

1 Introduction

Each exercise should be its own separate project.

Remember to follow the coding and documentation standards for the class listed on the MyClasses pages.

When you are ready to submit your work create a folder called Homework06 in that folder have separate folders for each project, one folder per project. Put all the code files needed for that project in its respective folder. Do not include the files that the IDE creates, I just want the code files. Zip the entire Homework06 folder up into a single zip file and submit it.

2 Exercises

1. This exercise is for you to develop a program using parallel arrays. Since arrays store only one type of data we cannot store strings and doubles in the same array structure. So if we had to store a person's name and numeric information about that person we could use two arrays, one array to store names and then another array to store the numeric data. The program will ask for the number of students in the class at the beginning, make sure you error check this to be greater than 0.

Write a program that will take in information about a class, that is, student's names and exam grades and printout a report of the class including averages and grade projections for the final exam. Use 4 parallel arrays, a one-dimensional array of strings to hold the student's names, a two-dimensional array with 4 columns to hold the exam grades, a one-dimensional array to hold the exam averages for each student, and a two-dimensional array to hold the projections. Load the data into the array as shown in the example below. The exam averages are calculated as usual, exam sum divided by 4. The grade projections are the number of points needed on a 200 point final to get the listed grade based on a 90-80-70-60 scale. If the projection is above 200 (and hence not possible) the program will display NA and if the projection is negative (the student already has enough points) then the projection displays 0. To calculate the projection you take the needed percentage in decimal form, multiply by 600 (total number of points) and subtract the sum of their 4 exam scores. So in the example below for me to get a B, I need,

$$0.8 \cdot 600 - (75 + 82 + 73 + 77) = 173$$

points.

```
Input the number of students in the class: 3
Input student 1 name: Don Spickler
Input Exam 1 score for Don Spickler: 75
Input Exam 2 score for Don Spickler: 82
Input Exam 3 score for Don Spickler: 73
Input Exam 4 score for Don Spickler: 77
```

```

Input student 2 name: John Doe
Input Exam 1 score for John Doe: 43
Input Exam 2 score for John Doe: 37
Input Exam 3 score for John Doe: 22
Input Exam 4 score for John Doe: 17

Input student 3 name: Jane Public
Input Exam 1 score for Jane Public: 99
Input Exam 2 score for Jane Public: 95
Input Exam 3 score for Jane Public: 100
Input Exam 4 score for Jane Public: 97

```

Student's Name	Exam Scores				Avg.	A	Projections			D
	Exam 1	Exam 2	Exam 3	Exam 4			B	C		
Don Spickler	75.00	82.00	73.00	77.00	76.75	NA	173.00	113.00	53.00	
John Doe	43.00	37.00	22.00	17.00	29.75	NA	NA	NA	NA	
Jane Public	99.00	95.00	100.00	97.00	97.75	149.00	89.00	29.00	0.00	

2. In this exercise we will generalize the last exercise. Here we will take in the number of students in the class, the number of exams (all assumed to be 100 points), and the number of points remaining in the course, make sure you error check these to be greater than 0. Use the same parallel arrays but alter their sizes accordingly.

```

Input the number of students in the class: 2
Input the number of exams: 5
Input the points remaining: 250
Input student 1 name: Don Spickler
Input Exam 1 score for Don Spickler: 87
Input Exam 2 score for Don Spickler: 79
Input Exam 3 score for Don Spickler: 82
Input Exam 4 score for Don Spickler: 71
Input Exam 5 score for Don Spickler: 70

```

```

Input student 2 name: John Doe
Input Exam 1 score for John Doe: 100
Input Exam 2 score for John Doe: 97
Input Exam 3 score for John Doe: 99
Input Exam 4 score for John Doe: 95
Input Exam 5 score for John Doe: 98

```

Student's Name	Exam Scores					Avg.	A	Projections			D
	Exam 1	Exam 2	Exam 3	Exam 4	Exam 5			B	C		
Don Spickler	87.00	79.00	82.00	71.00	70.00	77.80	NA	211.00	136.00	61.00	
John Doe	100.00	97.00	99.00	95.00	98.00	97.80	186.00	111.00	36.00	0.00	