Computer Science 3A

Practical Assignment 5

9 March 2017

Time: 9 March 2017 13:45 – 17:00 Marks: 50

Practical assignments must be uploaded to `eve.uj.ac.za` **before** 17h00 in the practical session.

Late submissions **will not be accepted**, and will therefore not be marked. You are **not allowed to collaborate** with any other student. You **must** upload your assignment to Eve **before** it will be marked.

A popular drawing exercise among artists introduced by Kimon Nocolaïdes is a called blind contour mapping, where the artist draws the contour of a subject without looking at the paper or lifting their pencil. This exercise is typically good for warming up the artist and promotes right brain thinking. For this week's practical we are going to implement this exercise using a low level gui that stores the drawn lines that needs to be rendered on a canvas in an ArrayList. You are required to implement the following functions:

- **createArray** - A helper method for creating the underlying generic array.
- **add** - The method for adding an element to the ArrayList
- **remove** - The method for removing an element from the ArrayList.
- **front** - the methods that returns the front element in the queue.
- **expandArray** - The expand array function that creates a new array that depends on the strategy (1 for incremental and 2 for doubling) and copies the elements to the new array
- **iterator** - The method for returning the ArrayListIterator.
- **hasNext** - The ArrayListIterator method that returns true if there next() will return an element
- **next** - The ArrayListIterator method that returns the "next" item in the list and then advance the cursor.
- **paintComponent** - The overridden paintComponent method for rendering the lines
- **mouseReleased** - The mouse released method that indicates the end of a stroke and end of drawing.

You are required to implement a Java Program that realises the above operations.

The following files must be submitted to EVE:

1. *studentnumber*_p5.zip

Marksheet

1. ArrayList: createArray [5]
2. ArrayList: add [5]
3. ArrayList: remove [5]
4. ArrayList: expandArray [8]
5. ArrayList: iterator [2]
6. ArrayListIterator: hasNext [2]
7. ArrayListIterator: next [3]
8. SurfacePanel: paintComponent [8]
9. SurfacePanel: mouseReleased [2]
10. Compilation and Correct execution. [10]