your questions

Anyone have any general questions?

- Going to skip PSA discussion in too much detail since you still have a week!
let build something

The story of bob the Bobject object
bob the Object

bob starts as Object

- has toString()
  - other methods too but we're ignoring them
class Object
{
    String toString(){....};
    //...other stuff too but we'll ignore those
}

//..................

class Bobject //implicitly extends Object
{

}
bob the student

bob's school knows bob as a Student

The school can ask Bob to

- `read(String filename)` //read Java
- `write(string filename)` //write Java
- `doHobby()`
  - school didn't teach bob this, he learned on his own
    - `doHobby()` is abstract to be implement by bob
abstract class Student{
    void read(String javafile){...};
    void write(String javafile){...};
    abstract void doHobby();
}

class Bobject extends Student{
    void doHobby(){..}//must define since abstract
}
bob the Collegiate

bob goes to UCSD
- learns to read/write C++ (still knows java)
  - read(String file)
    - overridden from bob's School days
  - write(String file)
    - overridden from bob's school days
abstract class Collegiate extends Student{
    void read(String filename){
        if(isJavaCode(filename)) //calls helper
            super.read(filename);//why call through super?
        else
            ...//does stuff to read C/C++ files
    }
    void write(String filename){...};
}
class Bobject extends Collegiate{
    void doHobby(){..}//defined here, abstract in Student
}
Bob gets a job

- employer needs him to read/write java and c++
  - he already knows this
- employer needs him to do complex math
  - bob learns this one from YouTube 'cause who reads?
bob the Programmer

Interface Programmer
{
  void read(String filename); //both C++ & Java
  void write(String filename); //both C++ & Java
  void doComplexMath();
}

class Bobbject extends Collegiate implements Programmer{
  void doHobby(){..} //Student Class
  void doComplexMath(){...}; //Programmer Interface
}
who can do what?

bob's school knows bob as a Student

Student bob = new Bobject();
//will these compile? will they run correctly?

1. bob.read("file.java");
2. bob.doComplexMath();
3. bob.doHobby();
4. bob.write("file.cpp"); //write a C++ program
who can do what?

UCSD knows bob as a Collegiate

Collegiate bob = new Bobject();
// will these compile? will they run correctly?

1. bob.read("file.java");
2. bob.doComplexMath();
3. bob.doHobby();
4. bob.write("file.cpp"); // write a C++ program
who can do what?

bob's job knows bob as a programmer

Programmer bob = new Bobject();
//will these compile? will they run correctly?

1. bob.read("file.java");
2. bob.doComplexMath();
3. bob.doHobby();
4. bob.write("file.cpp"); //write a C++ program
abstract class

- Why have abstract classes?
- How can we use them?
abstract class

• Why have abstract classes?
  ○ We need a subclass to do some of the work for us as helper methods since we don't know how the subclass works!
  ○ Have partial implementation of the complete thing we are trying to do.

• How can we use them?
  ○ Force subclasses to define methods using compile time checks needed for correct usage
Why have interfaces?
What are they used for?
How are they different from abstract classes?
How are they similar to abstract classes?
interfaces

● Why have interfaces?
  ○ We need a class to do have certain method so another class can work with it
    ■ think of them as a nickname for a class that guarantees a certain set of functionality
  ○ can only extend one class, can implement many interfaces

● What are they used for?
  ○ same as abstract classes
interfaces

● How are they different from abstract classes?
  ○ have no instance variables or method definitions
  ○ can implement as many interfaces as you like
  ○ can only extend one class

● How are they similar to abstract classes?
  ○ force implementing class to define ALL methods in the interface
Have a good weekend

What are you doing?
Posting homework answers on the internet.

What for?
Unlike Hollywood and the recording industry, I view online copying as a good thing.

Soon, through the magic of peer-to-peer file sharing, kids the world over will have ready-to-use solutions to every question in my textbooks, and there’s not a thing teachers can do to stop it.

Isn’t it great?!

This is so unlike you, Jason.

Usually you’re freakishly competitive about your grades.

You misunderstand—these aren’t the correct answers.