

1.00/1.001 Tutorial 1

Introduction to 1.00

September 12 & 13, 2005

Outline

- Introductions
- Administrative Stuff
- Java Basics
- Eclipse practice
- PS1 practice

Introductions

- Me
 - Course TA

- You
 - Name, nickname, major, state/country, etc...
 - Why are you taking this class?
 - Keep reminding me of your name...

Administrative

- Guidelines on Academic Honesty
 - no pset credit until turn in
- Mandatory classes - LAB
- Problem Sets Due: 11AM on Fridays
 - Please remember to put a comment in your code with your name, email id, TA & Section Name – we will take off points if you don't
 - If you had trouble submitting PS0, let us know

Office Hours

- Feel free to come in with questions about Java, lectures, and problem sets
- No problem set help if you haven't tried on your own
- We will not:
 - Dedicate the entire afternoon to you.
 - Write any lines of code for you. This is what tutorials and active learning sessions are for.
 - Answer questions of the type: “I have the following 200 lines of code. Why isn't my program running correctly?”. We are neither debuggers nor prophets.

Laptop Problems/etc

- Use a power cable when you can
- Always back up your work, either on MIT server (you can use secureFX), or using CDR's or USB Flash drives

Weekly Tutorial

- Quick review of topics from previous week
- Group exercise / discussion
 - design & implementation
- Problem set review
- Mandatory
 - 5% of your grade
 - attendance & participation
 - make sure you participate!!
 - tutoring (after the 1st quiz)
- Section signup:
 - Problems? Please let me know ASAP.

Java Data Types

- 8 primitive or built-in data types
 - 4 integer types (byte, short, int, long)
 - 2 floating point types (float, double)
 - Boolean (boolean)
 - Character (char)
- These are not objects

Java Data Types: examples

```
int studentCount = 91;  
char firstLetter = 'a';  
float weight = 180.6F;  
double area = Math.PI * 5.0 * 5.0;  
boolean enjoy100 = true;  
boolean xGreaterThanY = (x > y);  
long theNumberOne = 1L;  
double googol = 1E100; //10100
```

- Make sure you don't use Java keywords (`do`, `while`, `import`...) as variable names!

Data Type Conversion

- Implicit (automatic) conversion – promotion

```
double x = 3.2 * 5;
```

```
double y = 24;
```

int promoted to double

- Explicit conversion – casting

```
int z = (int)(2.2 * 9.2);
```

```
int k = (int)(3.5 * 3);
```

expression cast to int

this expression is a double (very accurate)

Promotion

<u>Data Type</u>	<u>Allowed Promotions</u>
double	<i>None</i>
float	double
long	float, double
int	long, float, double
char	int, long, float, double
short	int, long, float, double
byte	short, int, long, float, double

↑ increasing capacity

Integer Arithmetic

- The type of any expression depends on the operands:
- $7/3 = ?$

Logical Operators

- Produce results of type `boolean`

Equal	<code>==</code>	Not equal	<code>!=</code>
Less than	<code><</code>	Less than or equal to	<code><=</code>
Greater than	<code>></code>	Greater than or equal to	<code>>=</code>
And	<code>&&</code>	Or	<code> </code>

Control Structures: Branch

```
if (boolean) ...
```

```
if (boolean) ... else ...
```

```
if (boolean1) ...  
else if (boolean2) ...  
else ...
```

Java API/Javadocs

- This is a very important tool that you should learn how to use ASAP
- <http://java.sun.com/j2se/1.5.0/docs/api/>
- Check if Javadocs are attached:
 - In Eclipse:
 - Place the cursor on any Java method or class
 - Select 'Navigate'->'Open External Javadoc' (or Shift+F2)
 - If documentation automatically opens, Javadocs are attached
- How to attach Javadocs:
 - In the Eclipse menu bar, go to
 - 'Window'->'Preferences'->'Java'->'Installed JREs'
 - There should be only one installed JRE (jre1.5.0_04)
 - Highlight it and click 'Edit...'
 - In the 'JRE System Libraries' box:
 - uncheck 'Use default system libraries'
 - expand all the libraries
 - Highlight 'Javadoc Location' for each library and click edit
 - In the 'Javadoc URL' box, browse for the correct folder ('C:\Program Files\Java\jdk1.5.0_04\docs\api') and click OK

Problem Set 1

- Taking user inputs
- Calculation
- Print result

Problem Set Practice (1)

- `import javax.swing.*;`
- **Ask the user for their age using a `JOptionPane`**
- **Store the input in a variable `age`**
- **Convert it to their age in dog years and print it out using `System.out.println()`**
- `dogAge = (age) * 7`

Problem Set Practice (2)

- Print out the number π as a:
 - double
 - float
 - int

Java Basics

- *Declaring variables*
 - initial value required? what about type?
 - a variable is simply a memory location that stores a value.
- *Assigning a value vs. testing a value*
 - compiler will catch this, but know the difference (= v/s ==)
- *Declaring floats and longs (F / L)*
- *Representing booleans*
 - use true/false, not 0/1
- *Naming conventions*
 - Java is case-sensitive!
 - classes and filenames: always Capitalize
 - variable names: `int runningSpeed=55;`
 - must begin with letter, underscore, or \$
 - final variables: `final double PI = 3.1416;`