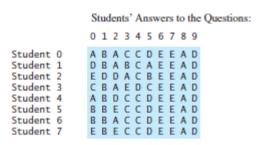# Java Programming Lab - Week 3

1. Write a program that will grade multiple-choice test. Assume there are eight students and ten questions, and the answers are stored in a two-dimensional array. Each row records a student's answers to the questions, as shown in the following array.

Students' Answers to the Questions:

	0	1	2	3	4	5	6	7	8	9
Student 0	A	B	A	C	C	D	E	E	A	D
Student 1	D	B	A	B	C	A	E	E	A	D
Student 2	E	D	D	A	C	B	E	E	A	D
Student 3	C	B	A	E	D	C	E	E	A	D
Student 4	A	B	D	C	C	D	E	E	A	D
Student 5	B	B	E	C	C	D	E	E	A	D
Student 6	B	B	A	C	C	D	E	E	A	D
Student 7	E	B	E	C	C	D	E	E	A	D

The key is stored in a one-dimensional array:

Key to the Questions:

	0	1	2	3	4	5	6	7	8	9
Key	D	B	D	C	C	D	A	E	A	D

Sample Run:

```
Student 0's correct count is 7
Student 1's correct count is 6
Student 2's correct count is 5
Student 3's correct count is 4
Student 4's correct count is 8
Student 5's correct count is 7
Student 6's correct count is 7
Student 7's correct count is 7
```

2. Given a set of points, find the two points that are nearest to each other. Sample Input and output are shown below.

	x	y
0	-1	3
1	-1	-1
2	1	1
3	2	0.5
4	2	-1
5	3	3
6	4	2
7	4	-0.5

```
The closest two points are (1, 1) and (2, 0.5)
```

3. Write a program that ignores nonalphanumeric characters in checking whether a string is a palindrome.

Here are the steps to solve the problem:

1. Filter the string by removing the nonalphanumeric characters. This can be done by creating an empty string builder, adding each alphanumeric character in the string

to a string builder, and returning the string from the string builder. You can use the **isLetterOrDigit(ch)** method in the **Character** class to check whether character **ch** is a letter or a digit.

2. Obtain a new string that is the reversal of the filtered string. Compare the reversed string with the filtered string using the equals method.

Sample Runs:

```
Enter a string: ab<c>cb?a  ↵Enter
Ignoring nonalphanumeric characters,
is ab<c>cb?a a palindrome? true
```

```
Enter a string: abcc><?cab  ↵Enter
Ignoring nonalphanumeric characters,
is abcc><?cab a palindrome? false
```