Name _____ Period_____

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1. The `Assignment` class below creates and manages assignments for a gradebook,

Assignment.java

```java
public class Assignment {
    public String name;
    public int totalPoints;
    public String dueDate;
    public boolean countInGrade;

    public Assignment(String n, int tp, String dd, boolean c){
        name = n;
        totalPoints = tp;
        dueDate = dd;
        countInGrade = c;
    }
}
```

A portion of the `Gradebook` class is shown below.  You will write code to complete the remainder of this class.

Gradebook.java

```java
import java.util.Scanner;

public class Gradebook{

    public static void main(String args[]){
        //Creates a gradebook with 5 assignments
        /* To be completed in part (a) */

        //Prompts the user for the assignment information
        Scanner input = new Scanner(System.in);
        System.out.println("What is the name of the assignment?");
        String name = input.nextLine();
        System.out.println("How many points is the assignment out of?");
        int points = input.nextInt();
        System.out.println("What is the due date (mm/dd/yy)?");
        String dueDate = input.next();
        System.out.println("Does this count towards the grade?");
        boolean counts = input.nextBoolean();
    }
}
```

(a)  Declare an array called gradebook that can hold 5 assignments.

```java
Assignment gradebook[] = new Assignment[5];
```

| | /1 |
|---|---|

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(b) A scanner is used to get the input required for each assignment.  In the space below, write code that could be used to create an Assignment using the input provided.  Assing this assignment to index 0 in the gradebook.

```
gradebook[0] = new Assignment(name, points, dueDate, counts);
```

|  | /2 |
|---|---|

(c) Below is a list of assignments that have been stored in the array gradebook,

| Index | Name | Total Points | Counts Towards Grade | Due Date |
|---|---|---|---|---|
| 0 | Exam 1 | 18 | True | 09/01/23 |
| 1 | Exam 2 | 12 | True | 09/08/23 |
| 2 | Exam 3 | 17 | True | 09/15/23 |
| 3 | Lab 2 | 20 | False | 09/15/23 |
| 4 | Ticket Out the Door 4 | 5 | True | 09/02/23 |

In the space below, indicate how you could find the assignment worth the most points.   Once you have located the assignment, print its corresponding information.  For example,

Lab 2 is worth 20 points

```
int high = gradebook[0].totalPoints;
int highIndex = 0;
for(int i = 1; i < gradebook.length;i++){
    if(gradebook[i].totalPoints > high){
        high = gradebook[i].totalPoints;
        highIndex = i;
    }
}
String result = gradebook[highIndex].name + " is worth " +
gradebook[highIndex].totalPoints + " points";
System.out.println(result);
```

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|---|---|

(d) A gradebook can be visualized as a series of parallel arrays as follows. Where the values in each array represent the total points earned on the corresponding assignment.

|  | Exam 1 | Exam 2 | Exam 3 | Lab 2 | Ticket Out the Door 4 |
|---|---|---|---|---|---|
| **Bart** | 15 | 9 | 14 | 20 | 2 |
| **Homer** | 14 | 11 | 12 | 18 | 4 |
| **Wilma** | 12 | 12 | 9 | 17 | 5 |

```
int Bart[] = {15, 9, 14, 20, 2};

int Homer[] = {14, 11, 12, 18, 4};

int Wilma[] = {12, 12, 9, 17, 5};
```

The `avgGrades` array stores the average grade for each assignment as a percentage. For example,

```
int avgGrades[] = {75, 88, 68, 92, 73}
```

In space below, write an algorithm that does the following,

- Declares and initializes a the `avgGrades` array
- Computes the average grade on each assignment and stores the result as a percentage in the appropriate index. Each index in the `avgGrade` array should map to the correct assignment in gradebook array.

```
    int avgGrades[] = new int[gradebook.length];


    for(int i = 0; i < gradebook.length;i++){
        avgGrades[i] = (int)(((Bart[i] + Homer[i] +
Wilma[i])/3.0)/gradebook[i].totalPoints*100);
    }
```

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(e) A report card needs to be generated for each student. Consider the report card for Bart,

Exam 1: 15/18
Exam 2: 9/12
Exam 3: 14/17
Lab 2: 20/20*
Ticket Out the Door 4: 2/5
Final Grade: 77.0

In the space below, write code that could be used to create the output shown for Bart. Assignments marked with an asterisk are not included in the final grade calculation.

```java
String reportCard = "";
double totalEarned = 0;
double totalPoints = 0;
for(int i = 0; i < Bart.length;i++){

    reportCard += gradebook[i].name + ":\t" + Bart[i] +
     "/" + gradebook[i].totalPoints;

     if(!gradebook[i].countInGrade){
        reportCard += "*";
     }else{
        totalEarned += Bart[i];
        totalPoints += gradebook[i].totalPoints;
     }
     reportCard += "\n";
}
double finalGrade = Math.round(totalEarned/totalPoints * 100);
reportCard += "Final Grade = " + finalGrade;
System.out.println(reportCard);
```

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Score _____/17