**National University of Computer and Emerging Sciences, Lahore Campus**

**Course**

**Name:**

**Program:**

**Duration:**

**Paper Date:**

**Section:**

**Exam:**

**Data Structures**

**BS(CS)**

**1.5**

**Hours**

**11**

**-**

**Oct**

**-**

**23**

**BCS**

**-**

**H**

**3**

**Quiz**

**-**

**1**

**Course Code:**

**Semester:**

**Total Marks:**

**Weight:**

**Pages:**

**CL2001**

**Fall 2023**

**50**

**7.5**

**%**

**2**

**Student**

**:**

**Name:**

**Roll No.**

**Section:**

**Instruction/Notes:**



# Scenario: Collaborative Technical Societies Event at FAST-NUCES

At FAST-NUCES, Lahore, an electrifying and groundbreaking collaborative event is about to unfold on the horizon! Picture this: multiple technical societies, each with its own distinct identity, vibrant energy, and unwavering passion, are converging to orchestrate a monumental extravaganza. While these societies usually tread their own paths and blaze trails independently, they've made a collective pact to join forces for a spectacular mega-event, and the epicenter of this thrilling convergence is none other than SOFTEC. With the visionary guidance of the esteemed Director of FAST-NUCES, this event promises to be an exhilarating fusion of boundless innovation, cutting-edge technology, and a splash of artistic creativity that will leave everyone in awe. Get ready to witness history in the making!

**Requirements:**

1. Create a class or system to manage the collaborative event and participants from various societies.
2. Each participant has the following attributes:
   * Student ID (an integer)
   * Name (a string)
   * Email (a string)
3. Implement the following operations in the class or system:
   * Add a participant to the event with their Student ID, name, and email.
   * Remove a participant from the event by Student ID.
   * Display the list of participants from all societies.
   * Ensure that a participant can belong to multiple societies.
4. Develop a function to find common students who are members of multiple technical societies participating in the event. You have membership lists for each society, and the function should identify students who belong to more than one society, creating a list of their records.
5. Implement a function to merge the memberships of all participating societies into a single, comprehensive membership list for the collaborative event. Ensure that this merged list contains unique student records.
6. Create a function to remove any duplicate student memberships within each society's membership list. If a student's ID appears more than once in a society's membership list, only keep one instance of their record.