EAST WEST UNIVERSITY
Department of Computer Science & Engineering
B.Sc. in Computer Science and Engineering Program
Final Examination, Fall 2020 Semester

Course:	**CSE347 Information System Analysis and Design, Section-1**
Instructor:	**Md. Mohsin Uddin, Senior Lecturer, Department of CSE**
Total Marks:	**40 (20 will be counted for final grading)**
Time:	**1 Hour and 10 Minutes**

Note: There are **four** questions, answer all of them. Course Outcome (CO), Cognitive Level and Marks of each question are mentioned at the right margin.

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1. Write unit testing code for the following program. Make sure all the methods are tested and the timeouts of all methods' call are at most 100ms. [CO3,C3, Marks:14]

```java
import java.util.Arrays;
public class MyList<E> {
    private int size = 0;
    private static final int DEFAULT_CAPACITY = 10;
    private Object elements[];
    public MyList() {elements = new Object[DEFAULT_CAPACITY];}
    public void add(E e) {
        if (size == elements.length) {ensureCapa();}
        elements[size++] = e;
    }
    private void ensureCapa() {
        int newSize = elements.length * 2;
        elements = Arrays.copyOf(elements, newSize);
    }
    public E get(int i) {
        if (i>= size || i <0) {
            throw new IndexOutOfBoundsException("Index: " + i + ", Size " + i );
        }
        return (E) elements[i];
    }
    public static void main(String[] args) {
        MyList<String> list = new MyList<>();
        list.add("Bangladesh"); list.add("USA");
        String item = list.get(0);
    }
}
```

2. Each of the following scenarios represents a specific user interface design golden rule. **Identify** the specific golden rule for each scenario as well as **justify** your answers. [CO3,C3, Marks:6]

a. "A set of applications (products) should implement the same design rules."

b. "The normal users should not aware about operating system, file management functions and other technology used in the system etc."

c. "Accomplish a system function (e.g. alt + P to invoke print function), the mnemonic should tied up with the option in such a way that it is easy to remember. e.g : 'P' for print."

3. Consider the following component description of a e-commerce system. **Construct** a UML component diagram for the system. [CO3,C4, Marks:10]

"A e-commerce system is comprised of three related subsystems - Online_Storage, Accounting, and Warehouses. Online_Storage subsystem comprises of three components related to e-commerce - Authentication, Search_Engine, and Item_Cart. Accounting subsystem comprises of three components related to e-commerce - Orders, Customers, and Accounts. Warehouse subsystem has only one component named Inventory. Search_Engine component allows to search or browse items by exposing provided interface Product Search and uses required interface Search Inventory provided by Inventory component. Item_Cart component uses Manage Orders interface provided by Orders component during checkout. Authentication component allows customers to create account, login, or logout and binds customer to some account. Accounting subsystem provides two interfaces - Manage Orders and Manage Customers. Delegation connectors link these external contracts of the subsystem to the realization of the contracts by Orders and Customers components. Warehouses subsystem provides two interfaces Search Inventory and Manage Inventory used by other subsystems and wired through dependencies."

4. Consider the following simplified description of Apple iTunes application deployment. **Construct** a UML deployment diagram for the system. [CO3,C4, Marks:10]

"The iTunes setup application could be downloaded from iTunes website and installed on a home computer. After installation and registration iTunes application could communicate with Apple iTunes Store. Customer can buy and download music, video, TV shows, audiobooks, etc. and store it in media library. Mobile devices like Apple iPod Touch and Apple iPhone could update own media libraries from home computer with iTunes through USB, or could download media directly from Apple iTunes Store using some wireless protocol like Wi-Fi, 3G, or EDGE."