

## File Streams

11-9-2001

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## Opening Discussion

- What did we talk about last class?
- Do you have any questions for Assn #5?
- You can't have a print function in your stack class. That is the same as peeking in the middle.
- Creating a dynamic array and passing to a function.

```
double *vals=new double[n];  
fill(vals);
```

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## Files

- Most operating systems organize their data into files that are stored in directories where directories form something of a tree structure.
- It is often helpful to use data from files in your programs. We have done this by redirecting the input and output in the past, but today we will look at a more flexible approach.

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## cin and cout

- You have been using cin and cout since the first few days of this class not knowing anything about what they were. They are actually input stream and output stream objects. They are connected with the standard input and output of the computer.
  - cin is an istream
  - cout is an ostream

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## File Streams

- C++ also has classes for streams that are "attached" to files.
  - ifstream reads from a file
  - ofstream writes to a file.
- This allows you to have a program write something that you can read read in later in either a later execution of the same program or the execution of a different program.

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## Opening and Closing

- To use a file you have to open it. This can be done either by passing it a file name as an argument when it is created or by calling the open method with the filename.
- When you are done with a file it should be closed. This will happen automatically when the variable passes out of scope, or you can do it by calling the close method.

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## Reading and Writing

- Once files are open you can read and write to them just as you would with cin or cout. This works so nicely because the input and output file streams inherit from the normal input and output streams. Inheritance is a topic we will cover a little under two weeks from today.

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## Additional Information

- There is a lot more to file streams and I/O streams in general than what we have talked about in this class. If you want to know more about it I recommend getting a book that talks about the C++ libraries.
- Topics we haven't covered include:
  - Formatting output.
  - Files that are both read and write.
  - Direct access files.

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## Minute Essay

- cin and cout are declared in the global space when you include iostream. As a result you can access them anywhere. This won't be the case for file streams. What will this change in your code?
- Your assignment #5 is due on Monday. With any luck I'll get assignment #4 back to you then as well (I'm not that optimistic).

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