

### Benefits of OO software design and development:

- It was easy to implement because everything was modularized into different classes which in turn perform different functionality. Hence it was easy you add or remove functionality based on the requirement changes.
- Since we followed a OO Software design we able to find the requirements and the changes during the design time i.e. before the coding phase from the usecase diagrams, class diagrams and activity diagrams which helped us to get an idea about the implementation.

### Challenges of OO software design and development:

- It is a time consuming process as we need to develop the various diagrams and specification document before the actual coding.
- Writing the testcases and contracts are more challenging and difficult compared to actual coding.

**Eg:** *In our case we had issues in writing contracts for adding to the list. We just checked true or false which was obvious and wrong. We actually need to check if it is present in list. So we changed our contracts as per Professors Suggestion in the review.*

It is changed in librarian.java for the following methods

- add\_Member
- remove\_Member
- add\_Book
- remove\_Book

Changed code:

```
public boolean inserted(String s, Library l)
{
    int found=0;
    for(Journal x : l.journalist)
    {
        if (x.getBook_Name().equals(s))
            found=1;
    }
    for(Magazine x : l.magazinelist)
    {
        if (x.getBook_Name().equals(s))
            found=1;
    }
    for(Study_Books x : l.studybooklist)
    {
        if (x.getBook_Name().equals(s))
            found=1;
    }
    for(Reference_Books x : l.referencebooklist)
    {
```

```
        if (x.getBook_Name().equals(s))
            found=1;
    }
    if(found==1)
        return true;
    return false;
}

@Requires({"name!=null", "price>=0.00","cat!=null"})
@Ensures({"inserted(name,l)"})
public boolean add_Book(Library l,String name,double price,String cat)
{
    //....
}
```

### Overall Experience

From our experience we found that the OO Software design is more efficient and helpful in developing the software.