|  |  |  |
| --- | --- | --- |
|  |  |  |
| 0 | 8 | 4 |
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KINGDOM OF SAUDI ARABIA | JAZAN UNIVERSITY

COLLEGE OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

ASSIGNMENT-2 / 2022-2023

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| **Academic Year** | 2022-2023 | **Semester** | Second |
| **Course with code** | Programming-2 (comp-213) | **Marks** | 10 |
| **Type of Assignment** | Exercises | **Deadline** | 05/02/2023 |
| **Date of Announcement** | 29/01/2023 | **Group** | 1827, 1802 |
| **Student Name** |  | **Student ID** |  |

**Important notes:**

* *Duplicated or copied submission will strictly affect your grade (****both students will receive zero mark!)***
* *Late submission, after deadline, may affect your grade.*

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| --- | --- | --- | --- | --- |
| **ASSIGNMENT PROBLEM STATEMENT** | | | | |
| Q1: Assume an array ***arr*** is declared in the main program. What is the values of the variables ***(first, last,*** and ***mid)*** each time calling ***binarySearch*** method in order to find the key: **(3 marks)**  int [ ] arr = {10, 20, 30, 40, 50, 60, 70, 80, 90};   1. **binarySearch (arr, 0, arr.length-1, 50);**   **First Last mid**   1. **binarySearch (arr, 0, arr.length-1, 70);** | | | | |
|  | **First** | **Last** | **mid** |  |
| 0 | 8 | 4 |
| 5 | 8 | 4 |
|  |  |  |
|  |  |  |

**3) binarySearch (arr, 0, arr.length-1, 0);**

|  |  |  |
| --- | --- | --- |
| **First** | **Last** | **mid** |
| 0 | 8 | 4 |
| 0 | 3 | 1 |
| 0 | 0 | 0 |
| 0 | -1 | -1 |

Q2: Assume that a String ArrayList **courses** are defined, which contains the following elements:

**(“Math”, “Science”, “English”, “Art”) (2 marks)**

* + Write one statement that use an ArrayList method to find if the list contains “Science” or not.

if (courses.contains("Science")) {

// do something

}

* + Write one statement that use an ArrayList method to find the index of “Art”.

int index = courses.indexOf("Art");

Create an array of objects by completing the following parts: **(5 marks)**

* + Declare a class **Car** and Declare three private instance variables (**name, brand, model**) as (**String, String, and int)** respectively.
  + Define the setter and getter methods for these variables.
  + Define **display** method to print out a car’s information **(name, brand, model).**

In the main program:

* + Create an array of the defined class **Car** with size **6**.
  + Create two objects from class **Car** and add them into the array.
  + Set values **(name, brand, model)** for these two objects after adding them in the array.
  + Show the two objects in the output using **display** method.

class Car {

    private String name;

    private String brand;

    private int model;

    // setter methods

    public void setName(String name) {

        this.name = name;

    }

    public void setBrand(String brand) {

        this.brand = brand;

    }

    public void setModel(int model) {

        this.model = model;

    }

    // getter methods

    public String getName() {

        return this.name;

    }

    public String getBrand() {

        return this.brand;

    }

    public int getModel() {

        return this.model;

    }

    // display method

    public void display() {

        System.out.println("Name: " + this.name);

        System.out.println("Brand: " + this.brand);

        System.out.println("Model: " + this.model);

    }

}

public class Main {

    public static void main(String[] args) {

        Car[] carArray = new Car[6];

        // creating two objects

        Car car1 = new Car();

        Car car2 = new Car();

        // adding objects to the array

        carArray[0] = car1;

        carArray[1] = car2;

        // setting values for the objects

        car1.setName("Car 1");

        car1.setBrand("Brand 1");

        car1.setModel(2021);

        car2.setName("Car 2");

        car2.setBrand("Brand 2");

        car2.setModel(2022);

        // displaying objects

        System.out.println("First car:");

        carArray[0].display();

        System.out.println();

        System.out.println("Second car:");

        carArray[1].display();

    }

}

