NAME: Prepotente, Lorenze Niño F. Subject:Data Structure and Algorithms

Course/Year: BS Information System-2A Professor:Khristine Botin

**Activity Title:** Design Your Heap Challenge

**Objective:**

Empower students to collaborate and learn by designing a creative and engaging assessment centered on Heap Data Structures. Through this activity, partners will enhance their understanding of heaps while fostering teamwork, creativity, critical thinking, and problem-solving skills.

**Title: The Auto Mechanic’s Heap Challenge**

**Theme:** Manage the cars in a workshop using heaps to sort and prioritize them by speed!

**Explanation of the Challenge**

In "The Auto Mechanic’s Heap Challenge," you will manage a list of cars by their speeds using the concept of heaps. Heaps are a type of binary tree that can be used to efficiently manage and prioritize data. Specifically, you will work with two types of heaps:

**Max-Heap:** A binary tree where the value of each node is greater than or equal to the values of its children. The largest value is at the root of the tree.

**Min-Heap:** A binary tree where the value of each node is less than or equal to the values of its children. The smallest value is at the root of the tree.

**You will complete the following tasks:**

* Insert cars with their speeds into a Max-Heap and display the heap after each addition.
* Convert the Max-Heap into a Min-Heap for easier handling of slower cars.
* Heapify a random list of car speeds into a Max-Heap.

**Documentation:**   
