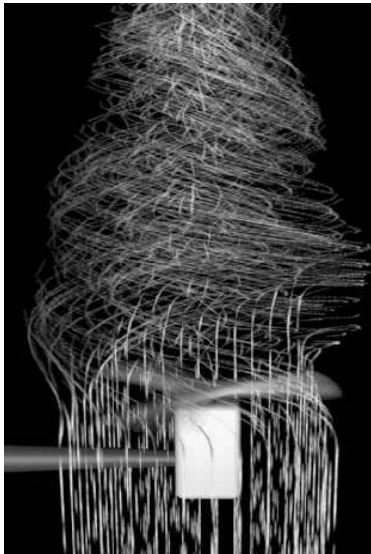


# Let Me In

## Getting Data into Your Program

### Ahh, Streams



- C++ views data as streams
- There are markers in the stream to indicate where you are
- The data travels past and you extract or insert as you want

## Input Streams and Extraction

- `#include <iostream>`
- Input:
  - `cin`
  - `>>` //think sticking data in variable
- Output:
  - `cout`
  - `<<` // think taking data out and into stream
- Extraction skips whitespace!
  - `\n`, `\t`, `' '`, `\r`, `\v`

## Newline Character

- Two ways to get a new line
  - `\n`
  - `endl;`

## Examples

		<u>25</u> A 16.9\n
cin >> i;	i = 25	25_A 16.9\n
cin >> ch;	ch = A	25 A_16.9\n
cin >> x;	x = 16.9	25 A 16.9 <u>16.9</u> \n

## One Character at a Time; Getting and Skipping

- get function
- example  
Ocin.get(someChar);
- ignore function
- example  
Ocin.ignore(200, '\n');
- Second parameter can be any character

## Strings: How to read them

- `getline` function

- example

  - `getline(cin, myString);`

    - Defaults to the newline character

- Alternative

  - `getline(cin, myString, '\t');`

    - Where the third parameter can be any character

## Files: Let's Use Them

- `#include <fstream>`

- Declare a file stream variable

  - `ifstream inFile; //input file stream`

  - `ofstream outFile; //output file stream`

- Open the files

  - `inFile.open("MyInput.dat");`

  - `outFile.open("MyOutput.dat");`

## Alternative

- Declare and Open in one statement

- `ifstream inFile("MyInput.dat");`

- `ofstream outFile("MyOutput.dat");`

## Were You Born in a Barn?

- Don't forget to close the files when you are done with them

- `inFile.close();`

- `outFile.close();`

## Using ifstreams and ofstreams

- Work just like cin and cout
  - Extraction and Insertion
  - get
  - getline
- Read marker in read file
- Write marker in write file

## I Don't Know the Name of My File

- Declare it at run time
  - Get from input statement in a string
  - Use it to open the file

```
ifstream inFile;
```

```
inFile.open(myString); //won't work
```

  - Instead need to do this

```
inFile.open( myString.c_str() ); //will work
```

# FAILURE

- You can check for failure
- `inFile.fail();`
- Example

```
int i=10, j = 20, k=30;  
inFile >> i >> j >> k;      // 1234.56 7 89  
outFile << i << j << k;     // 1234 20 30
```