

CS 501B – Introduction to JAVA Programming
Fall 2023 Semester
Due: 11/03/2023 Friday at 11:59 PM

Instructions:

1. You are not allowed to use any package/library unless stated otherwise.
2. There is no skeleton given for this assignment.
3. You are required to follow questions.
4. We will be testing your code on hidden test cases.
5. Test your code with your own test cases.
6. Please comment your name and CWID in the first two lines of every `.java` file.
7. Add comments in your code about what you are doing.
8. You are required to zip only `.java` file as `FirstName_LastName_Assignment#.zip` (Ex: Roushan_Kumar_Assignment6.zip).
9. This assignment covers topics from week 8.
10. Students are not allowed to collaborate with classmates and any other people outside. All work must be done individually. Any work having evidence of showing academic dishonesty violation is subjected to zero for the assignment.
11. Use the `JavaFX` library. It provides many UI controls for developing a comprehensive user interface.

Penalty:

1. 10 marks will be deducted for invalid format of file / assignment submission.
2. If you submit after the due date then 10 marks will be deducted for every day after the due day.
3. If you submit an assignment after two weeks from the due date then you will get zero marks.
4. You will receive zero, if code doesn't compile / run.

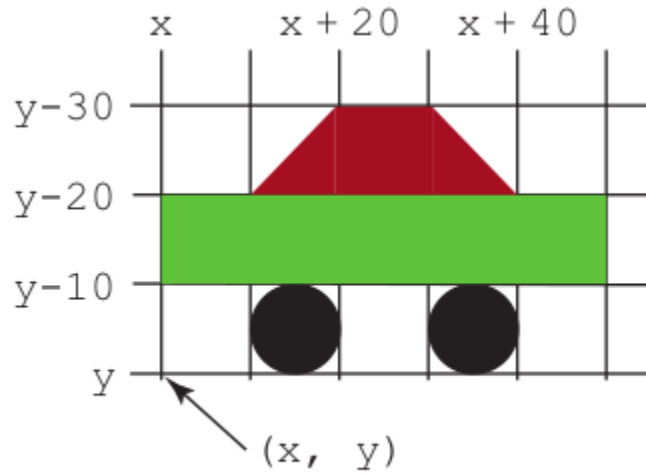
Questions:

Each question carries **25** points and total points is **100**.

1. Write a program that simulates car racing, as shown in Figure a. The car moves from left to right. When it hits the right end, it restarts from the left and continues the same process. You can use a timer to control animation. Redraw the car with new base coordinates (x, y), as shown in Figure b. Also let the user pause/resume the animation with a button press/release and increase/decrease the car speed by pressing the up and down arrow keys.



(a)



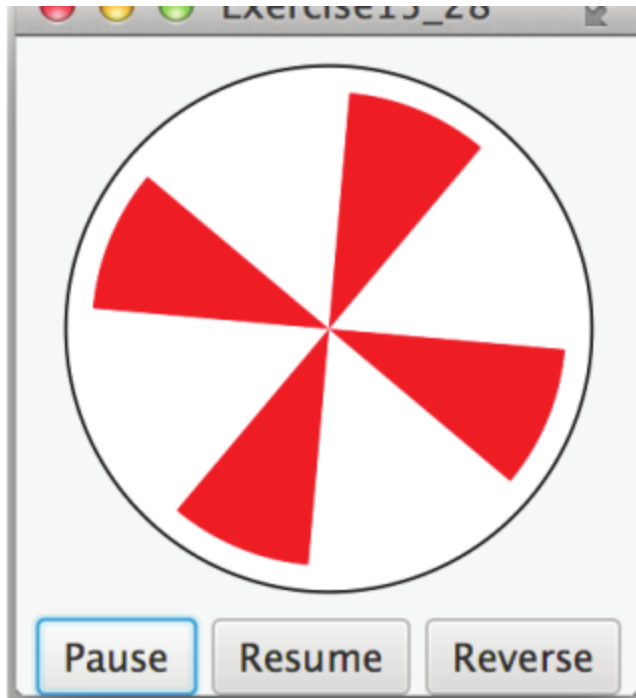
(b)

File name : `RackingCar.java`

// Do coding in below class

```
class RackingCar {
    }
```

- Write a program that displays a running fan, as shown in Figure c. Use the Pause, Resume, and Reverse buttons to pause, resume, and reverse fan running.

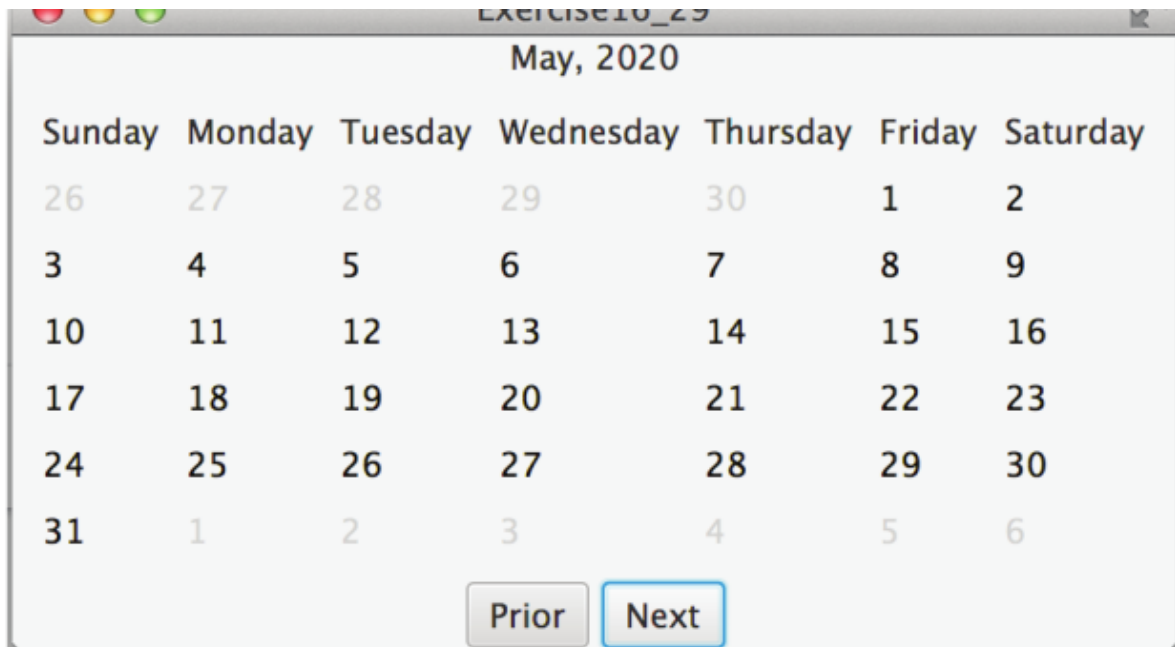


(c)

File name : `RunningFan.java`

```
// Do coding in below class
class RunningFan {
}
```

3. Write a program that displays the calendar for the current month. You can use the Prior and Next buttons to show the calendar of the previous or next month. Display the dates in the current month in black and display the dates in the previous month and next month in gray, as shown in below Figure.

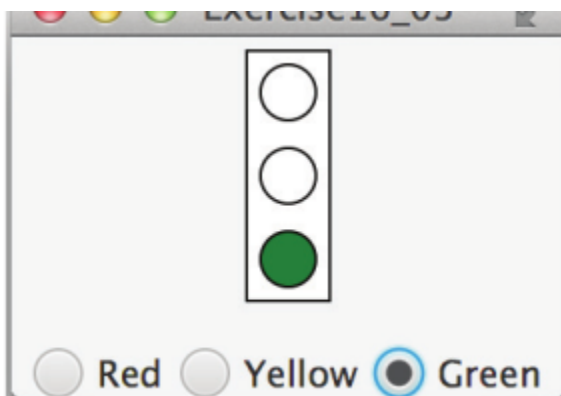


File name : `Calendar.java`

// Do coding in below class

```
class Calendar {
    }
```

- Write a program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on. Only one light can be on at a time (see below Figure). No light is on when the program starts.



File name : `TrafficLight.java`

```
// Do coding in below class
class TrafficLight {
    }
```