In a team of 3-4, answer the following questions:

1. Name 2 examples of stacks found in the real world?

2. List 3 characteristics of a Stack in the software world.
   a.
   b.
   c.

3. List the methods (with parameter(s) + type, if any, and type of return value) of the Public Interface of a Stack data collection ADT class. You can use “ElementType” to indicate the type of the objects contained on the stack.

4. Design and draw the array-based data structure of a Stack ADT (include labels):
5. Design and draw the link-based data structure of a Stack ADT (include labels):

6. Which of your 2 data structure designs above is the most time efficient?
   Explain why by listing the time efficiency (in Big O notation) of their public methods:

7. **Problem Statement**: Write an algorithm, using only the methods of the List and Stack ADT Public Interfaces, that figures out whether a List containing the following elements 1 2 3 4 5 4 3 2 1 is a palindrome and a List containing the following elements 1 2 3 4 5 1 2 3 4 is not. The List ADT to be used is a position-oriented List ADT with the following Public Interface: insert(…), remove(…), retrieve(…), getElementCount( ), removeAll( ).

8. Give 2 examples of problems (not yet mentioned in our activity) we could solve using a Stack ADT: