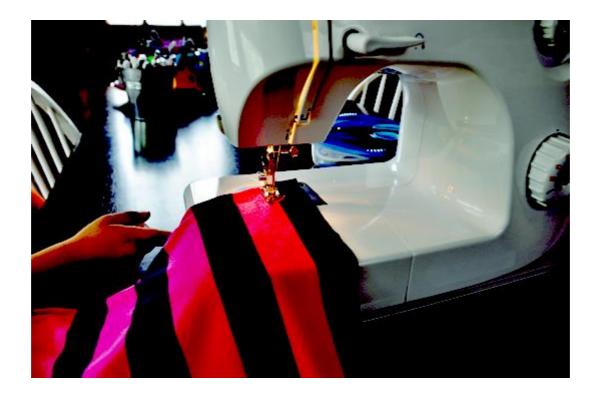# How To Get A New Shirt

- Make it yourself:

# How To Get A Shirt

- Make it yourself:
- Get if from a store or factory:

# How To Get A Shirt

- Make it yourself:
- Get if from a store or factory:
- Have someone give it to you:

# How To Get A New Object

- Make it yourself (create an object with ***new***):

```
JPanel panel = new JPanel() ;
```

# How To Get A New Object

- Make it yourself (create an object with *new*):

- Get it from a *factory* (another object or class):

```
JPanel panel = new JPanel() ;

. . .

Component[] children = panel.getComponents() ;
```

# How To Get A New Object

- Make it yourself (create an object with **new**):

- Get it from a **factory** (another object or class):

- Have it handed over (**injected**):

```
JPanel panel = new JPanel() ;

. . .

Component[] children = panel.getComponents() ;

. . .

JLabel label = new JLabel("Kelvin") ;
panel.add(label) ;
```

# Make It Yourself Vs. Purchase

- Make It Yourself
  - You get one very specific shirt or object.
  - You are bound to the specific type of shirt or object.

- Store or Factory
  - Get any shirt or object that meets a general specification:
    - 15" neck and 32" sleeve (sport shirt, dress shirt, sweatshirt)
    - One or more objects extending a base class or implementing an interface
  - Wider selection:
    - Different stores or factories provide different conforming products.
    - All we care about is the spec (size, interface).

# Make It Yourself Vs. "Gift"

- Make It Yourself
  - You get one very specific shirt or object.
  - You are bound to the specific type of shirt or object.

- Gift (Injection)
  - Accept any gift that meets the specification
    - 15" neck and 32" sleeve (sport shirt, dress shirt, sweatshirt)
    - One or more objects extending a base class or implementing an interface
  - Don't even have to know where it came from:
    - "Giver" decides on where shirt / object comes from.
    - "Giver" may make it directly or get it from a factory.

# Store / Factory Vs. "Gift"

- Factory
  - You have to be able to find the factory.
  - If conditions change you need to find a different factory.

- Gift (Injection)
  - Not bound to any particular factory or store.
  - What you use comes from the "outside."

# Summary for Objects

- **Make it yourself** - binds you to a specific concrete class.

- **Use of factory** - allows different concrete classes from a specific (concrete) factory.

- **Get via injection** - binds you only to the behavior desired (wherever the object originates).

- Consider the final SwingUI version of the weather station application:
  - Any examples of "make it your self"?
  - Any examples of "factory"?
  - Any examples of "gift" or "injection"?