

static method basics

Introduction
to
Programming

Laura Hobbes
LeGault

Review

Writing
Methods

```
public static int cube(int length) {  
    int retval = length*length*length;  
    return retval;  
}
```

```
public static void main(String[] args) {  
    ...  
    int cube_x = cube(x);  
    ...  
}
```

⇒ **Really super important:** methods DO NOT NEST.

static method basics

Introduction
to
Programming

Laura Hobbes
LeGault

Review

Writing
Methods

```
public static int cube() {  
    int retval = x*x*x; // DOES NOT WORK  
    return retval;  
}
```

```
public static void main(String[] args) {  
    ...  
    int cube_x = cube();  
    ...  
}
```

⇒ **Really super important:** variables are LOCAL.

Designing Methods

Introduction
to
Programming

Laura Hobbes
LeGault

Review

Writing
Methods

When we use methods in a program, it can help a lot to take a big problem and break it down into a smaller one. We call this “stepwise refinement”.

Let’s practice this with the problem of translating an `int` (e.g. 348) to a `String` (e.g. “three hundred forty eight”). (We’ll assume that any `int` is less than 1000 for simplicity.)

How do we design this method?

Introduction
to
Programming

Laura Hobbes
LeGault

Review

Writing
Methods

- 1 What should the method do?
- 2 What does the method need as input?
- 3 What are the parameter types and return type?
- 4 Write pseudocode.
- 5 Write code-code.
- 6 TEST (hard to do on a chalkboard)

Breaking problems down

Introduction
to
Programming

Laura Hobbes
LeGault

Review

Writing
Methods

What are some tasks we'll need to do multiple times if we have big numbers?

We'll need to process each digit separately. How?

Call stacks

Introduction
to
Programming

Laura Hobbes
LeGault

Review

Writing
Methods

Let's look at the call stack that occurs when our program executes.

- 1 Start up called method: allocate AR, parameters
- 2 Execute method
- 3 Return to caller: remove AR, replace call with return value
- 4 Continue executing calling method

And hopefully we have time for

Introduction
to
Programming

Laura Hobbes
LeGault

Review

Writing
Methods

Mid-semester evals D: