

# CS 302, Week 4

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# Characters - Which will work?

```
int intValue = 0;
```

```
char aChar = 'B';
```

```
intValue = aChar; // 1
```

```
aChar = (char)(intValue + 1); // 2
```

```
char aChar = '\u0041'; // 3
```

//where is the compiler error?

[https://en.wikipedia.org/wiki/List\\_of\\_Unicode\\_characters](https://en.wikipedia.org/wiki/List_of_Unicode_characters)

**p1 is Due Friday**

See notes in Piazza

# Debugging

Lots of time spent, learn to do it well.

- Assumptions:

*When code isn't behaving as expected, assumptions must be wrong.*

Explain it to your dog.

Master of the dumb question.

# Debugging - Share Context

- Instead of:

*"My code isn't doing what I want. What's wrong with it?"*

- Try:

*"I wanted to do X, so I wrote <some-code>. I expected to see Y when I ran this code, but instead I saw Z. What am I missing?"*

# Code Style

Wrapping Lines

Indenting

Temporary commenting

# Testing

boundary conditions

user input

branch path

# What is output?

```
for ( int i = 10; i > 0; i -= 2 ) {  
    if ( i % 3 != 0 ) {  
        System.out.println( "i=" + i);  
    }  
}
```



# What is the range of myNum values?

```
import java.util.Random;
```

```
//...
```

```
Random rng = new Random();
```

```
int myNum = rng.nextInt(4) + 8;
```

# Dangling Else - What is print out?

```
if ( value >= 1 )  
    if ( value <= 10)  
        System.out.println( "1 to 10" );  
    else  
        System.out.println( "> 10 OR < 1?????" );
```

# ? : operator

condition ? <true value> : <false value>

What is print out?

```
boolean sunny = false;
```

```
System.out.println( sunny ? "sunny" : "cloudy");
```

# What is print out?

```
char choice = 'a';  
switch (choice) { //switch var can be int or char  
case 'a': System.out.println("a");  
case 'b': System.out.println("b");  
    break;  
default: System.out.println("otherwise");  
    break;  
}
```

# Navigating this Social System

- Value Fairness and Consistency in a large class environment
- Offer Detailed Program Specification on Course Website
- Offer Group Discussion (Piazza)
- Systematic process for grading

# Notes

- **Extended Office Hours this week: Thursday 1-4pm**
- **Forms Page**
  - **All Exam Conflicts and McBurney notes are due this week.**
- **Test server is up**
  - **responds once a day, not all tests are shared**
- **TA or Instructor focuses on**
  - **Style and Structure, Documentation**
- **Search Piazza before posting**

# Debugging

- Decompose problem
  - put parts into Java Visualizer, for example
  - Comment out parts
- Print statements
  - Average Demo

# Compound conditions

`&&` (AND) both sides true to be true, else false

`||` (OR) either side true then true, else false

`!` (NOT) if true then false, and vice-versa

`!(a && b) == !a || !b` //is this true or false?



# Truth Table

a	b	!a	!b	a && b	!(a && b)	!a    !b
true	true	false	false	true	false	false
false	false	true	true	false	true	true
true	false	false	true	false	true	true
false	true	true	false	false	true	true

# Truth Table for DeMorgan's Law

a	b	!a	!b	a && b	!(a && b)	!a    !b
true	true	false	false	true	false	false
true	false	false	true	false	true	true
false	true	true	false	false	true	true
false	false	true	true	false	true	true

# Arrays - variable list, all same type

```
int [] list;
```

```
list = new int[4];
```

```
list[0] = 99;
```

```
list[1] = 53;
```

```
System.out.println( list[0]);
```

```
// an element is at arrayName[ index]
```

# What is printed?

```
int[] numbers = {1,2,3,4,5,6,7,8,9,10};
```

```
System.out.println( "numbers[1]="  
    + numbers[1]);
```

# Do arrays need to be initialized?

```
double []numbers = new double[10];
```

```
System.out.println("numbers[3]="  
    + numbers[3]);
```

# Where is the error?

```
int [] list = new int[10];  
for ( int i = 0; i <= list.length; i++) {  
    list[i] = i * 2;  
}  
System.out.println("list[5]=" + list[5]);
```

# How can I print out the array?

```
int []list = {10,2,23,64,25,16,67,18,39,10};  
System.out.println( list);
```

# How to find the max value?

```
int []list = {10,2,23,64,25,16,67,18,39,10};
```



# Is 18 in this array?

```
int []list = {10,2,23,64,25,16,67,18,39,10};
```

```
//linear search?
```

```
//binary search?
```

# How to put first, last?

//and move all the others down?

```
int []list = {1,3,5,7,9,11,13,15,17,19};
```