

National School of Computer Science

Manouba University



Lab Handouts

Advanced JAVA



Level :

II2, Software Engineering Department

Lab and course Instructor:

ASMA AYARI

Rapport written by
Maryem Ben Rhouma

Academic Year : 2021 /2022



LAB 2.3: RACING CARS WITH JAVAFX

1. Objectives:

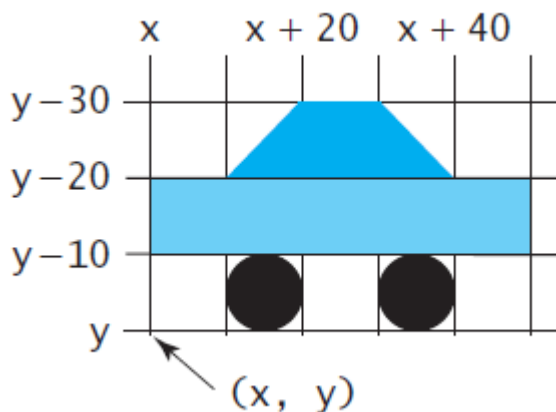
- Develop racing cars.
 - pause/resume the animation with a button press/release
 - increase/decrease the car speed by pressing the UP and DOWN arrow keys.
 - Simulate 4 cars racing

2. Activity List:

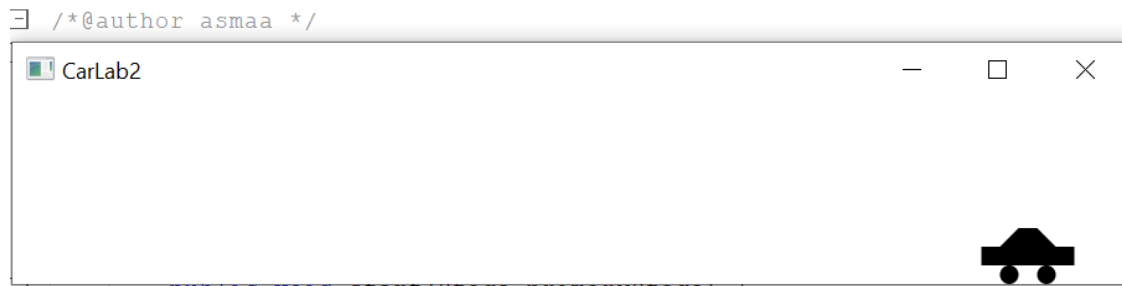
Activity:

Write a program that simulates a car racing, as shown in the figure below.

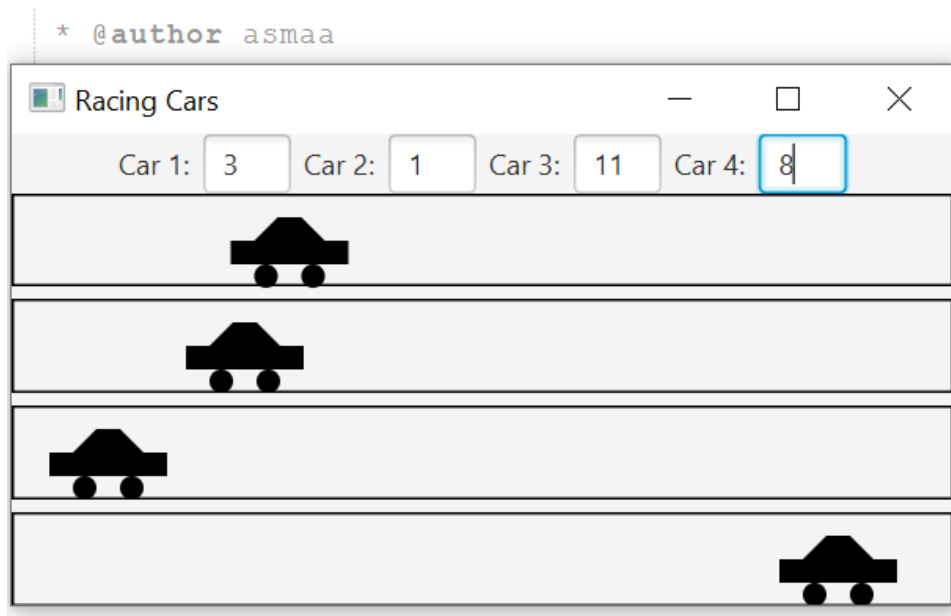
1. Draw the car with a new base coordinate (x, y) , with reference to ANNEX II.
The car moves from left to right.
When it hits the right end, it restarts from the left and continues the same process.
Use a timer to control animation.



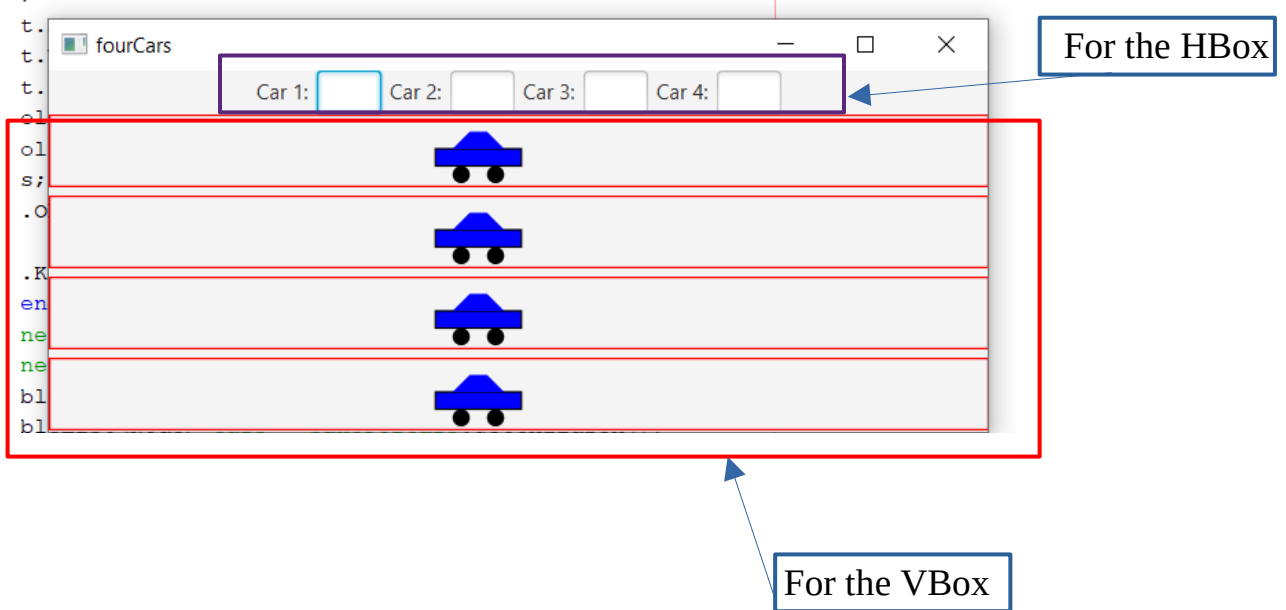
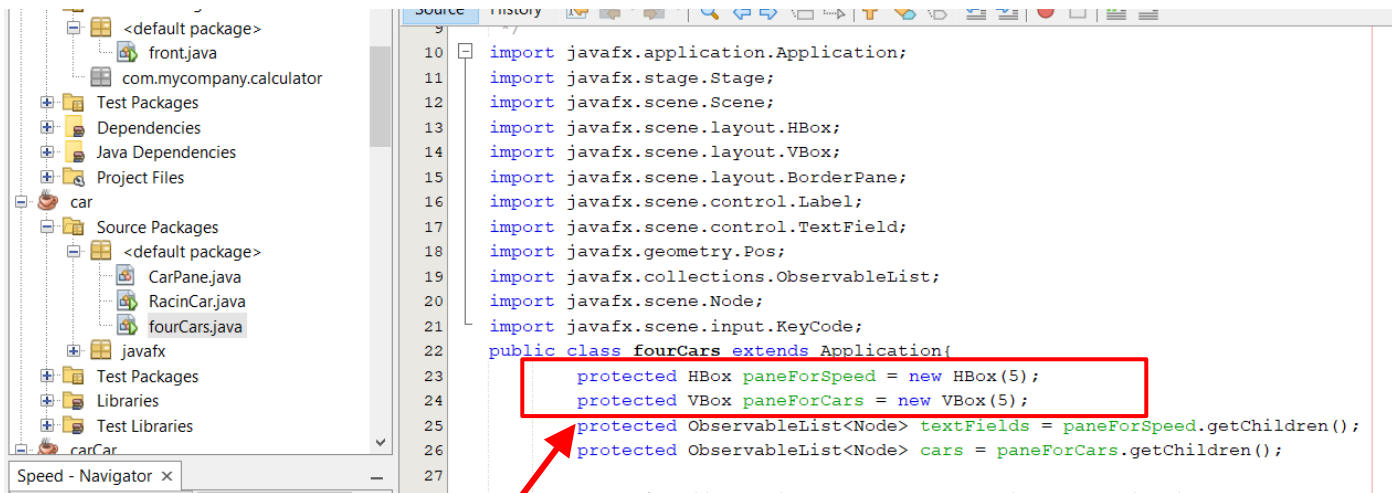
2. Let the user pause/resume the animation with a button press/release and increase/decrease the car speed by pressing the UP and DOWN arrow keys.



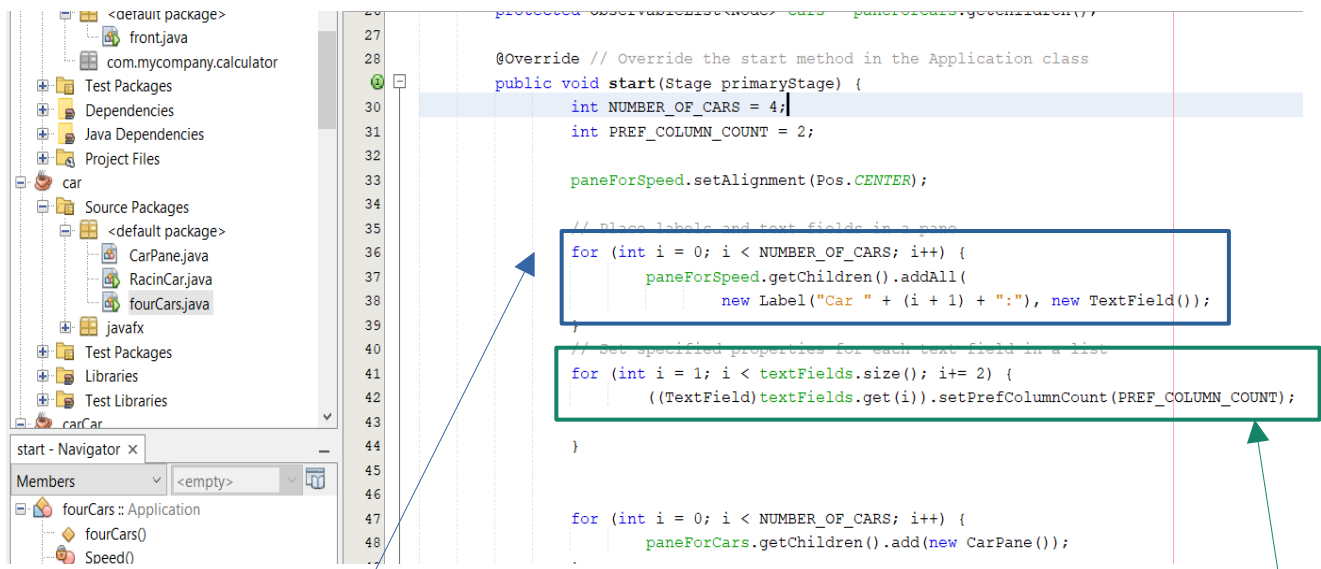
3. Write a program that simulates four cars racing, as shown in the figure below. Set the speed for each car, with a maximum of 100.



import the libraries needed for this project



Override the start method in the Application class



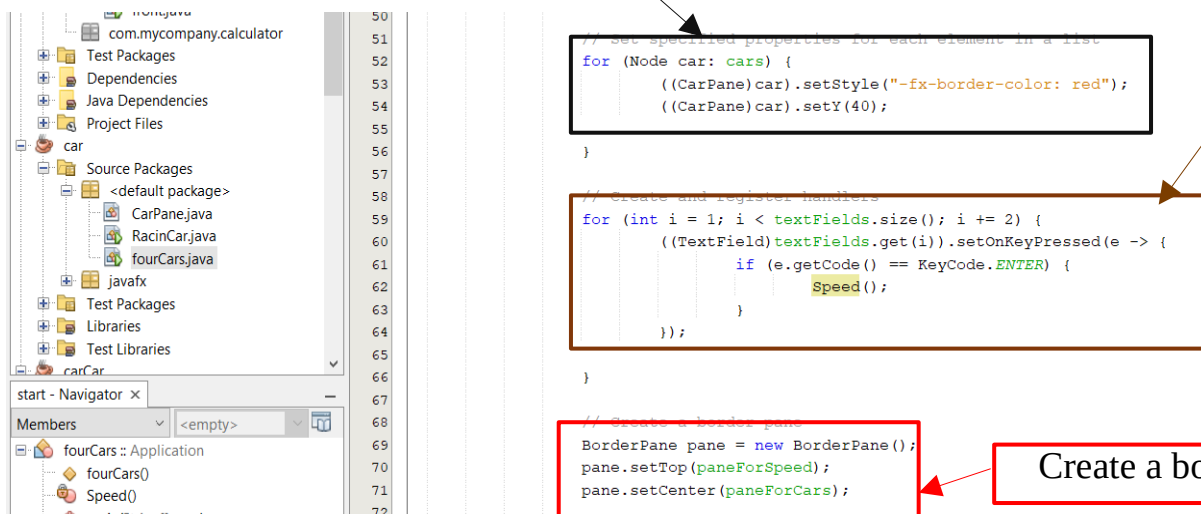
```
27 // Override the start method in the Application class
28 @Override // Override the start method in the Application class
29 public void start(Stage primaryStage) {
30     int NUMBER_OF_CARS = 4;
31     int PREF_COLUMN_COUNT = 2;
32
33     paneForSpeed.setAlignment(Pos.CENTER);
34
35     // Place labels and text fields in a pane
36     for (int i = 0; i < NUMBER_OF_CARS; i++) {
37         paneForSpeed.getChildren().addAll(
38             new Label("Car " + (i + 1) + ":"), new TextField());
39     }
40
41     // Set specified properties for each text field in a list
42     for (int i = 1; i < textFields.size(); i+= 2) {
43         ((TextField)textFields.get(i)).setPrefColumnCount(PREF_COLUMN_COUNT);
44     }
45
46     for (int i = 0; i < NUMBER_OF_CARS; i++) {
47         paneForCars.getChildren().add(new CarPane());
48     }
49 }
```

Place labels and text fields in a pane

Set specified properties for each text field in a list

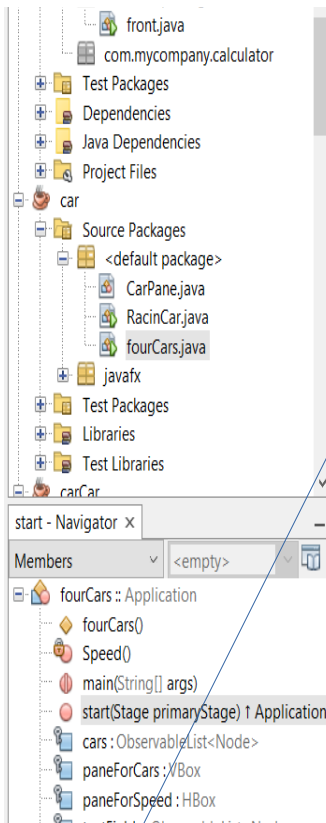
Set specified properties for each text field in a list

Create and register handlers



```
50
51 // Set specified properties for each element in a list
52 for (Node car: cars) {
53     ((CarPane)car).setStyle("-fx-border-color: red");
54     ((CarPane)car).setY(40);
55 }
56
57 // Create and register handlers
58 for (int i = 1; i < textFields.size(); i += 2) {
59     ((TextField)textFields.get(i)).setOnKeyPressed(e -> {
60         if (e.getCode() == KeyCode.ENTER) {
61             Speed();
62         }
63     });
64 }
65
66 // Create a border pane
67 BorderPane pane = new BorderPane();
68 pane.setTop(paneForSpeed);
69 pane.setCenter(paneForCars);
70
71 }
```

Create a border pane



```
72  
73 // Create a scene and place it in the stage  
74 Scene scene = new Scene(pane, 400, 200);  
75 primaryStage.setTitle("fourCars"); // Set the stage title  
76 primaryStage.setScene(scene); // Place the scene in the stage  
77 primaryStage.show(); // Display the stage  
78 }  
79  
80 /** Set specified rate for a CarPane list */  
81 private void Speed() {  
82     for (int i = 1, j = 0; i < textFields.size(); i += 2, j++) {  
83         if (((TextField)textFields.get(i)).getText().length() > 0) {  
84             ((CarPane)cars.get(j)).setSpeed(  
85                 Double.parseDouble(((TextField)textFields.get(i)).getText()));  
86             ((CarPane)cars.get(j)).play();  
87         }  
88         else {  
89             ((CarPane)cars.get(j)).pause();  
90         }  
91     }  
92 }  
93  
94 public static void main(String[] args) {  
95     Application.launch(args);  
96 }  
97  
98  
99 }
```

Create a scene and place it in the stage

Set specified rate for a CarPane list