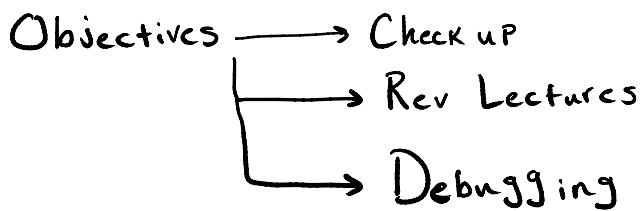


## Discussion 9/9



- Can everyone access Piazza?
- Has everyone installed eclipse?
- Quiz next Wed, 16th
- Project questions.

Ask questions on Piazza  
9am - 5PM  
Should take < 1 hour  
no discussion

### Abstraction

#### Classes vs Interface

Generic → List< $T$ > lst[i]

Enumerated Types → enum Week { Friday, ... }

.. equals(Object obj)

① Check with ==

② Check if same type

③ Cast

④ Compare

Comparable → a.compareTo( $T$  b)

↳ Return  $a < b \Rightarrow -1$

$a > b \Rightarrow +1$

$a = b \Rightarrow 0$

Iterable → Iterator

↳ bool hasNext()

Student extends Person

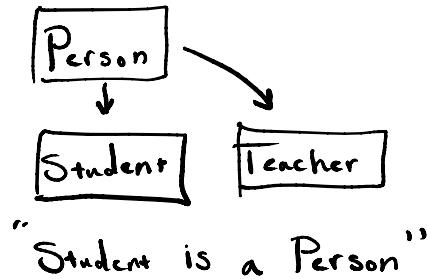
- Iterator -

bool hasNext()  
Type next()

Student

- Inheritance

is a  
extends  
Super is this



## Discussion 9/9 (2)

### Debugging

Step into → Line by line

Step Over → Don't go into methods

Step Return → Leave Current method

Start Debug

Debug X Project Explorer

Course [Java Application]  
examples.Course at localhost:4493  
Thread [main] (Suspended)  
Course.<init>(String, int) line: 14  
Course.main(String[]) line: 51  
C:\Program Files\AdoptOpenJDK\jdk-13.0.

Utilities.java Course.java Student.java Object.class

```
public class Course {  
    private String name;  
    private int maxCapacity, enrolled;  
    private ArrayList<Student> list;  
  
    public Course(String name, int maxCapacity) {  
        this.name = name;  
        this.maxCapacity = maxCapacity;  
        list = new ArrayList<Student>(); /* Set breakpoint */  
    }  
  
    public boolean canEnroll(Student s) {  
        return enrolled < maxCapacity ? true : false;  
    }  
  
    public void enroll(Student s) {  
        if (canEnroll(s)) {  
            list.add(s);  
            enrolled++; /* Set breakpoint and see content */  
        }  
    }  
}
```

Current Stack

break Point

Variable tab

Shows current value

(x)= Variables X Breakpoints Expressions

Private      Public

*Instance Variable of this class*

Name	Value
<init>() returned	(No explicit return value)
this	Course (id=22)
enrolled	0
list	ArrayList<E> (id=33)
maxCapacity	35
name	"cmsc999" (id=23)
name	"cmsc999" (id=23)
maxCapacity	35
Local Variable	
<Choose a previously entered expression>	
[] → List is empty	