

Understanding complex expressions:

```
while( ! getline(inf, name, '|').eof() ) { ... }
```

Let's start with a C++ expression which is easy to understand:

```
5 + 4 - 2 + 3;
```

This is evaluated from left to right and simplifies like this:

```
5 + 4 - 2 + 3;
```

```
9 - 2 + 3;
```

```
7 + 3;
```

```
10;
```

Now, let's pretend that these numbers are all objects of some pretend integer class:

```
class Integer {
public:
    Integer plus(Integer arg);
    Integer minus(Integer arg);
    ...
};
Integer two;
Integer three;
Integer four;
Integer five;
```

I can add two numbers together this way:

```
two.plus(five);
```

This expression returns another Integer: seven

Since the `plus()` member function returns another integer, we can call another member function on the value returned:

```
5 + 4 - 2 + 3;           five.plus(four).minus(two).plus(three);
```

```
9 - 2 + 3;              nine.minus(two).plus(three);
```

```
7 + 3;                  seven.plus(three);
```

```
10;                     ten;
```

Now, back to our while loop. Here it is:

```
while( ! getline(inf, name, '|').eof() ) { ... }
```

First, note that `inf` is a class object with a member function `eof()`. The `eof()` member function will return `true` if `inf` is at end-of-file, otherwise `eof()` returns `false`. So, I can create a while loop like this:

```
while( ! inf.eof() ) { ... }
```

Which means loop while `inf` has not reached the end of the file.

There exists a function (a normal function, not a member function) named `getline` which is used like this:

```
getline(inf, name, '|')
```

This function takes data from `inf` and puts it in `name` until it hits a pipe character.

The clever thing is that the `getline()` function returns its first argument (in this case, `inf`). So, if I were to ask, What is the result of this expression:

```
getline(inf, name, '|')
```

The answer would be `inf`. Since `inf` is returned from the function, I can call a member function on it:

```
getline(inf, name, '|').eof()
```

Putting it all together:

```
while( ! getline(inf, name, '|').eof() )
```