

Basic Java OOP

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From C to Java

writing Java methods is very similar to writing C procedures (with some minor differences here and there), except that

- an instance method shall access its own (within instance) data or local variables (not strict requirement, more to be discussed later)
- can declare, initialize, call other instances
- can also call its own methods

writing Java classes is very similar to writing C structures, except that

- a class can provide actions in addition to the data definition

Eight Java Primitive Types

primitive type: defining direct memory interpretations

- `byte`, `short`, `int`, `long`: 1/2/4/8 byte (big-endian) integers
- `float`, `double`: 4/8 byte floating point numbers
- `boolean`: `true` or `false`
- `char`: 2 byte unicode

all (except `boolean`) very similar to C

Many Java Extended Types

```
class WhateverYouWant
```

- `class OOPStudent`
- `class java.io.PrintStream`
- `class java.util.Scanner`
- `class java.lang.String`

read the API, **guess**, and write the program
you want

A Minor Hint: on `import` et al.

```
1  /* POOUser.java */
2  public class POOUser{
3      private java.lang.String ID;
4      private java.lang.String name;
5      private int onlineCount;
6
7      public void setName(java.lang.String the_name){ name = the_name; }
8      public boolean isFrequent(){ return (onlineCount > 10000); }
9  }
10 /* POOUserDemo.java */
11 public class POOUserDemo{
12     public static void main(String [] args){
13         POOUser u = new POOUser();
14         java.io.PrintStream ps = java.lang.System.out;
15         ps.println(u.isFrequent());
16     }
17 }
```

Primitive versus Extended

- primitive:
 - one single piece of data with literal support (e.g. `5.2`, `true`)
 - no extended actions except basic operations
- extended (classes):
 - one or many pieces of data (instance variables)
 - all instances with the same pieces, but (possibly) with different values
 - extended actions (instance methods)
 - all instances with the same capability, but (possibly) with different behavior depending on status