

Full Class

CSE 114 INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING

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Announcements

Midterm II

- Thursday 25-Apr-2024

Topics:

- Static and non-static members in a class (“full class”)
- Visibility control of objects
- Memory representation of an object with static and non-static members

Reading: follow the lecture notes closely and use textbook as a reference

[Notes + Chapters 9, 10, 11, 12]

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Expanding the program structure again

Now mix static and dynamic members (fields and methods) in a class

See the needs for both in a class by understanding how they are used

See [program_structure_6.txt](#)

See [Account.java](#) that now contains a mix of static and dynamic members in a class

Also see [UseAccount.java](#)

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Visibility control on state info in objects

[public](#) vs. [private](#)

With [private](#), you would have to provide getters (readers) and setters (writers) unless you want to hide the private member data from outside

With [public](#), you can access the fields (static and non-static) directly without using getters and setters

Why use private? Why hide state info?

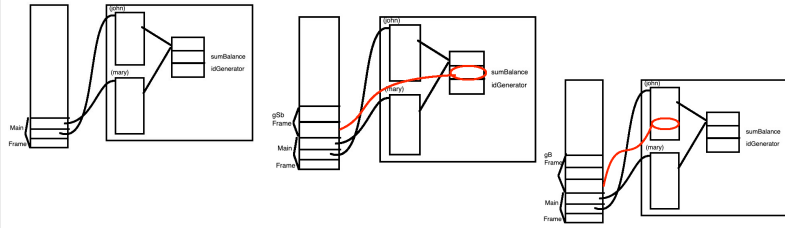
- It makes software more maintainable!

See [AccountPublic.java](#) and [UseAccountPublic.java](#)

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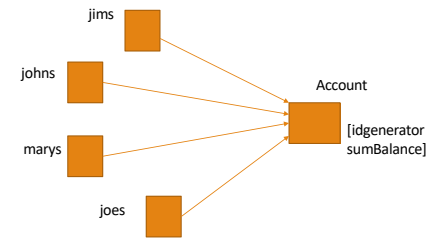
Memory representation of a class with static and dynamic members

See [Account.java](#) and [UseAccount.java](#)



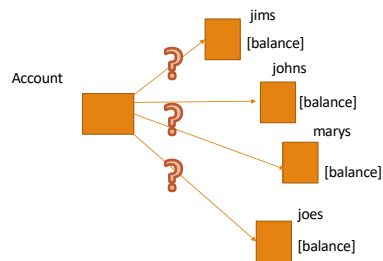
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Dynamic objects referencing static members



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Static objects referencing dynamic members ???



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Using static fields vs. using an additional class

See [static_or_another_class.txt](#)

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Variables in Java

1. Local variables
 - within a method (function)
2. Instance variables (aka dynamic fields; non-static or dynamic variables)
 - within a class without the `static` keyword
 - a copy in each instance of the class (if you create 234 instances, there will be 234 copies)
3. Static variables (aka class variables)
 - within a class with the `static` keyword
 - only one copy in the entire class
 - shared by all the instances of the class

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Lifetime of these variables

1. Local variables
 - alive only while the method is running/executing
2. Instance variables (aka dynamic fields; non-static or dynamic variables)
 - alive as long as an instance (object) is alive
 - when does an instance die, i.e., goes away from memory?
3. Static variables (aka class variables)
 - alive as long as the program is alive, i.e., until the main exits

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Static objects vs. dynamic objects

Static object, e.g., the `Account` object

What do you mean?

- Well, it is a 'meta-object'.

Dynamic objects, e.g., objects created as instances of a class (e.g., `Account`) using `new`

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