Object Modelling: Object Relationships and Communication

Object Modelling

1.

```
+------------------+          +------------------+
|  Library         |          |  Book            |
|  - name String   |          |  - title : String|
|                  |          |  - author: String|
|  + add Book():Void|         |  + getInfo(): void|
+------------------+          +------------------+
            |                          |
            +--------- <has> ----------+
```

2. Bank and account holder (Association)

```
+------------------+          +------------------+
|  Bank            |          |  Customer        |
|                  |          |  - name: String  |
|  - name: String  |          |  - email: String |
|  - branch: String|          |  - number: int   |
|  + openAccount():void|      |  + viewBalance():void|
+------------------+          +------------------+
            |                          |
            |  <---- < Associates> ----|
            |
            |-->
```
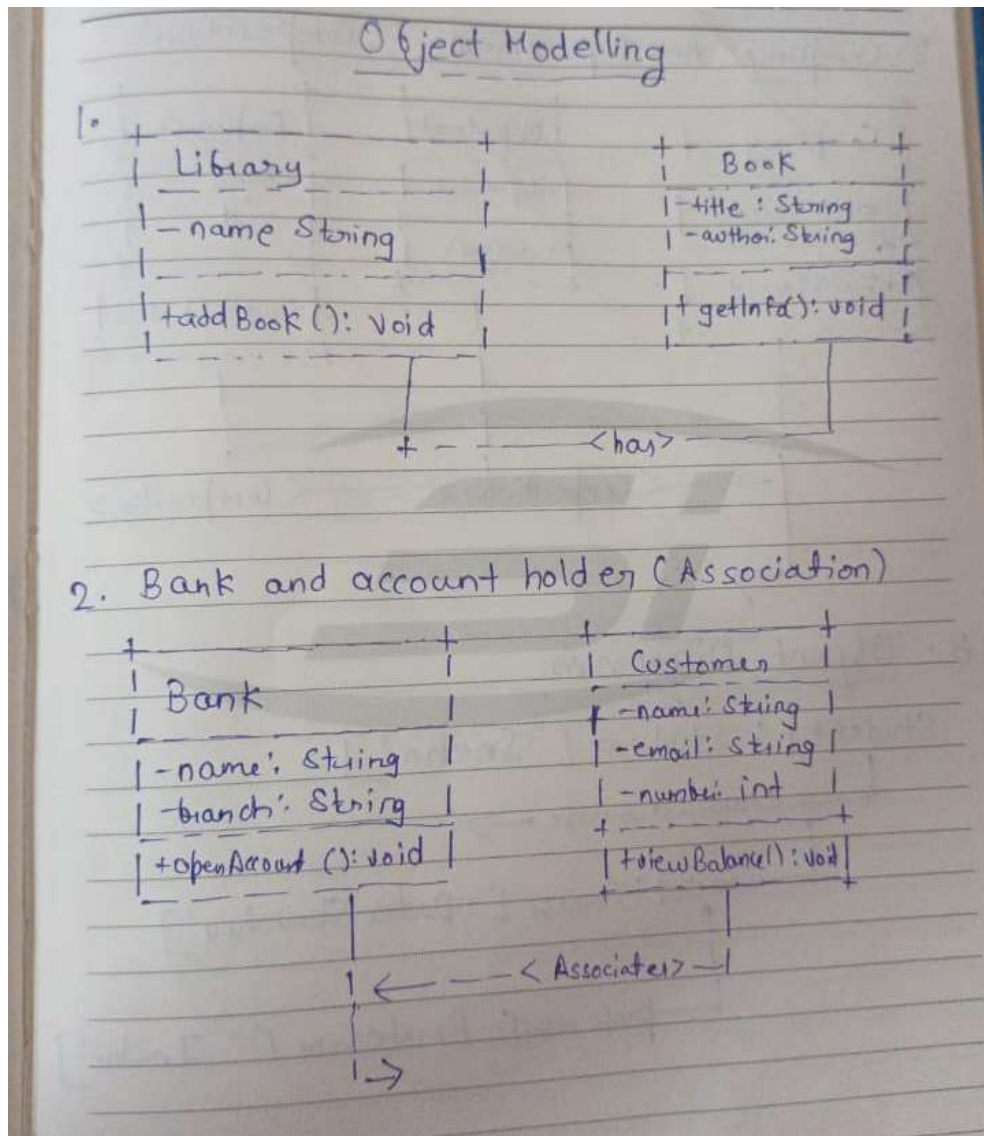
3. Company And Departments (Composition)

```
+----------------+        +-----------+     +-----------+
| Company        |        | Department|     | Employee  |
+----------------+        +-----------+     +-----------+
| +name: String  |        | -department|    | -name     |
+----------------+        +-----------+     | -id       |
| +hire(): void  |        | + assign() |    +-----------+
+----------------+        +-----------+     | +work()wk |
        |                      |            +-----------+
        |                      |                 |
        |                      |                 |
        |- - -<Composition>- - - -<Composition>
        |
        |_>
```
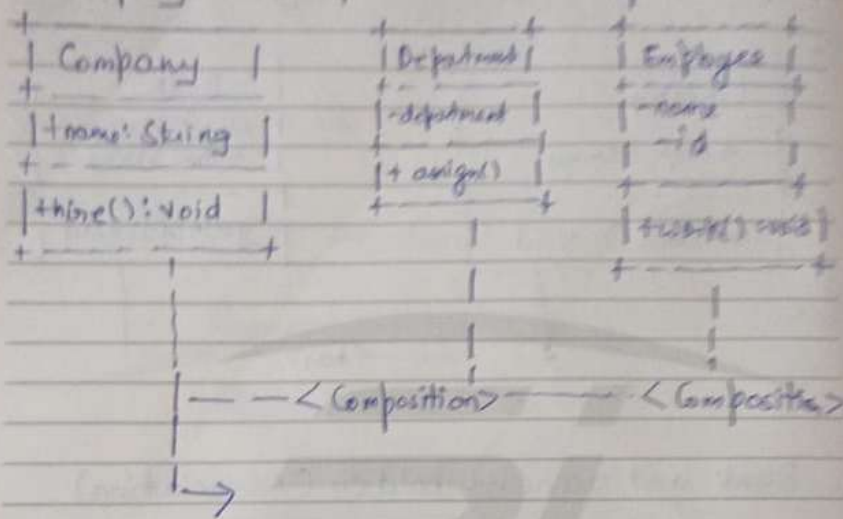
8. Object Diagram

```
Student1 : Student ["Sneha"]
   |_____ enrolledCourse →
        |____ Course1 : Course ["Data Structure"]
              ↑
              |____ professor1 : Professor ["Joshi"]
```
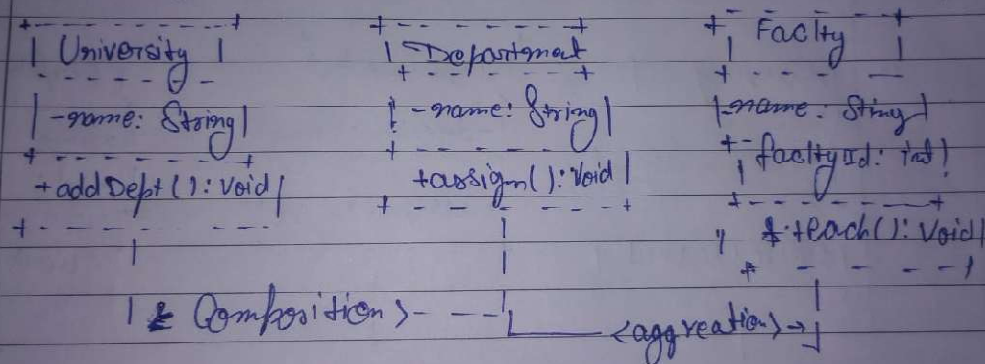
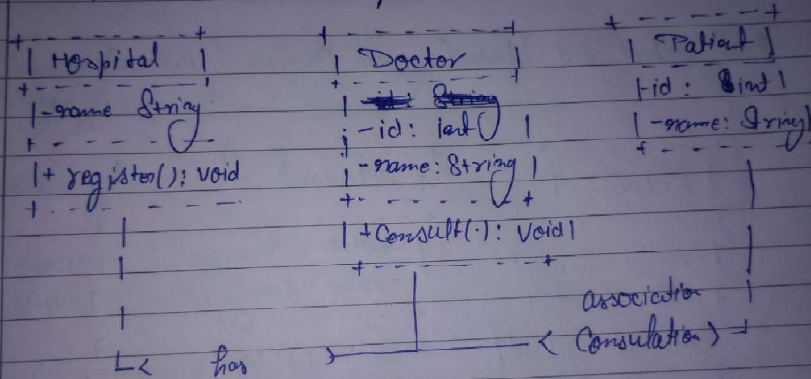4) School and Students with Courses (Association and Aggregation)

```
+----------+          +-----------+         +-------------+
| School   |          | Student   |         | Course      |
+----------+          +-----------+         +-------------+
|-name: String|       |-roll No : String|   |-Code: String|
+----------+          | -name : String  |   |-title: String|
: +admit (): Void |   +-----------+         +-------------+
+----------+          |+enroll (): Void |    |+listStuda():Void|
    |                 +-----------+         +-------------+
    |      aggreations    |                     |
    ----- <aggreation> ----+-- <association>----+
```
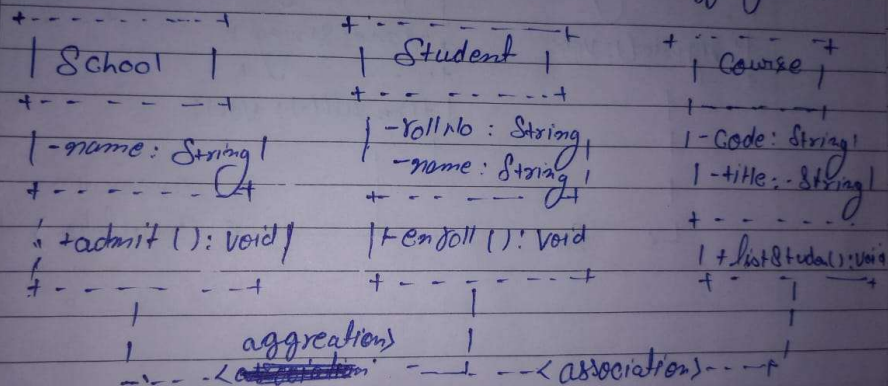
5) University with Faculties and Departments (Composition + Aggregation)

```
+-----------+        +------------+         +-----------+
| University |       | Department |         | Faclty    |
+-----------+        +------------+         +-----------+
|-name: String|      |-name: String|        |-name: String|
+-----------+        |+assign(): Void|       |+faclty Id: int|
|+add Dept (): Void|  +------------+         +-----------+
+-----------+             |                  |+teach(): Void|
     |                    |                  +-----------+
     |& Composition >----+       <aggreation>→|
```

5) Hospital, Doctors and Patient (Association + Communication)
```
+-------+
```

6) Hospital, Doctors and Patient (Association + Communication)

```
+--------------+         +--------------+        +- - - - - -+
| Hospital     |         | Doctor       |        | Patient   |
+- - - - -'    |         +- - -         |        +-id:  8int |
| -name String |         | -id: int     |        | -name: String |
+- - - - -     |         | -name: String|        +- - - - - -.
| + register(): void      +- - - - -    +        |
+- -            |         | +Consult(·): Void |   |
        |                +- - - - - - +          |
        |                        |               |
        +                        |          association |
       L<    has    >-----+------+--< Consultation > +
```

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7) E-Commerce Platform

```
+- - - - - +       +- - - - - +       +- - - - -+
| @ Customer|       | Order    |       | Product  |
+- - - - -. |       +- - - - - +       +- - - -.
| -name String |    | -orderId int |   | - productId
| -email: String|   | -date  Date  |   | -name
+- - - - -.  |      +- - - - - |       +- - - - +
| -placeOrder()|    | +processPayment(Void  | + getDetails()
+- - - -|           +- -   ·  - - +    +- - - - +
     |                    |                |
     +<- - -has - - >     |              +<--Contains>+
```