CS1083 Assignment # 2 - Fall 2024

Due: Wednesday, 25 September before 4:30 pm in the Desire2Learn dropbox. (See submission instructions below).

The purpose of this lab is:

- Gain familiarity with ArrayLists and Polymorphism

This lab is to be done individually. If you have questions, direct them to a tutor/assistant during an extra help session. If your question is not answered during an extra help session, you may contact your course professor.

Background Scenario

You are asked to write a basic program for someone to see if the outfit they are wearing is in fashion.

Wearable Interface

You must write a wearable interface named "**Wearable.java**". An object is considered wearable if it has the following 3 behaviours:

1. It can access and return its colour
2. It can access and return its size (examples: "Medium", "31in", "10 American")
3. Given a season ("Spring", "Summer", "Autumn", or "Winter"), it will return true if the wearable object is in fashion or false otherwise.

Shirt

You must write a class called "**Shirt.java**". Shirt objects are wearable and keep track their type (examples: "T-Shirt", "Sweater", "Button-Up", etc.) Shirts come in sizes such as "Small" or "Extra Large" and can be any colour. Once a shirt's size and colour are set, they cannot be changed. Shirts objects must have a toString() method that matches the style in the displayed output below (blank spaces are tabs).

```
Hawaiian:    Large    Red and Blue
```

Here are some fashion rules to determine if a shirt is in fashion:

1. A "T-Shirt" is only fashion in "Spring" and "Summer"
2. A "Sweater" is only fashion in "Autumn" and "Winter"
3. A "Hawaiian" shirt is ***not*** in fashion in "Spring", "Summer", or "Autumn"

Pants

You must write a class called "**Pants.java**". Pants objects are wearable. Pants can be any colour and their size (leg length) are measured in either inches or centimeters (i.e. 21cm or 39in – ***you can assume the unit will always be either "cm" or "in" and the units will immediately follow the last number***). The size of a pair of Pants can change; however, colour is set. Pants objects must have a toString() method that matches the style in the displayed output below (blank spaces are tabs).

```
Pants:   31in     Tan
```

There is only one fashion tip with Pants:

1. If a pair of Pants has a size (leg length) is less than 25in in "Winter", it is **not** considered in fashion.
    a. You may need to refresh your knowledge on substrings and how to convert between centimetres and inches.

Shoes

You must write a class called "**Shoes.java**". Shoes objects are wearable. Shoes can be any colour and their size is measure with a number followed by the location (i.e. "7 European" or "12 American"). General Shoes do not exist; however, Sneakers and Boots do.

Sneakers

You must write a class called "**Sneakers.java**". Sneakers are special Shoes that also have store whether the Sneakers have laces. Sneaker objects must have a toString() method that matches the style in the displayed output below (blank spaces are tabs).

```
Sneakers:    9 American   Black
```

Sneakers are **not** in fashion in "Winter".

Boots

You must write a class called "**Boots.java**". Boots are special Shoes that also have store whether the Boots have a lining. Boots objects must have a toString() method that matches the style in the displayed output below (blank spaces are tabs).

```
Boots:   9 American   Black
```

Boots are **only** in fashion in "Winter".

Driver Program for Testing

You must create a basic driver called "**OutfitDriver.java**". In this file, create an outfit by instantiating a Shirt, a pair of Pants, and a pair of Shoes. Add all articles of clothing in **a single ArrayList**. Cycle through the ArrayList with a **for-each** loop to print out all articles of clothing.

Print a message regarding if the outfit is in fashion for the season "Winter" (**must do this by looping** rather than by checking each individual article of clothing).

Example Output

```
Flannel:     Medium       Red and White
Pants:       63.246cm     Blue
Boots:       9 American   Black
Sneakers:    10 European  White
This outfit is NOT in fashion!
```

Note that tabbing does not need to match perfect.

Your electronic submission (submitted via Desire2Learn) will consist of two files. Name your files YourName-fileName.extension, e.g. JohnSmith-as2.zip, JohnSmith-as2.pdf:

1. A single pdf file containing a listing of the source code for the **`Wearable`** interface, as well as the **`Shirt`**, **`Pants`**, **`Shoes`**, **`Boots`**, and **`Sneakers`** classes. Also include your **driver.**
2. A zip file containing all your Java classes.