



# Welcome to Compsci 201

- Data Structures and Algorithms
- Go to the class webpage
  - [www.cs.duke.edu/courses/spring12/compsci201](http://www.cs.duke.edu/courses/spring12/compsci201)
  - Start looking around



# After This Class

- You will know
  - What material is covered in Compsci201
  - The course logistics
- You will be ready
  - To start coding in Java!



# What is Computer Science?

- “It is the art of designing efficient and elegant methods of getting a computer to solve problems, theoretical or practical, small or large, simple or complex.”
  - C.A.R. (Tony) Hoare



# Course Material

- Toolkit - for getting a computer to solve problems
  - Efficient and elegant methods
    - Data structures and algorithms
  - Understanding tradeoffs
    - How long will this algorithm take?
    - How much space will this data structure use?



# Course Material

- Toolkit is applicable for any programming language
  - Java





# Course Material

- Data Structures and Algorithms
  - Data Structures - the organization of data and its storage allocations in a computer
  - Algorithms - A process or set of rules to be followed in calculations or other problem-solving operations



# Course Material

- Analysis, use, and design of data structures and algorithms using an object-oriented language like Java to solve computational problems. Emphasis on abstraction including interfaces and abstract data types for **lists**, **trees**, **sets**, **tables/maps**, and **graphs**. Implementation and **evaluation** of programming techniques including **recursion**. Intuitive and rigorous **analysis of algorithms**.



# Course Material

- Tradeoffs
  - How do we measure speed of code?







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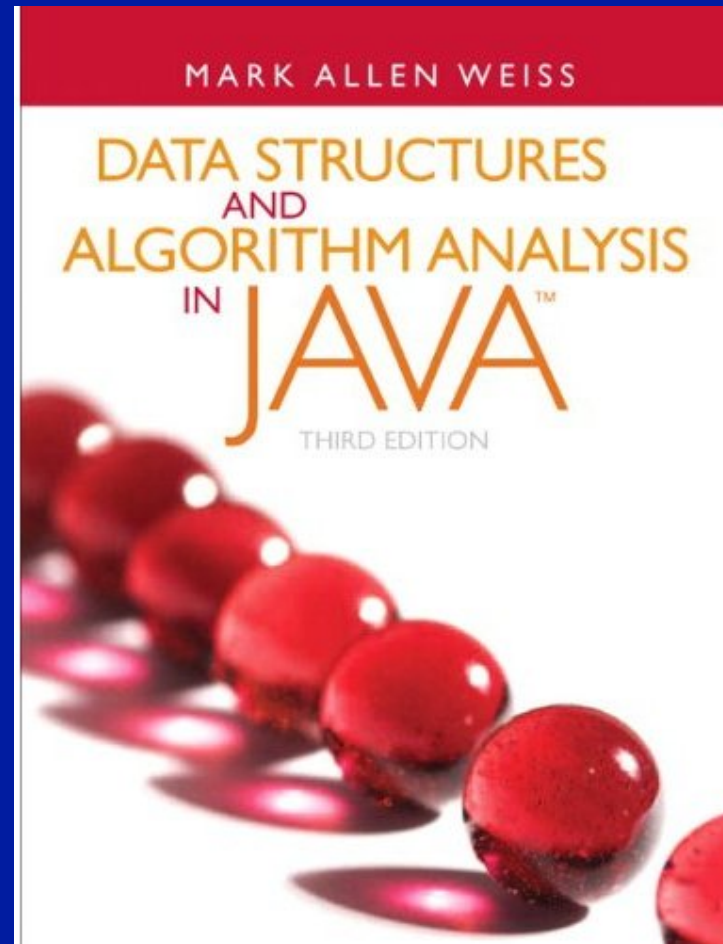
# Logistics

- See the course webpage for full details!
- [www.cs.duke.edu/courses/spring12/compsci201](http://www.cs.duke.edu/courses/spring12/compsci201)



# Course Logistics

- Textbook





# Course Logistics

- Programming assignments - 40%
- APTs - 10%
  - Required - 3%
  - All others - 7%
- Classwork/Recitation - 15%
- Midterms - 20%
  - Feb 13 - 10%
  - Mar 27 - 10%
- Final - 15%



# Course Logistics

- Late Policy
  - 24 hours - 10% penalty
  - > 24 hours - 50% penalty
  - > 2 weeks - 100% penalty



# Course Logistics

- Grading Policy
  - Grading errors *MUST* be reported to gradTA and faculty within 3 days of reported grade
  - See website for how to report errors



# Course Logistics

- Recitation
  - Fridays from 10:05-11:20
  - Weekly review and practice of course material
  - Pre-work posted on website due before recitation
    - There is an assignment for this Friday



# Course Logistics

- Honor Code
  - Don't cheat
  - Write your own code
  - Acknowledge help
  - Don't cheat





# Important dates

- Exam 1 - February 13
- Exam 2 - March 27
- Final - April 3



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- Java
  - Statically typed language
    - Variables have types defined at compile time
      - `int i;`
      - `double d;`
      - `String s;`



# Code

- Java
  - Object-Oriented Programming (OOP) language
    - Code is in a Class
    - Code is in a function/method





# Code

```
class Example{
```

```
    public static void main(String[] args){
```

```
        System.out.println("Hello 201");
```

```
    }
```

```
}
```



Name of your class (Starts with a capital letter)



```
class Example{
```

# Code

```
public static void main(String[] args){
```

```
    System.out.println("Hello 201");
```

```
}
```

```
}
```



Name of your class (Starts with a capital letter)

# Code

**class Example{**

Tell computer where to start running your program

**public static void main(String[] args){**

*System.out.println("Hello 201");*

}

}



Name of your class (Starts with a capital letter)

# Code

`class Example{`

Tell computer where to start running your program

`public static void main(String[] args){`

`System.out.println("Hello 201");`

`}`

Print to the terminal

This is what you are printing

`}`





- Algorithmic Problem Solving and Testing
  - Let's do one!



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# Homework

- There is a recitation assignment on the webpage due BEFORE recitation on Friday
  - Setup and start coding in Java