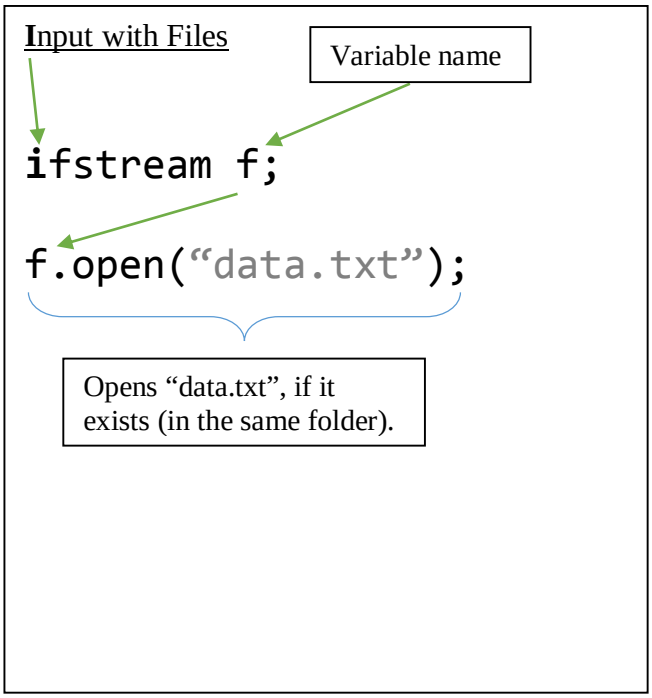
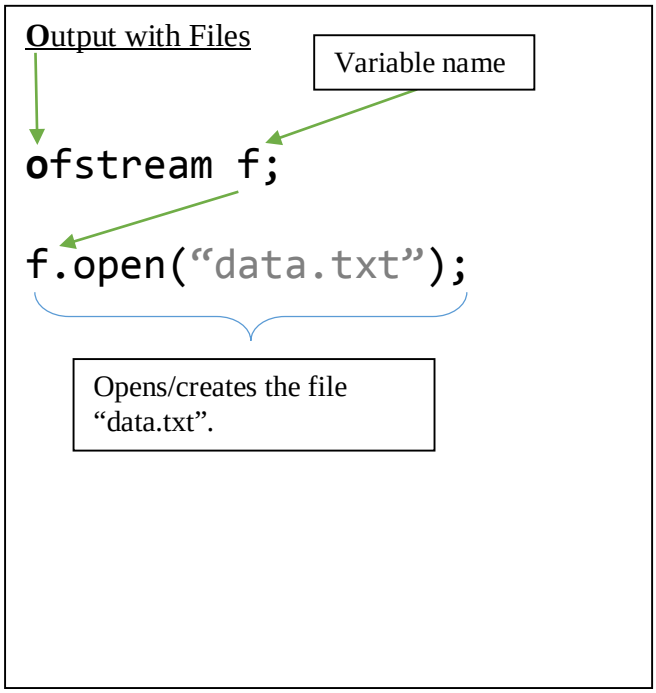
Crash Course on File I/O (Written by professor Kent Chin)

Here's a simple C++ program:

```
#include <iostream>

using namespace std;

int main() {
  int x;
  char c;
  string s;

  //how we did input with the keyboard
  cin >> x;
  cin >> c;
  cin >> s;

  //how we did output to the console
  cout << x << endl;
  cout << c << endl;
  cout << s << endl;

  return 0;
}
```

What if you wanted to input and output data to a file? C++ makes this easy with the `<fstream>` library! At the top of the program, include the following: `#include <fstream>`





Here's a simple C++ program with some basic file **input**:

```
#include <iostream>
#include <fstream>
using namespace std;

int main() {
  int x;
  char c;
  string s;

  ifstream in_file;
  in_file.open("in.txt");

  //the same >> operator you used with cin can grab data from a file!

  in_file >> x;
  in_file >> c;
  in_file >> s;

  cout << x << endl; //45
  cout << c << endl; //g
  cout << s << endl; //thisisonebigstring

  in_file.close(); //closes the file
  return 0;
}
```

Assume "in.txt" has the following contents

```
45
g
thisisonebigstring
```

Here's a simple C++ program with some basic file **output**:

```
#include <iostream>
#include <fstream>
using namespace std;

int main() {
  int x = 53;
  char c = 't';
  string s = "what am I doing???";

  ofstream out_file;
  out_file.open("out.txt"); //opens/creates "out.txt"

  //the same << operator you used with cout puts data to a file!

  out_file << x << endl;
  out_file << c << endl;
  out_file << s << endl;

  out_file.close(); //closes the file
  return 0;
}
```

```
53
t
what am I doing???
```