WIA1002 Data Structure
Lab 2: Introduction to Data Structure

1. Create a class that used to generate N number of non-duplicate integer in between 0 – 100. The class must display the number in sorted list. The class must be generic to support array and linked-list implementation. Example output:

```
Generate 20 non-duplicate integer within 0-100
Linked List Implementation
0 10 14 18 27 31 35 43 49 50 52 54 55 61 67 76 81 84 97 100
Array Implementation
1 5 6 15 17 20 33 39 44 47 49 52 53 69 74 78 82 85 96 98
```

2. Create a TextFile based implementation named TextFileLog that implements the SimpleLog interface. The interface contains the following specifications:
   - A method to insert item to the log
   - A method to check whether the log is full
   - A method to get the size of the log
   - A method to check whether the item exists in the log
   - A method to delete the log
   - A method to display all items in the log

   Create a Tester class to test the program, given output below.

```
Create a text file log with maximum record equal to 5
Text File Log Size 5
James
Ahmad
Siti
Ramesh
John

Adding another record
The log is full
Searching for Siti in the file
Text File Log contains Siti
Clear the text file log
Text File Log Size 0
```

3. Create an ADT for the UNO card. This ADT contains the following specifications.
   - A method to draw the card for a number of times.
   - A toString method that returns the value of each card drawed.

   Implement the ADT using Array and LinkedList. Create a Tester class to test the program, given output below.

```
Array Implementation
Player 1 draws 7 times
Yellow Zero :: Yellow Draw Two :: Green Skip :: Draw Four :: Green Zero :: Yellow Three :: Red Zero ::
Array Implementation
Player 2 draws 7 times
Red Four :: Green Three :: Green Six :: Red Nine :: Yellow Five :: Yellow Four :: Blue Five ::

Linked List Implementation
Player 1 draws 7 times
Green Five :: Blue Reverse :: Pick Colour :: Green Reverse :: Red Nine :: Red Zero :: Red Two ::
Linked List Implementation
Player 2 draws 7 times
Green One :: Blue One :: Yellow Four :: Green Zero :: Green Draw Two :: Pick Colour :: Red Three ::
```