

**Assignment No. 2**  
**Object Oriented Programming Using C++**  
**BEE-11CD**

**Date: 31<sup>st</sup> March 2020**  
**Due Date: 15<sup>th</sup> April 2020**

*(Don't get upset with the length of this document this Assignment is a piece of cake for you)*

This is a great example of behavior factoring between a super class and its subclasses.

**An object never forgets its Super class.**

For this problem, you will design C++ classes suitable for storing information about university instructors. The goal of the example is to demonstrate arranging classes in a hierarchy for maximum code-sharing. There are three types of instructor:

- Faculty
- Lecturer
- Grad student

At any time, an instructor can best be described by three quantities:

- Number of unread e-mail messages
- Age
- Number of eccentricities

There are two measures of an instructor's current mood:

- Stress
- Respect.

### **Stress:**

An instructor's stress level is the number of unread messages. However, Stress is never more than 1000. Grad students are the exception. Their stress is double the number of unread messages and their maximum stress is 2000.

### **Respect:**

Generally, an instructor's level of respect in the community is their age minus the number of eccentricities. Respect can never be negative. Faculty is exception— Faculty eccentricities are regarded as "signs of a troubled genius" thereby increasing respect. So for faculty respect is age *plus* number of eccentricities.

## Program Logic:

Everything in an instructor's life is driven by receiving e-mail. Several things happen when an instructor gets new, un-read e-mail:

- First, the amount of unread-mail is increased.
- Second, 90% of the time, there will be no change in the number of eccentricities. 10% of the time the number of eccentricities will randomly go up or down by one.
- Third, the new unread mail may cause the instructor's Stress factor to become larger than their Respect factor which makes the instructor unhappy. In this case, instructors have different coping mechanisms. Faculty reacts by gaining 10 eccentricities. Lecturers react by accidentally deleting half their unread mail. Grad students react by reading all of their unread mail. The resulting mental anguish causes the Grad student's eccentricities to go up or down by one randomly. The coping mechanisms may or may not bring the Stress and Respect factors back in line. The coping mechanism is activated at most one time for each batch of incoming mail.