## Java Data Types

| | |
|---|---|
| byte / short / int / long | -123, 10 |
| float / double | 235.13 |
| char | 'U' |
| boolean | true, false |
| String | "Greetings from earth" |

## Java Statements

**If Statement**

```
if ( expression ) {
  statements
} else if ( expression ) {
  statements
} else {
  statements
}
```

**While Loop**

```
while ( expression ) {
  statements
}
```

**Do-While Loop**

```
do {
  statements
} while ( expression );
```

**For Loop**

```
for ( int i = 0; i < max; ++i) {
  statements
}
```

**For Each Loop**

```
for ( var : collection ) {
  statements
}
```

**Switch Statement**

## Java Statements (cont)

```
switch ( expression ) {
  case value:
    statements
    break;
  case value2:
    statements
    break;
  default:
    statements
}
```

**Exception Handling**

```
try {
  statements;
} catch (ExceptionType e1) {
  statements;
} catch (Exception e2) {
  catch-all statements;
} finally {
  statements;
}
```

## Java Data Conversions

**String to Number**

```
int i = Integer.parseInt(str);
double d = Double.parseDouble(str);
```

**Any Type to String**

```
String s = String.valueOf(value);
```

**Numeric Conversions**

```
int i = (int) numeric expression;
```

## Java String Methods

| | |
|---|---|
| s.length() | length of s |
| s.charAt(i) | extract ith character |
| s.substring(start, end) | substring from start to end-1 |
| s.toUpperCase() | returns copy of s in ALL CAPS |
| s.toLowerCase() | returns copy of s in lowercase |
| s.indexOf(x) | index of first occurence of x |
| s.replace(old, new) | search and replace |
| s.split(regex) | splits string into tokens |
| s.trim() | trims surrounding whitespace |
| s.equals(s2) | true if s equals s2 |
| s.compareTo(s2) | 0 if equal/+ if s > s2/- if s < s2 |

See http://docs.oracle.com/javase/6/docs/api/java/lang/String.html for more.

## java.util.ArrayList Methods

| | |
|---|---|
| l.add(itm) | Add itm to list |
| l.get(i) | Return ith item |
| l.size() | Return number of items |
| l.remove(i) | Remove ith item |
| l.set(i, val) | Put val at position i |

```
ArrayList<String> names =
  new ArrayList<String>();
```

See http://docs.oracle.com/javase/6/docs/api/java/util/ArrayList.html for more.

## java.util.HashMap Methods

| | |
|---|---|
| *m*.put(*key*,*value*) | Inserts *value* with *key* |
| *m*.get(*key*) | Retrieves value with *key* |
| *m*.contoinsKey(*key*) | true if contains *key* |

```
HashMap<StÂrinÂg,String> names =
  new HashMap<StÂrinÂg, String>();
```

See http://docs.oracle.com/javase/6/d-ocs/api/java/util/HashMap.html for more.

## Java Hello World

```
import java.util.Date;
public class Hello {
  public static void main(String[] args) {
    System.out.println("Hello, world!");
    Date now = new Date();
    System.out.println("Time: " + now);
  }
}
```

* Save in Hello.java
* Compile: **javac Hello.java**
* Run: **java Hello**

## Java Arithmetic Operators

| | | | |
|---|---|---|---|
| x + y | add | x - y | subtract |
| x * y | multiply | x / y | divide |
| x % y | modulus | ++x / x++ | increment |
| | | --x / x-- | decrement |

Assignment shortcuts: x *op*= y
Example: x += 1 increments x

## Java Comparison Operators

| | | | |
|---|---|---|---|
| x < y | Less | x <= y | Less or eq |
| x > y | Greater | x >= y | Greater or eq |
| x == y | Equal | x != y | Not equal |

## Java Boolean Operators

| | | |
|---|---|---|
| ! x (not) | x && y (and) | x || y (or) |

## Java Text Formatting

**printf style formatting**
```
System.out.printf("Count is %d\n", count);
s = String.format("Count is %d", count);
```
**MessageFormat style formatting**
```
s = MessageFormat.format(
  "At {1,time}, {0} eggs hatched.",
  25, new Date());
```
**Individual Numbers and Dates**
```
s = NumberFormat.getCurrencyInstance()
  .format(x);
s = new SimpleDateFormat(""h:mm a"")
  .format(new Date());
s = new DecimalFormat("#,##0.00")
  .format(125.32);
```

See http://docs.oracle.com/javase/6/d-ocs/api/java/text/package-frame.html for MessageFormat and related classes