

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

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

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

java.util.ArrayList Methods

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

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

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



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Published 17th July, 2012.
Last updated 12th May, 2016.
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java.util.HashMap Methods

`m.put(key, value)` Inserts *value* with *key*

`m.get(key)` Retrieves value with *key*

`m.containsKey(key)` true if contains *key*

```
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 < y</code> | Less | <code>x <= y</code> | Less or eq |
| <code>x > y</code> | Greater | <code>x >= 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("h: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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