SYSC 2004 C and D: Object-Oriented Software Development **Lab No 4**: [1 mark]

The main objective of this lab No 4 is to learn how to use effectively the ArrayList collection in defining classes, and to learn and experiment with control flow structures such as a for-each loop, or a while loop, or an iterator. We will be using the MusicOrganizer class in the *music-organizer-v1* project, which makes use of the library class ArrayList (folder chapter 4, found in the source code folder in cuLearn).

Q1: Add a method called checkIndex to the MusicOrganizer class. It takes a single integer parameter and checks whether it is a valid index for the current state of the collection. To be valid, the parameter must lie in the range 0 to size()–1.

If the parameter is not valid, then it should print an error message saying what the valid range is. If the index is valid, then it prints nothing. Test your method on the object bench with both valid and invalid parameters. Does your method still work when you check an index if the collection is empty?

Q2: Write an alternative version of checkIndex called validIndex. It takes an integer parameter and returns a boolean result. It does not print any- thing, but returns true if the parameter's value is a valid index for the current state of the collection, and false otherwise. Test your method on the object bench with both valid and invalid parameters. Test the empty case too.

Q3: Rewrite both the listFile and removeFile methods in MusicOrganizer so that they use your validIndex method to check their parameter, instead of the current boolean expression. They should only call get or remove on the ArrayList if validIndex returns true.

Q4: Implement the listAllFiles method in your version of the music-organizer project (your are allowed to use either a for-each loop, or a while loop, or an iterator). Pick any appropriate one.