

CSE446: Project Part 01

Deadline: 14th August, 2025, 11 AM (Submit in Turnitin, Present Offline)

Disaster Recovery Training Management

It is the year 2025, and a powerful cyclone has caused severe damage to the coastal areas of your country. In the aftermath, various disaster recovery training programs are being organized to help affected communities learn **first aid, shelter rebuilding techniques, and safe food/water handling practices**.

You are assigned to design a **smart contract** for maintaining participant data and managing **training session schedules**.

Requirements:

You have to write a **smart contract** with the following features.

There will be **three types of users**:

1. **Admin**
2. **Participant**
3. **Trainer**

Add Participant Data:

Your system will offer options for all users — administrators, trainers, and participants — to **register themselves**.

The **participant** registration data should include at least:

- `id`
- `name`
- `age`

- `gender`
- `district`
- `training_interest` (must be one of: `first_aid`, `shelter_rebuild`, `food_safety`)
- `has_completed_training` (boolean)

Data Update: (*Admin only*)

The system should have an update function that can **only** be used by the admin. Using this function, the admin can:

- Update the `training_interest` (must be one of: `first_aid`, `shelter_rebuild`, `food_safety`)
- Update the `has_completed_training` property (boolean — once set to `true`, it cannot be changed back to `false`)

If the admin enters any invalid value for `training_interest` or other restricted fields, the update should fail, and an **appropriate error message** should be visible in the terminal.

Book Training Slot:

The smart contract should have functionality that allows participants to **book a training slot** with a trainer.

- Participants will pay a **small booking fee** to any admin (assume a fixed amount).
- Each training slot lasts **30 minutes**.
- If a trainer is already booked for a particular time slot, another participant **cannot** book them for that same slot.
- Example slots:
 - Slot 1: 9:00 AM – 9:30 AM
 - Slot 2: 9:31 AM – 10:00 AM

- Slot 3: 10:01 AM – 10:30 AM

Check Training Schedule:

All users — admin, participants, and trainers — should be able to view the **training schedule of every trainer**.

This system will ensure that **training sessions are efficiently organized, time conflicts are avoided, and participants receive proper disaster recovery guidance**.