

Lab work (Java Collections)

1. Write a stack class that takes in an array of strings with the following city elements, "Blantyre", "Mzuzu", "Lilongwe", "Zomba", and "Bulawayo".

The stack should have the following methods

- a) **push()** that inserts elements and checks if the stack is full or not,
- b) **pop()** that removes an element,
- c) **peek()** that displays the top element,
- d) **isFull()** that checks if the stack is full,
- e) **isEmpty()** that checks if the stack is empty.
- f) Using a for loop, print out the elements from the stack, when printing, remember the principle of **LIFO**. Use a helper method **displayStack()**. Make sure that all use cases are fulfilled.

Sample output

```
Bulawayo
Zomba
Lilongwe
Mzuzu
Blantyre
```

2. Create a dynamic array of String type, and write a method that sorts elements in alphabetical order. The program should also have a helper method to print the unsorted and sorted elements.

Note: You need to have two classes, "Stack" and "DynamicArray" and they should be instantiated in the driver/main class.