output
- Allows data to be retained between program runs
- Steps:
  - *Open* the file
  - File access (read from, write to, or both)
  - *Close* the file

File I/O: What is Needed

WESTERN SYDNEY UNIVERSITY

- Use `fstream` header file for file access
- File stream types:
  - `ifstream` for input from a file
  - `ofstream` for output to a file
  - `fstream` header for input from or output to a file
- Define file stream objects:

```
ifstream infile;
ofstream outfile;
```

Opening Files

WESTERN SYDNEY UNIVERSITY

- Creates a link between file name (outside the program) and file stream object (inside the program)
- Use the `open` member function:

```
infile.open("inventory.dat");
outfile.open("report.txt");
```

- Filename may include drive, path info.
- Output file will be created if it does not exist; if it exists, then existing file will be erased first (if not programmed properly)
- Input file must exist for `open` to work

File Access

WESTERN SYDNEY UNIVERSITY

- Can use output file object and << to send data to a file:

```
outfile << "Inventory report";
```

- Can use input file object and >> to copy data from file to variables:

```
infile >> partNum;
infile >> qtyInStock >> qtyOnOrder;
```

Closing Files

WESTERN SYDNEY UNIVERSITY

- Use the `close` member function:

```
infile.close();
outfile.close();
```

Example of Output to a File

WESTERN SYDNEY UNIVERSITY

```
// basic file operations
#include <iostream>
#include <fstream>
using namespace std;

int main () {
  ofstream myfile;
  myfile.open ("example.txt");
  myfile << "Writing this to a file.\n";
  myfile.close();
  return 0;
}
```

head file for file i/o

Declare the output file variable

Open the file

Write to the file

Close the file

Example of Input from a File

WESTERN SYDNEY UNIVERSITY

```
// basic file operations
#include <iostream>
#include <fstream>
#include <string>
using namespace std;

int main () {
        ifstream myfile1;
        string input_data;

        myfile1.open("example.txt");
        getline (myfile1,input_data);
        cout<<input_data;
        myfile1.close();

        return 0;
}
```

More info on C++

WESTERN SYDNEY UNIVERSITY

[1] learncpp.com: 18.6 – Basic file I/O
https://www.learncpp.com/cpp-tutorial/186-basic-file-io/