National University of Computer & Emerging Sciences (NUCES) Islamabad,
Department of Computer Science

DATA STRUCTURES – FALL 2021

LAB 01

Learning Outcomes

In this lab you are expected to learn the following:

- Abstract Data Type (ADT)

Objective

To understand Abstract data type and its operations in practical perspective.

Abstract Data Type:

To process data with a computer, we need to define the data type and the operation to be performed on the data. The definition of the data type and the definition of the operation to be applied to the data is part of the idea behind an abstract data type (ADT). ADT means to hide how the operation is performed on the data. In other words, the user of an ADT needs only to know that a set of operations are available for the data type, but does not need to know how they are applied.
In data structures there are many ADT like list ADT, stack ADT, queue ADT and so on. In this lab we will implement a list ADT.

Task:

Consider a scenario of a restaurant E-menu system. You have to write a java program for restaurant E-menu and use the concept of abstraction in it. There should be three classes: Restaurant, Menu and Dish each having their own attributes and methods. Your E-Menu system should be able to provide the following functionalities:

- **Add dishes to a certain menu**
- **Update price of certain dish**
- **Remove certain dish from menu**
- **Display complete menu**
- **Add different menus to restaurant**

Your task is to implement these functionalities in java and show the proper running of the program. If you complete the task then you can enhance this task by adding more functionalities in it.

Food Mall		
Continental Menu	**Pakistani Menu**	**Italian Menu**
Chicken Chow Mein	Chicken Tikka	Beef Lasagna
Egg Fried Rice	Chicken Karahi	Creamy Alfredo Pasta
Mongolian Beef	Butter Handi	Chicken Fettucini