

Vanier College
Computer Science Department

Programming 2

LAB 1

Q1: What is the output of following codes?

a)

```
int[] data = {1,3,5,8,11,15};
int sum = 0;
for (int i = 1; i < data.length; ++i)
{
    sum = sum + data[i] - data[i-1];
    System.out.println("sum    = " + sum);
}
```

b)

```
int i;
int a[] = {5, 2, 3, 1, 1, 0, 2, 1, 0, 1};
for (i = 0; (i < a.length); i++)
{
    if (a[i] == 0)
        break;
    if (i % 3 == 0)
        continue;
    System.out.print(a[i])
}
```

Q2: Write the necessary statement to perform the following operations on 1-D arrays:

- a) Declare and initialize an array of 10 integers with the values -10.
- b) Add 1 to each of the 20 elements of an integer array called `values`.
- c) Read 7 values for a float array called `dailyTemperatures` from the keyboard.
- d) Print the 5 values of an integer array called `bestScores` in column format.

Q3: Given a sorted array, write a statement to find the k th largest element in the array
[1,2,3,4,5,6,7,8,9]

Q4: Write a program that prompts user to enter the size and elements of an array and display the largest element in the array. (Define a method `getLargest` to return the largest element)

Q5: Write a program to reverse the elements of an integer array. Note, your program should not just display the elements in reverse order but actually change the content of the array. For example, if the array contains:

1	2	3	4
---	---	---	---

then after your program, the array should contain:

4	3	2	1
---	---	---	---

Q6: Write a program that compares two arrays of characters (not Strings!) of the same size and determines if they contain the same elements (but not necessarily in the same order). For example, the following arrays contain the same elements:

'a'	'c'	'k'	'i'	'b'
'b'	'i'	'k'	'a'	'c'

so your program should display true.

Q7: Define a class called `Car` that could be used to store information about a car. The class should have instance variables to store the car's *brand*, *price*, *speed* (in km per hour), *inspectionReport*. (Define *brand* and *inspectionReport* as `String`, and *price* and *speed* as `double` variables). Add at least a **parametrized constructor** that allows the user of the class to set all instance variables. Add a non-static method called **ShowInspectionSummary** that returns the first

5 words from the inspectionReport (or the entire text if it is less than 5 words). Add a *static* method called **ComputeAveragePrice** that takes an array of cars as parameter and computes and returns the average price of the cars in the array. Add another *static* method called **ShowFastestCar** that takes an array of cars as parameter and returns the fastest car in the array. If several cars have the same speed, this method should return null. Also, your class should have a reasonable set of **accessor** and **mutator methods** (if you have not defined them), an **equals** method, and a **toString** method, whether or not your program uses them. You may add other methods if you wish.

b)(20 pts.)Test your class from your driver program. To do this, you could create an array of cars and test the methods defined in the class. (The array can be initialized inside the body of your driver code without prompting user OR can be filled after getting the user inputs).

A **sample input** array with 3 car elements is like:

Car1:
brand:RTO
price:8000
speed:120
inspectionReport: Durable engine, Comfortable Car, Nice Interior/Exterior Design

Car2:
brand:CVP
price:10000
speed:115
inspectionReport: Durable Suspension System, High Acceleration, Nice Handling

Car3:
brand:XGN
price:15000
speed:115
inspectionReport: Powerful AC, Silent Engine, Low Acceleration

In the **sample output**, your program should display *at least* the following information:

- Average price
- Fastest car
- Inspection summary (for at least one car)

Using the **sample input**, **part of sample output** looks like: (The format of displaying the information in the output is entirely up to you.)

Average Price:11000

Fastest Car:

[Brand: XGN Price: 15000 Speed: 115 Inspection Report: Powerful AC, Silent Engine, Low Acceleration]

Car2's Inspection Summary: Durable Suspension System, High Acceleration,