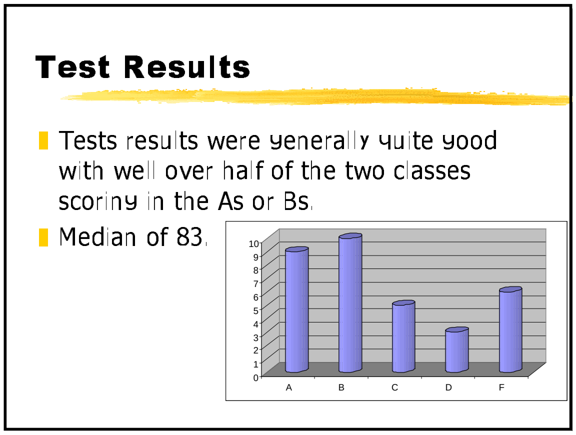
Operator Overloadiny

10 29 2001



Test Results

- Tests results were yenerally yuite yood with well over half of the two classes scoriny in the As or Bs.
- Median of 83.

Openiny Discussion

- What did we talk about last class (before the test)?
- Do you have any yuestions about assiynment #4?
- Riyht now I m yoiny to try to stick to the topics currently listed on the web paye (the ones I posted last week). Notice the days off and let me know what you think about this.

Wouldn-t it be nice

- When you write a class, it would occasionally be nice to be able to use objects of that class with normal operators so that we can write more normal looking expressions.
- For example if you have a class for complex numbers it would be nice to write a–b+c where a, b, and c are objects of type complex. In C++ you can.

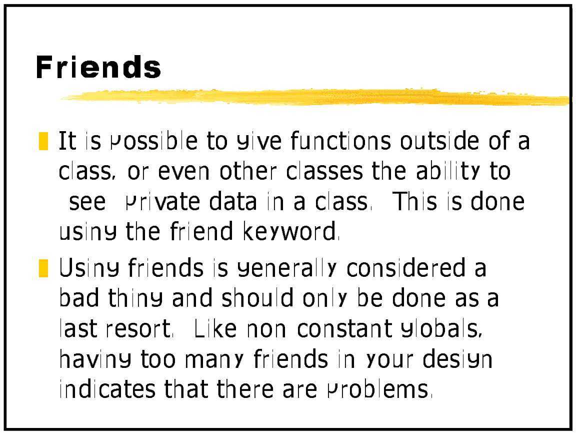
Operators as Functions

- In C++, operators are treated just like other functions, and just like other functions, you have the ability to overload them so that they do different things with different arguments.
- The naming of operators is fairly straightforward.

```
int operator+ (int a, int b);
int operator== (Student a, Student b);
```

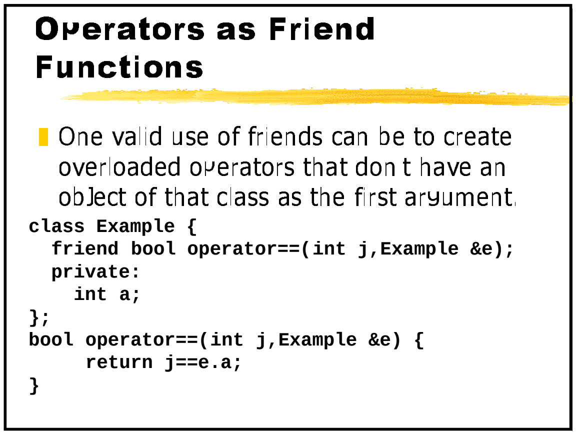
Operators as Methods

- Operators can be declared as methods of a class. In this case a binary operator takes only one argument which is the second operand.
- The downfall of this is that you can t overload an operator where the first argument isn t of the class in question. For that you have to do something a bit different.



Friends

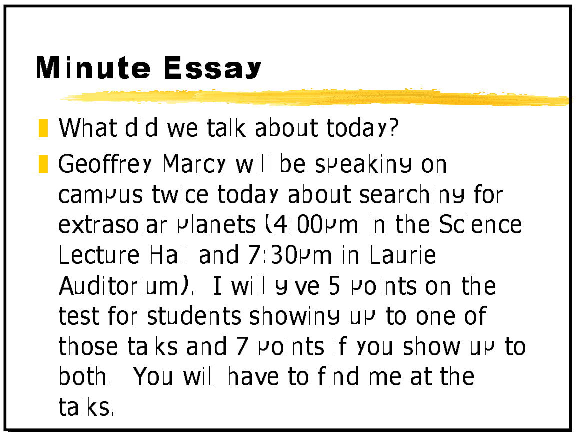
- It is possible to give functions outside of a class, or even other classes the ability to see private data in a class. This is done using the friend keyword.
- Using friends is generally considered a bad thing and should only be done as a last resort. Like non constant globals, having too many friends in your design indicates that there are problems.



Operators as Friend Functions

- One valid use of friends can be to create overloaded operators that don t have an object of that class as the first argument.

```
class Example {
  friend bool operator==(int j,Example &e);
  private:
    int a;
};
bool operator==(int j,Example &e) {
     return j==e.a;
}
```



Minute Essay

- What did we talk about today?
- Geoffrey Marcy will be speaking on campus twice today about searching for extrasolar planets (4:00pm in the Science Lecture Hall and 7:30pm in Laurie Auditorium). I will give 5 points on the test for students showing up to one of those talks and 7 points if you show up to both. You will have to find me at the talks.