

Java Intro

Strings

- “This is a string.”
 - Enclosed in double quotes
- “This is “ + “another “ + “string”
 - + concatenates strings
- “This is “ + 1 + “ string”
 - + can also concatenate numbers and strings

Escape Sequences

- Same as in python
 - \t tab
 - \n newline
 - \" double quote
 - \\ backslash

Variables

- Unlike python, Java is strongly typed
 - You MUST specify the type of each variable
- Numeric primitive types
 - int, long, float, double

Examples

```
int age;
```

```
double cost;
```

```
int x = 5;
```

```
double a = 9, b = 9.5;
```

- `x=b; //COMPILATION ERROR`
- `age = 10.6; //COMPILATION ERROR`

Other Primitive Types

- char
 - A single character enclosed in single quotes
 - `char first_initial = 'S';`
- boolean
 - true/false
 - `boolean isPair = true;`

Constants

- final keyword prevents changing value of variable
 - final double TAX_RATE = .0825;

Expressions

- $+$, $-$, $*$, $/$, $\%$
- Same precedence as python

Expressions

- ++ = increase by 1
 - int i = 0;
 - i++; //add one to i
- -- = decrease by 1
 - int i = 10;
 - i--; //subtract 1 from i
- pre/post increment
 - int total1 = ++i;
 - int total2 = i++;

Data Conversion

- Assignment conversion
 - assign value of one type to variable of another type
 - OK for widening conversions
 - `int i = 5; double d = i;`

Data Conversion

- Promotion
 - operators automatically convert operands
 - double a = 5.0;
 - int b = 6;
 - double result = a/b;

Data Conversion

- Casting
 - programmer explicitly specifies
 - specify type in parens
 - `double d = 9; int x=(int)d;`

Keyboard Input

- The Scanner class

```
import java.util.Scanner;
```

```
Scanner scan = new Scanner (System.in);
```

```
scan.nextLine()
```

```
scan.nextInt()
```

```
scan.nextDouble()
```

```
import java.util.Scanner;
public class Tax {
    public static void main(String[] args) {
        //A program to calculate tax and total cost for an item.
        //constant rate of taxation
        final double TAX_RATE = .0825;

        Scanner s = new Scanner(System.in);
        System.out.println("Enter item cost: ");

        //ask user for the cost of the item
        double cost = s.nextDouble();

        //calculate the tax
        double tax = cost*TAX_RATE;

        //calculate total cost
        double total = cost+tax;

        System.out.println("Cost: " + cost);
        System.out.println("Tax : " + tax);
        System.out.println("Total: " + total);
    }
}
```