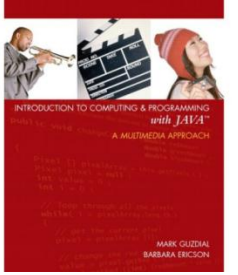
CSE8A Lecture3



- TODO:
  - Finish PSA1with partner and type the "turnin PSA1" command by midnight tonight
    - GET AN INTERVIEW for PSA1 from a tutor by Wed 1/16/13 midnight
    - See tutor hours posted on class website
- IN TERM EXAM 1 THIS FRIDAY
  - Will cover everything through today's class
  - Similar to PI, reading questions. End of chapter questions are good to study.
  - Through Lecture 3 – Slide #7 (Chapter 3 – no explicit questions about "this reference")
  - Attend discussion section this week

CLICKERS OUT!

PSA Interviews: Spread Out

- Some PSA's you will need to complete a 5 minute interview in the open lab (B250) with a tutor
  - These are individual, not with a partner.
  - See weebly web site for scheduled hours (you can't do them late, you can do them early if a tutor is free; must be completed within 48 hours of due date)

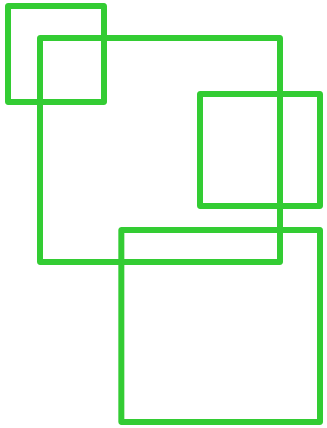
Procedure:

1. Come to B250. Log in and open the code for the week in Dr. Java
   - If your code is in your partner's account, you need to email it to yourself and put it in your account. Interviews are *individual,* not with your partner.
2. Then sign up on list on board for a 3-5 minute interview
   - We want to know if you know how your code works
   - We want to you develop professional communication skills for talking about code

Important Syllabus Details

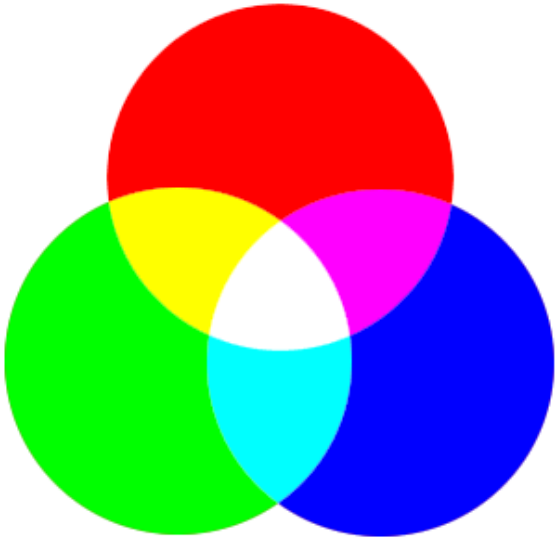
- Emailing the professor
  - PLEASE post on the Piazza discussion forum rather than email the professor. We have a huge staff (40+ tutors and TAs, 2 professors) ready and able to answer your questions!
  - If it's very personal/confidential, of course you can email the professor
- Grades (PSAs, interviews, labs, etc.) will be posted within one week after due date.
  - You have *only 1 more week after that* to contest a grade, report a missing grade, or report an error in recording the grade, etc.

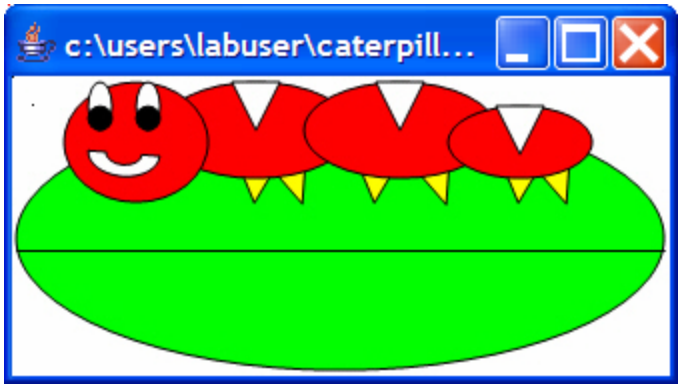
CSE 8A: Lecture 3

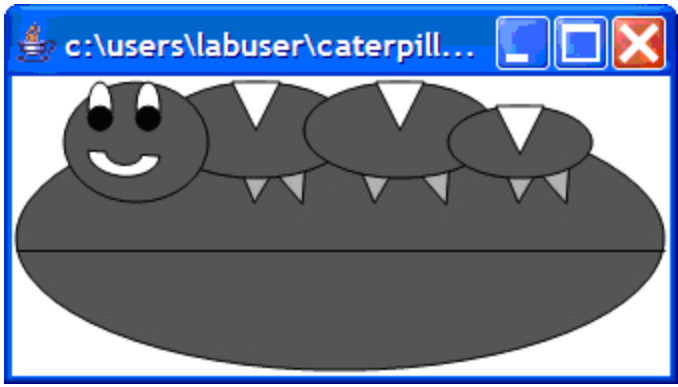


Methods: Squares and beyond!

loops



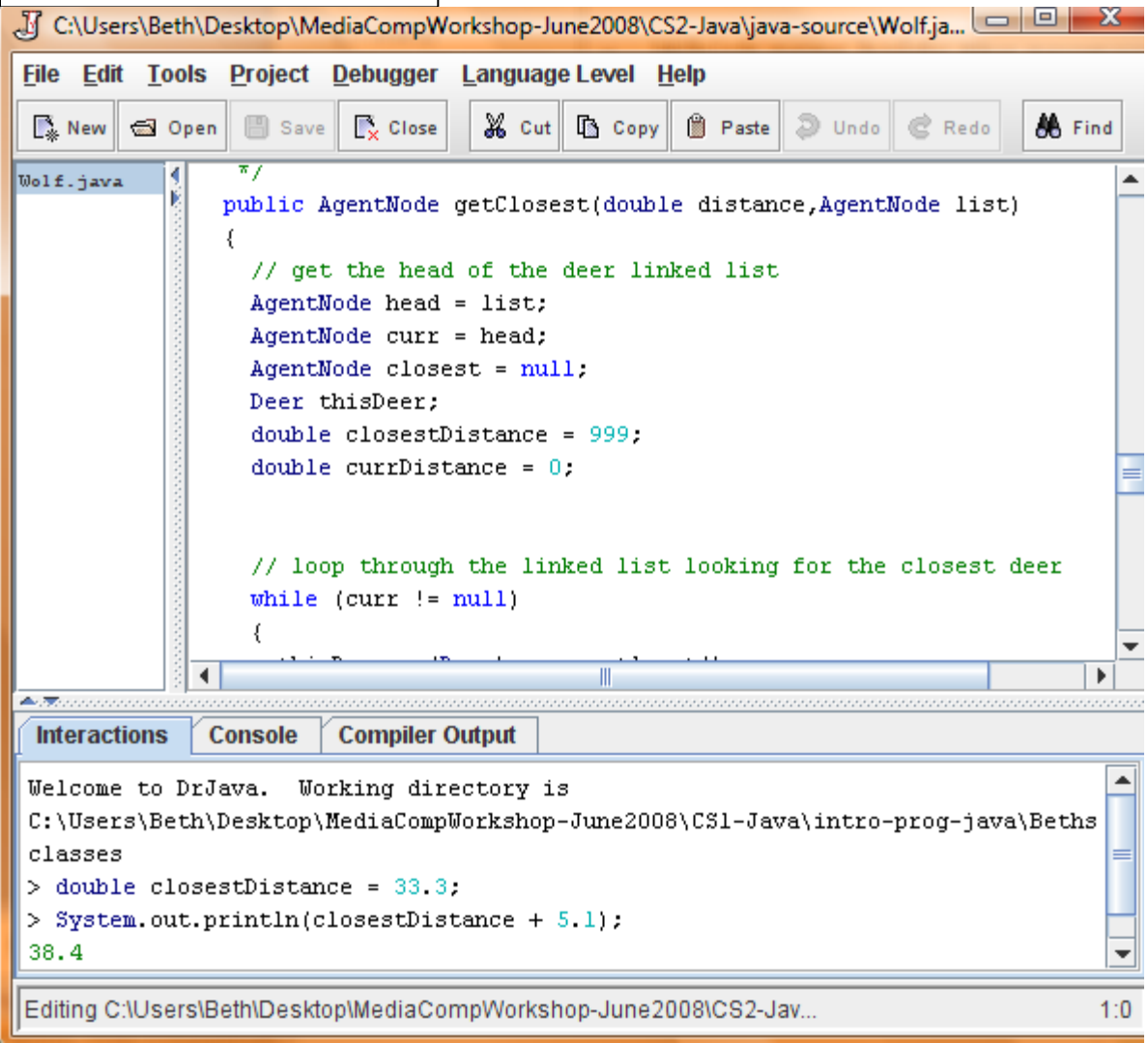




Pictures!

1) SOLO VOTE (30 secs)
2) Discuss in team (1 min)
3) GROUP VOTE (20 sec)

Review: Dr. Java IDE



- Which pane holds the permanent copy of a Java code (like an email) and which holds a temporary copy that can't be saved (like an IM session)?

Can you do LG2 now?

1) SOLO VOTE (30 secs)
2) Discuss in team (1 min)
3) GROUP VOTE (20 sec)

Review: Terminology

```
Turtle turtle1 = new Turtle();
turtle1.turn(-45);
```

Does your team know what these terms mean/are?

A.	Type,	Class,	parameter list
B.	Class,	Object,	method name
C.	Object,	method name,	parameter list

1) SOLO VOTE (30 secs)
2) Discuss in team (1 min)
3) GROUP VOTE (20 sec)

Why is this code incorrect?

Assume this code exists inside the `Turtle` class in the `Turtle.java` file

```
public void drawSquare()
{
  turtle1.turnLeft();
  turtle1.forward(100);
  turtle1.turnLeft();
  turtle1.forward(100);
  turtle1.turnLeft();
  turtle1.forward(100);
  turtle1.turnLeft();
  turtle1.forward(100);
}
```

A. Nothing is incorrect

B. Return type is wrong

C. There needs to be a parameter

D. turnLeft should be turnRight

E. use of `turtle1` is incorrect

CS concept: Writing Methods for Objects

The Turtle class

Generates

Turtle Objects

```
public void drawSquare()
{
  this.turnLeft();
  this.forward(100);
  this.turnLeft();
  this.forward(100);
  this.turnLeft();
  this.forward(100);
  this.turnLeft();
  this.forward(100);
}
```

Refers to the object that eventually calls the method

`maria`

(`this` will become maria)

`jose`

(`this` will become jose)

1) Think SOLO (30 sec)
2) Discuss (2 min)

Write a more general drawSquare

Write a new drawSquare that takes an int as a parameter to specify the side length of the square.

```
public void drawSquare(                    )
{









}
```

Old version for reference:

```
public void drawSquare()
{
  this.turnLeft();
  this.forward(100);
  this.turnLeft();
  this.forward(100);
  this.turnLeft();
  this.forward(100);
  this.turnLeft();
  this.forward(100);
}
```

Quick Comparison: Other methods with parameters that you know

- `System.out.println("This is a parameter of String type");`
- `int x = 45;`
  `System.out.println(x); //Param of int type`
- `turtle1.setName("George");`
- `turtle2.moveTo(45,115);`

Now, back to the drawSquare method…

`public void drawSquare(int size)`

What's the right way to "call" that new method to get a Turtle to draw a square?

```
public void drawSquare(int size)
```

A
```
World w = new World();
Turtle t = new Turtle(10,10, w);
t = drawSquare(50);
```

B
```
World w = new World();
Turtle t = new Turtle(10,10, w);
t.drawSquare(50);
```

C
```
World w = new World();
Turtle t = new Turtle(10,10, w);
t.drawsquare();
```

D
```
World w = new World();
Turtle t = new Turtle(10,10, w);
t = drawsquare();
```

E None of the above

1) SOLO VOTE (30 secs)
2) Discuss in team (2 min)
3) GROUP VOTE (30 sec)

Java Details: File names

- We just wrote 2 pieces of code. They each have to be stored in a different place.
- `drawSquare` is a method that can be called on a `Turtle` so it needs to be in the Turtle class (`Turtle.java`)
  - `t.drawSquare(50);`
- Then we wrote code to "test out" our Turtle method to "act on" a specific turtle.
  - That needs to go in a different class that we can make up a name for… like `SpecialTester`

1) SOLO VOTE (30 secs)
2) Discuss in team (1 min)
3) GROUP VOTE (20 sec)

So we might in Dr. Java open a new file and put this in it.

```
public class SpecialTester
{
  public static void main(String []args)
  {
    World w = new World();
    Turtle t = new Turtle(10,10, w);
    t.drawSquare();
  }
}
```

And Save As…?

A. SpecialTester.java
B. Turtle.java
C. Any name you want
D. drawSquare.java

1) SOLO VOTE (30 secs)
2) Discuss in team (1 min)
3) GROUP VOTE (20 sec)

Why write methods?

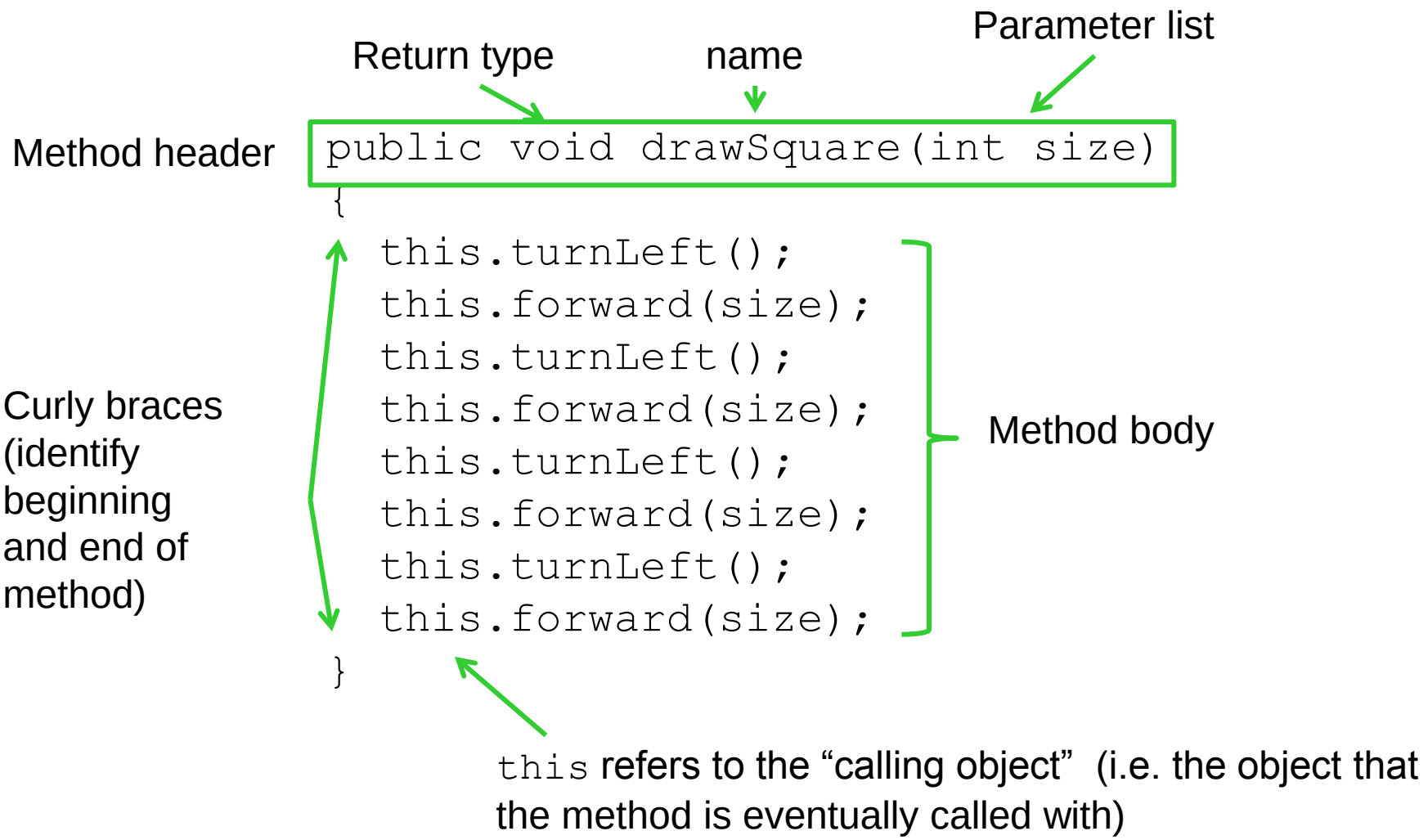
A. To avoid having to copy and paste code

B. To avoid fixing problems (bugs) in more than one place

C. To make it easier for others to use your code

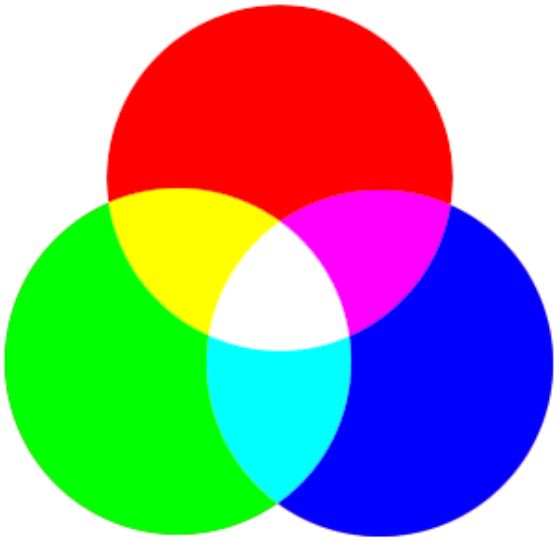
D. All of the above

For Reference: The anatomy of a method

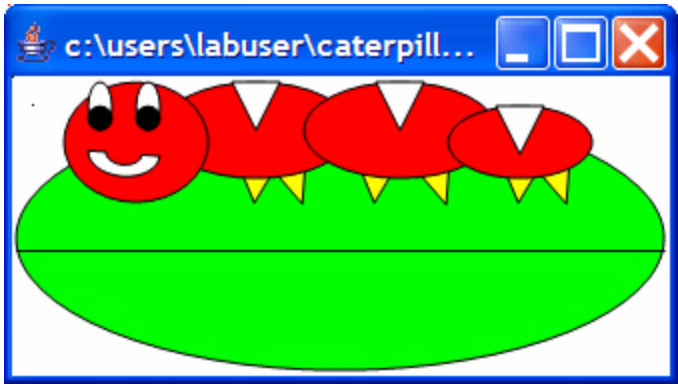


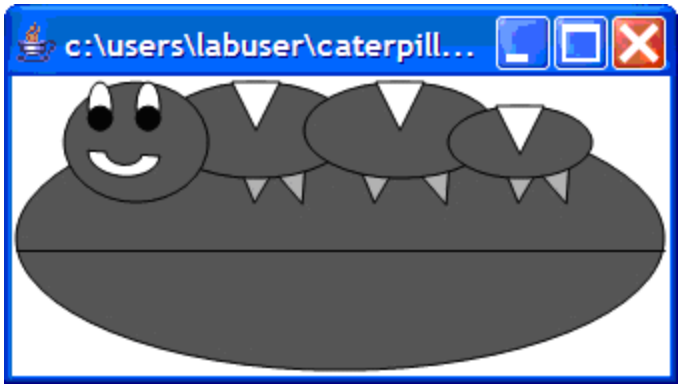
CSE8A: Introduction to Programming in Java

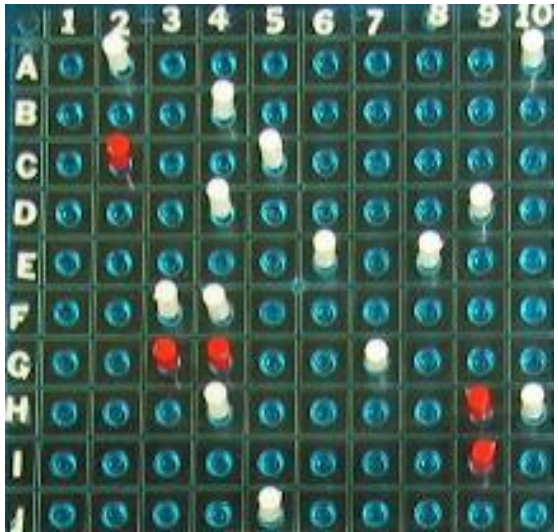
Chapter 4 (up to 89)



PICTURE DEMO!







1) SOLO VOTE (30 secs)
2) Discuss in team (1 min)
3) GROUP VOTE (20 sec)

CS Concept: Return types

What types are returned by the following method calls:

```
turtle1.turnLeft()
FileChooser.pickAFile()
new Picture()
```

A) main
Picture
String

B) Turtle
String
Picture

C) void
String
Picture

D) Turtle
Picture
void

- E) None of the above

1) Think SOLO (30 sec)
2) Discuss (2 min)

What is the difference between these pieces of code?

A

```
String fileName = FileChooser.pickAFile();
Picture picObj = new Picture(fileName);
picObj.show();
```

B

```
Picture picObj = new Picture(FileChooser.pickAFile());
picObj.show();
```

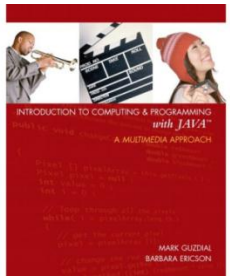
Draw a picture of the variables and Objects created

Practice: Simple Picture Manipulation

- Complete the following code to print the color of the first 5 pixels in row 10 of the chosen picture

```
Picture picObj = new Picture(FileChooser.pickAFile());
Pixel p = picObj.getPixel(                          );
System.out.println( p );
```

TODO



- Finish your PSA1. Submit it and have your interview.
- Check the class web page for news and info
- For next class: read textbook pages 89-117, and do the reading quiz
- If you need help, come find us!
  - Office hours
  - Lab hours
  - Piazza
  - When you ask us questions, it doesn't just help you. **It helps us** improve our instruction because it helps us peek inside what students are thinking. We appreciate students who take the time to ask!