Object Oriented Design 2024S

Stage 5 – Data updates

Introduction

In this stage, you will need to add a mechanism to the program that updates the state of previously loaded objects.

Data source

The data source simulating the network source used in the previous stages has been enriched with a mechanism for reporting changes in object data.

The source interface now includes 3 additional events:

1) OnIDUpdate – updates objects ID,
2) OnPositionUpdate – updates position component of the objects
3) OnContactInfoUpdate – updates objects contact information.

These events can be reported at any time while the data source is running. A system should be created that allows easy handling of new types of events updating objects.

OnIDUpdate

Event is defined in the following way:

```
public event IDUpdate? OnIDUpdate;
public delegate void IDUpdate(object sender, IDUpdateArgs args);
public class IDUpdateArgs
{
    public UInt64 ObjectID { get; init; }
    public UInt64 NewObjectID { get; init; }
}
```

ObjectID – current object ID,

NewObjectID – new object ID.

OnPositionUpdate

Event is defined in the following way:

```
public event PositionUpdate? OnPositionUpdate;
public class PositionUpdateArgs
{
    public UInt64 ObjectID { get; init; }
    public Single Longitude { get; init; }
    public Single Latitude { get; init; }
```

```
    public Single AMSL { get; init; }
}
```

ObjectID – current object ID,

Longitude – new longitude component,

Latitude – new latitude component,

AMSL – new AMSL component.

All displayed flights should be updated accordingly to the new data. If update is done to the flight or plane object. Current position of the flight/plane should be set to new values, and you should interpolate from this position to the target one. (Hint: use decorator to do this)

OnContactInfoUpdate

Event is defined in the following way:

```
public event ContactInfoUpdate? OnContactInfoUpdate;
public delegate void ContactInfoUpdate(object sender, ContactInfoUpdateArgs
args);
public class ContactInfoUpdateArgs
{
    public UInt64 ObjectID { get; init; }
    public string PhoneNumber { get; init; }
    public string EmailAddress { get; init; }
}
```

ObjectID – current object ID,

PhoneNumber – new phone number,

EmailAddress – new email address.

Integration

The updated data source is to work together with data loaded from the .ftr file. Application should first load all data from the .ftr file, then run the network source simulator with the given sample .ftre file and handle reported events (including those with new data) .

All changes made to existing data should be logged to a text file. The logs should contain information about the status before and after the modification. Logs from each day should be logged into separate files. It should be possible to distinguish between different application runs on the same day.

Attention!

The data source now accepts a file in the .ftre format.
All object should be in correct stage after the modifications.
If some modification would be illegal or object does not exist, information about this fact should be logged.

Deadline

2 weeks

All source files have to uploaded to the repository by 24th April 2024 at 11:59 PM.

The project has to be presented to the teacher during the lab on the 25th of April 2024.