

University of Cape Town ~ Department of Computer Science

Computer Science 1015F ~ 2007

Practical Test 4B – Test One

Time: 45 minutes

Write a program to count votes in a simple election.

Assume there are 5 candidates (numbered 1-5) and 5 voters.

For example, the votes (4, 2, 2, 4, 5) will yield counts of (0, 2, 0, 2, 1).

The user must enter 5 numbers and the vote counts must be stored in an array (integer of size 5). Finally, the vote counts must be printed out.

You may use object-oriented programming or you may write the code entirely within the main method if you wish.

You may consult your paper notes and textbook, but no electronic resources. You may NOT use a search engine or consult any Web resources (including Vula) or files on your flash disk, hard drive, etc.

Submit the Java source files to Vula, using a Zip file if necessary. Name your file **PTest4BOne.java** or **PTest4BOne.zip**.

Marking Guide:

- *Correctness: Definition of array:10%, Input: 25%, Calculation: 15%, Output: 10%*
- *Comments (Documentation): 40%*

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Practical Test 4B – Test Two

Time: 45 minutes

Write a program to convert a list of numbers to a list of (approximate) percentages of the total values.

For example, the numbers (1, 2, 3, 4, 5) will yield (6, 13, 20, 26, 33).

The user must enter a list of 5 numbers and these must be stored in an array (integer of size 5). Finally, the percentages must be printed out. If you use integers, like in the example, do not worry if your percentages do not add up to precisely 100.

You may use object-oriented programming or you may write the code entirely within the main method if you wish.

You may consult your paper notes and textbook, but no electronic resources. You may NOT use a search engine or consult any Web resources (including Vula) or files on your flash disk, hard drive, etc.

Submit the Java source files to Vula, using a Zip file if necessary. Name your file **PTest4BTwo.java** or **PTest4BTwo.zip**.

Marking Guide:

- *Correctness: Definition of array:10%, Input: 25%, Calculation: 15%, Output: 10%*
- *Comments (Documentation): 40%*

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Practical Test 4B – Test Three

Time: 45 minutes

Write a program to calculate the variance of each number in a list. To calculate a variance, you first calculate the average – then, for each value, subtract it from the average and square the result.

For example, the numbers (1, 2, 3, 4, 5) will have an average of 3, so the variances will be (4, 1, 0, 1, 4).

The user must enter a list of 5 numbers and these must be stored in an array (integer of size 5). Finally, the variances must be printed out.

You may use object-oriented programming or you may write the code entirely within the main method if you wish.

You may consult your paper notes and textbook, but no electronic resources. You may NOT use a search engine or consult any Web resources (including Vula) or files on your flash disk, hard drive, etc.

Submit the Java source files to Vula, using a Zip file if necessary. Name your file **PTest4BThree.java** or **PTest4BThree.zip**.

Marking Guide:

- *Correctness: Definition of array:10%, Input: 25%, Calculation: 15%, Output: 10%*
- *Comments (Documentation): 40%*

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Practical Test 4B – Test Four

Time: 45 minutes

Write a program to check if a list of numbers is symmetrical.

For example, the numbers (1, 2, 3, 4, 5) are not symmetrical, but the numbers (1, 2, 3, 2, 1) are symmetrical.

The user must enter a list of 5 numbers and these must be stored in an array (integer of size 5). Finally, print out a message to indicate if the list is symmetrical or not.

You may use object-oriented programming or you may write the code entirely within the main method if you wish.

You may consult your paper notes and textbook, but no electronic resources. You may NOT use a search engine or consult any Web resources (including Vula) or files on your flash disk, hard drive, etc.

Submit the Java source files to Vula, using a Zip file if necessary. Name your file **PTest4BFour.java** or **PTest4BFour.zip**.

Marking Guide:

- *Correctness: Definition of array:10%, Input: 25%, Calculation: 15%, Output: 10%*
- *Comments (Documentation): 40%*