Design Defects & Restructuring

Week 1: 27 Aug 2022

Rahim Hasnani

Introduction

- Instructor Intro
- Style: More of facilitator
- Motivation to teach this course
- Students' introduction & expectations

Course Outline & Policies

- Outline
- Whether this course is right for you
- Effort expectation
- Assignment copying/similarity policy
- Late submission policy
- Projects Discussion
- Home works

Recap OOP

- Class, Object, Attributes, Behaviors
- Inheritance, encapsulation, overloading vs overriding
- Virtual functions/methods
- Static members and Static functions
- Abstract class
- Interfaces
- Abstract class vs interface
- Static Class
- Inner Classes
- Struct vs Class

Recap Elementary OOA&D

- Basic relationships
  - Is-A
  - Has-A
  - Association
- Nouns and Verbs
- Basic Class Design

Exercise:

- Provide definition and implementation of a class called IntList. The class should use a fixed sized array to store numbers and should implement the following.

a. Allow user to add an element (a number) to the list
b. Allow user to remove a number from the list by specifying its position (index)
c. Allow user to clear the list
d. Allow user to find out the number of elements in the list
e. Throw an exception if the list has no capacity during the add operation
f. Provide arithmetic mean of the list.
g. Provide range of the list (e.g., Range of { 3, 6, 7, 10, 4, 2 } is 9).

Exercise

- Design classes for the following scenario:

Each Item has a code, name and a price. A Food Item additionally captures the expiry date and a flag identifying whether it is suitable for vegetarians. Provide class definitions identifying data members, accessors (member functions to get/set properties), inheritance relationships (if any), operations and access specifiers.