Lab 7

Class Practice!

Classes: Review and Practice

Header files vs source files

- Header files have the .h extension
- Source files have the .cpp extension

- Header files are where class definitions and function declarations go
- Source files are where function implementations go

In the Header file (.h)

- Some member functions
  - including a print function
- Public and private members
- A default constructor
- A non-default constructor
- Getters
- Setters

.cpp file

- Has all the implementation of the declaration in the header file
- Be careful with syntax here!!!

Write our own class

- we will have:
  - Header File
  - .cpp file with implementations
  - main.cpp to make use of our class

- Think about some real world examples or fun ideas that lend themselves to a class definition

In the Header file (.h)

- Some member functions
  - including a print function
- Public and private members
- A default constructor
- A non-default constructor
- Getters
- Setters

.cpp file

- Has all the implementation of the declaration in the header file
- Be careful with syntax here!!!

In main.cpp we want to…

- Make 3 instances of the class
- Create one with the default constructor
- Create the others with the non-default constructor(s)
- Access elements and change them, probably using getters and setters
- Do something cool…

Final Product

- Our final product will be uploaded to discussion resources along with these slides
- Think about ways you could improve our code!

Lab

- Two parts to the lab for today
- Exam practice
  - Answer the question in lab7.pdf
  - Write the answer with paper and pencil!
- Practice using and testing classes
  - EECS Harmony – test class member functions

Exam Practice

- Write your answer to the question just like you will on the exam
- Take at most ten minutes to solve the problem. Remember you have only 90 minutes for the upcoming exam
- After 10 minutes, we will show the answer and discuss the solution
- You will not submit your exam practice answer, but keep it to help you review!

Exam Practice – Solution

```
Location::Location() {
    name = "Ann Arbor";
    geolocation.setLatitude(42.3);
    geolocation.setLongitude(-83.7);
}


// Common errors:
// 1) creating a new Coordinates instance and neglecting
//    to set geolocation to it,
// 2) attempting to access private members of the
//    Coordinates class
```

Exam Practice – Solution

```
void Location::write(ostream &outs) {
    outs << name << " " << geolocation.getLatitude() << " "
         << geolocation.getLongitude();
}

// Common errors:
// 1) writing to cout instead of outs,
// 2) attempting to access private members of the
//    Coordinates class,
// 3) printing an endl,
// 4) incorrect syntax in calling a member function,
// 5) attempt to open or close outs
```

Classes Exercise

- Now complete the programming section of the lab assignment
- Feel free to ask any questions you have
- To receive the 7 points for the lab, you will need to submit:
  - test.cpp to the autograder
  - The grade from the autograder is your grade for the lab.