**GTU Department of Computer Engineering**

**CSE443 Object Oriented Analysis and Design**

**Fall 2021 - Homework 3 Report**

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**Question 1**

**Question 2 – Composite and Iterator**

**Solution**

**2.1 Understanding the problem**

The problem is like the following picture;

Diagram

Description automatically generated

Here, emails contains both address and name of its owner, groups contains an arbitrary number of personal or group addresses also **groups are composite, emails are leaf**.

**2.2 Class Diagram**

**2.2.1 Classes in my solution**

Graphical user interface, application

Description automatically generated

**2.2.2 Composite Pattern Class Diagram**

Graphical user interface, text

Description automatically generated

Here, EmailComponent class is abstract class, Email is leaf class and CompositeEmail is a composite class with add, remove and get methods.

**2.2.3 Full Class Diagram**

Here, we will see full diagram note that I used iterator design pattern to traverse all tree easily as expected in homework pdf file.

Graphical user interface

Description automatically generated

Here, Composite iterator implements java.util iterator interface to use in composite email class. NullIterator class is used in Email leaf class. Main class is for test purpose.

**2.3 Test Results**

Check Main.java class and run to see results. A part of result is following;

**A screenshot of a computer

Description automatically generated with medium confidence**