

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%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
<i>day</i> >= 1 and <i>day</i> <= 31	The day must be between 1 and 31.
<i>Month</i> >= 1 and <i>month</i> <= 12	The month must be between 1 and 12.
<i>Year</i> > 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.

Solutions:

Solutions available @ <https://github.com/cmpps251f19/cmpps251-content> examples:

```

v 05.Enum-Exceptions [cmpps251-content master]
  > JRE System Library [jdk-13]
  v src
    > enums.book
    > enums.gender
    > enums.lightstate
    > enums.trafficlight
    > exception.handling
    > exception.throwexample

```