

### 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 <i>i</i> th character
s.substring(start, end)	substring from <i>start</i> to <i>end-1</i>
s.toUpperCase()	returns copy of s in ALL CAPS
s.toLowerCase()	returns copy of s in lowercase
s.indexOf(x)	index of first occurrence 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 <i>itm</i> to list
l.get(i)	Return <i>i</i> th item
l.size()	Return number of items
l.remove(i)	Remove <i>i</i> th item
l.set(i, val)	Put <i>val</i> at position <i>i</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

<code>m.put(key, value)</code>	Inserts <i>value</i> with <i>key</i>
<code>m.get(key)</code>	Retrieves value with <i>key</i>
<code>m.containsKey(key)</code>	true if contains <i>key</i>

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

See <http://docs.oracle.com/javase/6/docs/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

<code>x + y</code>	add	<code>x - y</code>	subtract
<code>x * y</code>	multiply	<code>x / y</code>	divide
<code>x % y</code>	modulus	<code>++x / x++</code>	increment
		<code>--x / x--</code>	decrement

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

### Java Comparison Operators

<code>x &lt; y</code>	Less	<code>x &lt;= y</code>	Less or eq
<code>x &gt; y</code>	Greater	<code>x &gt;= y</code>	Greater or eq
<code>x == y</code>	Equal	<code>x != y</code>	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("hh:mm a")
    .format(new Date());
s = new DecimalFormat("#,##0.00")
    .format(125.32);
```

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



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