**Topic:** Abstracted Linked Lists

**Topic Introduction:**

The goal of this assignment is to implement a task management system using an abstracted linked list data structure in Java. Linked lists are a fundamental data structure in computer science that enable the efficient storage and manipulation of collections of items. In this lab, you will learn how to create and manipulate a linked list to manage tasks in a task management system.

**Assignment Goals:**

* Gain an understanding of linked lists as a data structure.
* Learn how to create and manipulate a linked list in Java.
* Practice object-oriented programming principles by abstracting the linked list into a separate class.
* Implement a task management system using the abstracted linked list.

**Assignment Description:**

* Create a Task class that has the following attributes
  + String title: the title of the task
  + String description: a brief description of the task
  + boolean completed: a flag indicating whether or not the task has been completed
* Create an Abstracted Linked List that will be used to store Task objects. This class should have the following methods:
  + add(Task t): add a new task to the linked list
  + remove(Task t): remove a task from the linked list
  + get(int index): retrieve a task at a specific index in the linked list
  + Size(): return the number of tasks in the linked list
* Create a TaskManager class that will act as the interface for the task management system. This class should have the following methods:
  + addTask(String title, String description): create a new task with the given title and description, add it to the linked list, and return the task
  + removeTask(Task t): remove the given task from the linked list
  + completeTask(Task t): mark the given task as completed
  + printTasks(): return a list of all tasks in the linked list
  + printCompletedTasks(): return a list of all completed tasks in the linked list
* Test the TaskManager class by creating a main method that adds tasks, completes tasks, and retrieves tasks from the linked list.

**Key:**

The key code is provided in the Key Code Folder within the Assignment folder.