CS 1073

FR04A

Assignment 3

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Question 1:

Part A

```
/**
 * This class represents a dog.
 *
 * @author Ebrahim Arefi, 3621326
 */
public class Dog {

   /**
    * The name of the dog.
    */
   private String name;

   /**
    * The age of the dog (in years).
    */
   private int age;

   /**
    * This method constructs a Dog object with the specified
    * name and age.
    *
    * @param nameIn the name of the dog.
    * @param ageIn  the age of the dog (in years).
    */
   public Dog(String nameIn, int ageIn) {
      name = nameIn;
      age = ageIn;
   }

   /**
    * This method retrieves the name of the dog.
    *
    * @return the name of the dog.
    */
   public String getName() {
      return name;
   }

   /**
    * This method retrieves the age of the dog.
    *
    * @return the age of the dog (in years).
    */
   public int getAge() {
      return age;
   }

   /**
```

```
     * This method computes and returns the dog's age in
     * "person years".
     *
     * @return the age of the dog (in person years).
     */
    public int dogToHumanAge() {
       return age * 7;

    }

    /**
     * This method is called to change the name of the dog.
     *
     * @param nameIn the new name for the dog.
     */
    public void setName(String nameIn) {
       name = nameIn;
    }

    /**
     * This method is called to increase the age of the dog
     * by one year.
     */
    public void ageIncrease() {
       age++;
    }

} // end Dog
```

Part B

```
/**
 * This is a driver class, that indicates the name and age of the dog.
 * As well as, computing and changing the age.
 *
 * @author Ebrahim Arefi, 3621326
 */
public class DogTestDriver {
	public static void main(String[] args) {

		Dog d1 = new Dog("Joo", 2);
		Dog d2 = new Dog("Jii", 5);
		Dog d3 = new Dog("Jaa", 10);

		d3.setName("Boo");

		d2.ageIncrease();

		System.out.println("As3Q1Output");
		System.out.println("-------------");
		System.out.println("Dog 1:");
		System.out
					.println("\tName: " + d1.getName() + "\n\tAge:
" + d1.getAge() + "\n\tConverted age: "
							+ d1.dogToHumanAge());

		System.out.println("-------------");
		System.out.println("Dog 2:");
		System.out
					.println("\tName: " + d2.getName() + "\n\tAge:
" + d2.getAge() + "\n\tConverted age: "
							+ d2.dogToHumanAge());

		System.out.println("-------------");
		System.out.println("Dog 3:");
		System.out
					.println("\tName: " + d3.getName() + "\n\tAge:
" + d3.getAge() + "\n\tConverted age: "
							+ d3.dogToHumanAge());

	}

}
```

As3Q1Output:

```
As3Q1Output
-------------
Dog 1:
       Name: Joo
       Age: 2
       Converted age: 14
-------------
Dog 2:
       Name: Jii
       Age: 6
       Converted age: 42
-------------
Dog 3:
       Name: Boo
       Age: 10
       Converted age: 70
```

Question 2:

Part A

```
/**
 * This class represents a program called FunRunParticipant for a fundraising
 * event.
 *
 * @author Ebrahim Arefi, 3621326
 */
public class FunRunParticipant {

    /**
     * The full name of the participant.
     */
    private String name;

    /**
     * The 10-digit number of the participant.
     */
    private long digitNum;

    /**
     * The total funds raised by the participant.
     */
    private double totalFunds;

    /**
     * This method constructs a FunRunParticipant object with a specific
     * name and participant number. The total funds are initialized to 0.00
     *
     * @param name     the name of the participant.
     * @param digitNum the number of the participant.
     */
    public FunRunParticipant(String name, long digitNum) {
        this.name = name;
        this.digitNum = digitNum;
        totalFunds = 0.00;
    }

    /**
     * This method retrieves the name of the doparticipantg.
     *
     * @return the name of the participant.
     */
    public String getName() {
        return name;
    }

    /**
     * This method retrieves the participant number.
     *
```

```
     * @return the participant number.
     */
    public long getParticipantNumber() {
        return digitNum;
    }

    /**
     * This method retrieves the total funds raised.
     *
     * @return the total funds raised by the participant.
     */
    public double getFunds() {
        return totalFunds;
    }

    /**
     * This method adds a donation amount to the total funds raised
     * by the participant.
     *
     * @param donation the amount donated by a sponsor.
     */
    public void addDonation(double donation) {
        totalFunds += donation;
    }

    /**
     * This method calculates the gift amount, based on
     * a percentage of the participant's total funds raised.
     *
     * @param percentage the percentage expressed in decimal format.
     *
     * @return the employer gift amount for the charity.
     */
    public double calculateEmployerGift(double percentage) {
        return totalFunds * percentage;
    }

}
```

Part B

```
/**
 * This is a driver class prints out each participant's name, number, total
 * funds, and their employer's gift contribution.
 *
 * @author Ebrahim Arefi, 3621326
 */
public class FunRunDriver {
        public static void main(String[] args) {

                FunRunParticipant sonia = new FunRunParticipant("Sonia Jackson",
1234512345L);
                sonia.addDonation(48.00);

                FunRunParticipant karl = new FunRunParticipant("Karl Wagner",
5246801135L);
                karl.addDonation(39.60);

                FunRunParticipant ivy = new FunRunParticipant("Ivy Paul",
9834510621L);
                ivy.addDonation(138.20);

                FunRunParticipant luca = new FunRunParticipant("Luca Conti",
7864236928L);
                luca.addDonation(153.80);
                luca.addDonation(64.00);

                karl.addDonation(75.00);

                sonia.addDonation(50.00);
                ivy.addDonation(50.00);

                System.out.println("As3Q2Output:");
                System.out.println("----------");
                System.out.println(
                                "Name: " + sonia.getName() + "\n\tparticipant number:
" + sonia.getParticipantNumber()
                                                + "\n\tTotal funds: "
                                                + sonia.getFunds());

                System.out.println();
                System.out.println("----------");
                System.out.println(
                                "Name: " + karl.getName() + "\n\tparticipant number: "
+ karl.getParticipantNumber()
                                                + "\n\tTotal funds: "
                                                + karl.getFunds());

                System.out.println();
                System.out.println("----------");
                System.out.println(
```

```
                                "Name: " + ivy.getName() + "\n\tparticipant number: "
+ ivy.getParticipantNumber()
                                                        + "\n\tTotal funds: "
                                                        + ivy.getFunds());

                System.out.println();
                System.out.println("----------");
                System.out.println(
                                "Name: " + luca.getName() + "\n\tparticipant number: "
+ luca.getParticipantNumber()
                                                        + "\n\tTotal funds: "
                                                        + luca.getFunds());

                double soniaGift = sonia.calculateEmployerGift(0.2);
                double karlGift = karl.calculateEmployerGift(0.15);

                double ivyGift = ivy.calculateEmployerGift(0.25);
                double lucaGift = luca.calculateEmployerGift(0.25);

                System.out.println();
                System.out.println();
                System.out.println("--------------------");
                System.out.println("Gift received by sonia: " + soniaGift + "\n");
                System.out.println();
                System.out.println("Gift received by karl: " + karlGift + "\n");
                System.out.println();
                System.out.println("Gift received by ivy: " + ivyGift + "\n");
                System.out.println();
                System.out.println("Gift received by luca: " + lucaGift + "\n");
        }

}
```

As3Q2Output

```
As3Q2Output:
----------
Name: Sonia Jackson
       participant number: 1234512345
       Total funds: 98.0

----------
Name: Karl Wagner
       participant number: 5246801135
       Total funds: 114.6

----------
Name: Ivy Paul
       participant number: 9834510621
       Total funds: 188.2

----------
Name: Luca Conti
       participant number: 7864236928
       Total funds: 217.8


--------------------
Gift received by sonia: 19.6


Gift received by karl: 17.189999999999998


Gift received by ivy: 47.05


Gift received by luca: 54.45
```