CMPS 251 Tutorial 3 – Fall 2019

Exercise 1 – TrafficLight enum

Declare a **`TrafficLight`** enum type having an instance attribute name **`duration`** and with a constructor to initialize the duration. Also provide a get method to return the duration.
Set the red light duration to 50, the green light to 40 seconds and the yellow light duration to 5 seconds.

Test the **`TrafficLight`** enum using the following main method:

```
public static void main(String[] args) {
  TrafficLight lightState = TrafficLight.GREEN;
  System.out.println("lightState value: " + lightState + " - lightState.toString(): " +
       lightState.toString());
  for (var state : TrafficLight.values()) {
       System.out.println(state + " stays on for " + state.getDuration() + "s");
  }
}
```

Exercise 2 – BookEnum

Declare a **`BookEnum`** enum type having 2 instance attributes name **`title`** and **`publicationYear`** and with a constructor to initialize these attributes. Also provide a get methods to return the title and the publicationYear.
The BookEnum should have the following constants and associated attributes:

Book Constant	Title	Publication Year
JAVA	Java How to Program	2019
CPP	C++ How to Program	2017
IW3	Internet & World Wide Web How to Program	2012
VB	Visual Basic How to Program	2014
CSHARP	Visual C# How to Program	2017

Test the **`BookEnum`** using the following main method:

```
public static void main(String[] args) {
  System.out.println("All books :");
  // print all books in enum Book
  for (BookEnum book : BookEnum.values()) {
   System.out.printf("%-10s%-45s%s%n", book, book.getTitle(),
      book.getPublicationYear());
  }
}
```

Exercise 3 – Exception Handling

3.1. Run this main method:

```
public static void main(String[] args) {
      int[] nums = {3, 5, 9};
      System.out.println(nums[3]);
      System.out.println("nums array size: " + nums.length);
}
```

- This will fail and you will get an error. Why?
- What exception did you get?

- Handle this exception by displaying a friendly message to the user.

3.2. Run this main method:

```
public static void main(String[] args) {
	int[] nums = null;
	System.out.println("nums array size: " + nums.length);

}
```

- This will fail and you will get an error. Why?
- What exception did you get?
- Handle this exception by displaying a friendly message to the user.

Exercise 4 – Throwing an Exception

- Create a **Date** having the following attributes *day*, *month*, *year* of type int.
- Create getters and setters for each of the attributes.
- In the set methods do the following validation and throw an **IllegalArgumentException** if the validation fails.

Validation	Error message to throw with the exception
`day >= 1 and day <= 31`	The day must be between 1 and 31.
`Month >= 1 and month <= 12`	The month must be between 1 and 12.
`Year > 0`	The year must be greater than 0.

- Add a constructor to initialize *day*, *month*, *year* attributes. Make sure you call the set methods in the constructor to enforce validation.
- Test the **Date** class using the following main method:

```
public static void main(String[] args) {
  Date date = new Date(13, 12, 2018);
  System.out.printf("%d/%d/%d", date.getDay(), date.getMonth(), date.getYear());
}
```

- This will fail and you will get an error. Why?
- What exception did you get?
- Handle this exception by displaying a friendly message to the user.