

Inheritance

Exploring Polymorphism

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Lectures and Labs

- This weeks lectures and labs are based on examples in:
 - **Objects First with Java** - A Practical Introduction using BlueJ, © David J. Barnes, Michael Kölling (<https://www.bluej.org/objects-first/>)

Topic List



- 1. Method polymorphism**

- e.g. display()

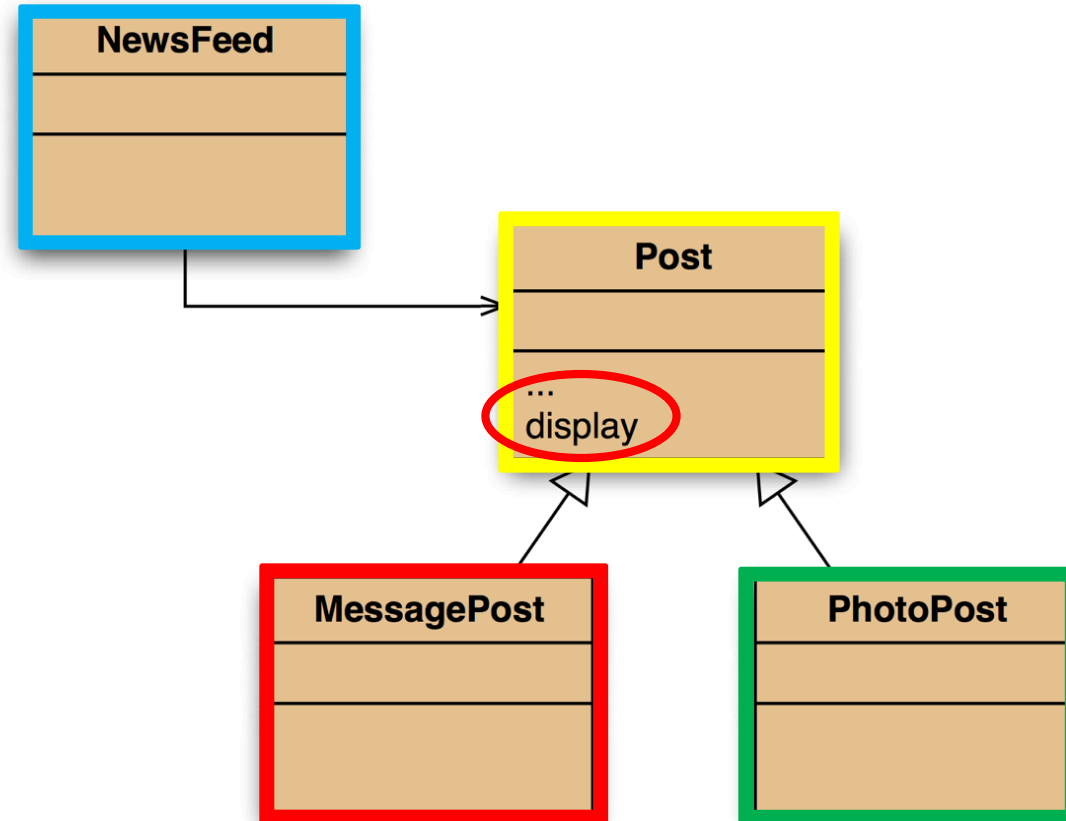
2. Static and dynamic type

3. Overriding

4. Dynamic method lookup

5. Protected access

Social NetworkV2 – Inheritance Hierarchy



You can now shoot, edit and share video on Twitter. Capture life's most moving moments from your perspective.



Testing the `display()` method...

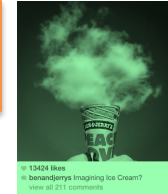
Create this **MessagePost**

You can now shoot, edit and share video on Twitter. Capture life's most moving moments from your perspective.

username	Leonardo da Vinci
message	Had a great idea this morning. But now I forgot what it was. Something to do with flying ...
likes	40 seconds ago - 2 people like this.
comments	No comments.

Testing the `display()` method...

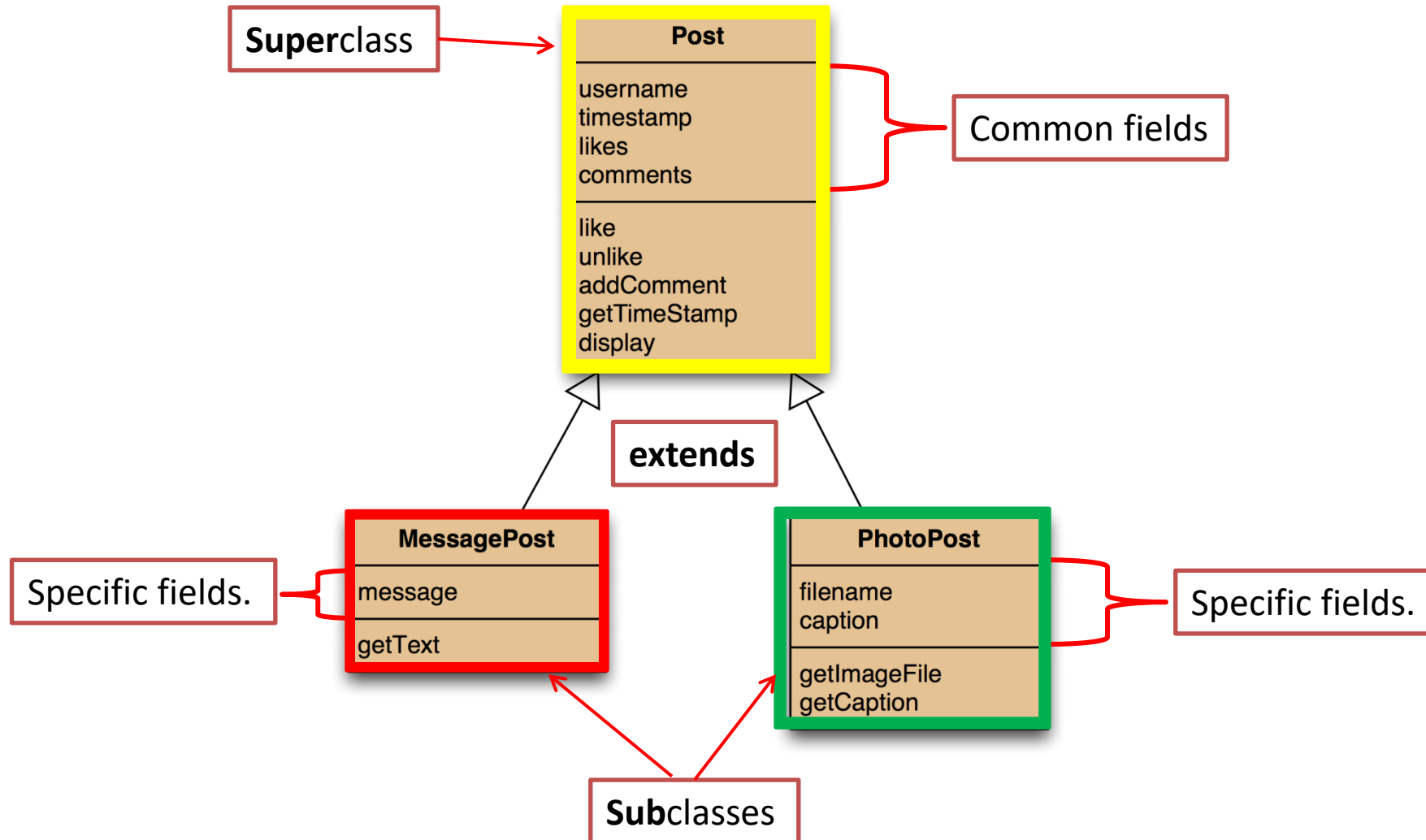
Create this **PhotoPost**



```
username    Alexander Graham Bell
filename    [experiment.jpg]
caption     I think I might call this thing 'telephone'.
likes       12 minutes ago - 4 people like this.
comments   No comments.
```

RECAP:

Social Network V2 - Using inheritance



Testing the `display()` method...

```
Leonardo da Vinci
Had a great idea this morning.
But now I forgot what it was. Something to do with flying ...
40 seconds ago - 2 people like this.
  No comments.
```

```
Alexander Graham Bell
[experiment.jpg]
I think I might call this thing 'telephone'.
12 minutes ago - 4 people like this.
  No comments.
```

What we want

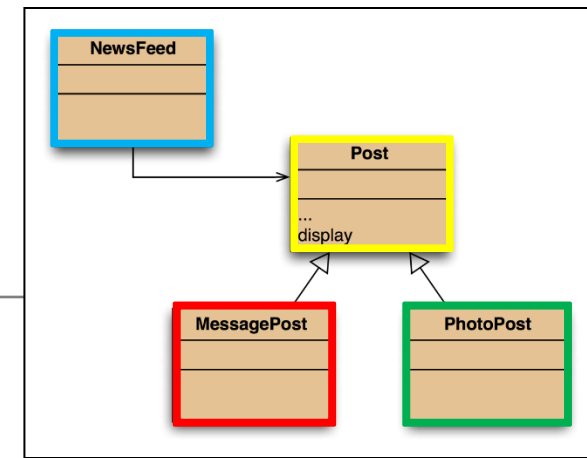
```
Leonardo da Vinci
40 seconds ago - 2 people like this.
  No comments.
```

```
Alexander Graham Bell
12 minutes ago - 4 people like this.
  No comments.
```

What we have

message filename caption are missing from what we have. i.e. the subclass specific fields

The problem



- The `display()` method in **Post** only prints the common fields.
- Inheritance is a **one-way street**:
 - A subclass inherits the superclass fields.
 - **The superclass knows nothing about its subclass's fields.**

Attempting to solve the problem?

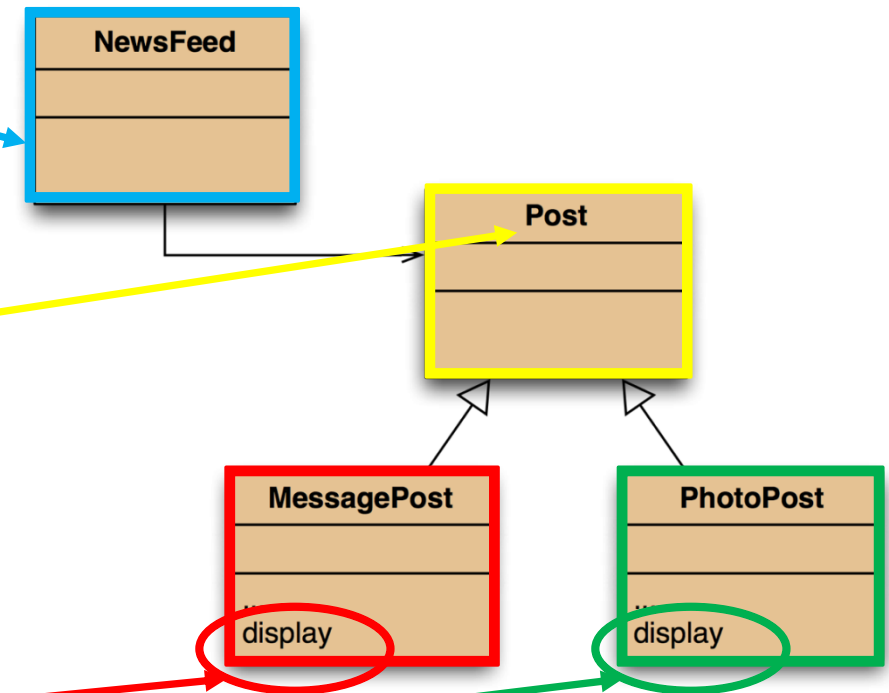
3) NewsFeed

cannot find a `display()` method in `Post`.

2) But `Post`'s fields are private.

1) Place a `display()` where it has access to the information it needs.

- i.e. in each subclass
 - One version for `MessagePost`
 - One version for `PhotoPost`



**Any
Questions?**

