CS 113 – Computer Science I

lecture 13 – Review

Tuesday 03/05/24

Announcements

- HW04 was due on Sunday

  - late due date tonight

- HW05 released (loops)

  - due sunday

- Midterm next class

Exam Format

- 1 page 8.5/11in cheat sheet allowed (front and back)

- Format:
  - ~25 points multiple choice / short answer
  - ~15 points reading and understanding code
  - 60 points programming
    - I won't try to compile your code :)
  - Be careful with types! You'll get points deducted if you code doesn't type check

- Read the front and back of every page!

Topics

- Errors (syntax, runtime, logic)
- Types (primitives and objects)
- Variables
- Methods (declarations and calls)
- chars as ints
- Convenience Syntax
- Strings
  - substring, length, equality
- Truth tables
- If statements
- Arrays
- Recursion
- Loops

Errors

compilation, runtime, or logic?

```
Example.java:3: error: incompatible types:
String cannot be converted to int
        int x = 100 + "s";
```

Errors

compilation, runtime, or logic?

```
Exception in thread "main"
java.lang.ArithmeticException: / by zero
    at Example.main(Example.java:3)
```

Errors

compilation, runtime, or logic?

```
Example.java:3: error: cannot find symbol
    System.ouy.println("Hello, World!");
          ^
  symbol:   variable ouy
  location: class System
```

Errors

compilation, runtime, or logic?

```
Exception in thread "main"
java.util.IllegalFormatConversionException: d !=
java.lang.String
```

Errors

what's a logic error?

Variables

1. How do I declare a variable?

2. How do i assign a value to a variable?

Variables

assignment or declaration?

- ```int x;```
- ```x = foo();```
- ```int y = 99;```

Types

1. List some types

2. What is a primitive type?
   a. list some

3. What is an object (reference type?)
   a. list some

4. What are the differences?

Objects

Strings and arrays are **NOT** primitives

They are objects

Explains why we can't use "==" to compare Strings
    "==" checks if two objects are the same
    not if the two values are the same

Types

types.java

Methods

methods.java

Methods - scope

Scope.java

Strings

- concatenation
- length
- substring

Strings.java

Truth tables

int temp = 68;

double val = 10.5;

boolean raining = true;

Expression	Value
temp > 80	
val != 5.6	
val >= 10.1	
raining == true	
!raining	
raining == false	

If statements

If.java

Arrays

- equality
- length
- indexing
- AOB
- is an array a primitive or object?
- default values

Arrays.java

Initializing empty arrays

int[] nums = new int[3];
    [0, 0, 0]

String[] strs = new String[3];
    [null, null, null]

Coding Question

Write a method `count` which takes a String and a char and returns an int indicating how many times the character appears in the String