

# FLARN (Fun Learning) - Iteration 02

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## 1 Object Constraint Language (OCL)

1. After a session, a user's attempted problems cannot be empty and increase by one.

---

```
context User::participateSession(p : Problem)
    post: self.attemptedProblems->notEmpty() and
          self.attemptedProblems->size() =
            self.attemptedProblems@pre->size() + 1
```

---

2. User can attempt a problem only once.

---

```
context User::participateSession(p : Problem)
    pre: self.attemptedProblems->excludes(p)
```

---

3. Only Administrator can promote a user to moderator if target user is not already a moderator.

---

```
context User::promoteUser(t : User)
    pre: self.userType = #ADMIN and t.userType != #MODERATOR
```

---

4. A User can review a problem set only if he has already attempted the problem.

---

```
context User::reviewProblem(p : Problem)
    pre: self.attemptedProblems->includes(p)
```

---

5. Only an Admin or a moderator can add a problem set.

---

```
context User::addProblemSet(p : Problem)
  pre: self.userType = #ADMIN or self.userType = #MODERATOR
```

---

6. All Users must have user type either ADMIN or MODERATOR or LEARNER.

---

```
context User
  inv: User.allInstances()->forall(p | p.userType = #ADMIN
    or p.userType = #MODERATOR or p.userType = #LEARNER)
```

---

7. Every problem must have at least one question.

---

```
context ProblemSet
  inv: self.questions.size()->notEmpty()
```

---

8. There must be at least one administrator.

---

```
context User
  inv: User.allInstances()->exists(u | u.userType = #ADMIN)
```

---

9. A user can't subscribe himself.

We can impose this both in model and during subscription.

---

```
context User
  inv: self.subscribedUsers->excludes(self)
```

---

---

```
context User::subscribe(t : User)
  pre: self.id != t.id
```

---

10. A user can subscribe other user only if he hasn't already subscribed that user.

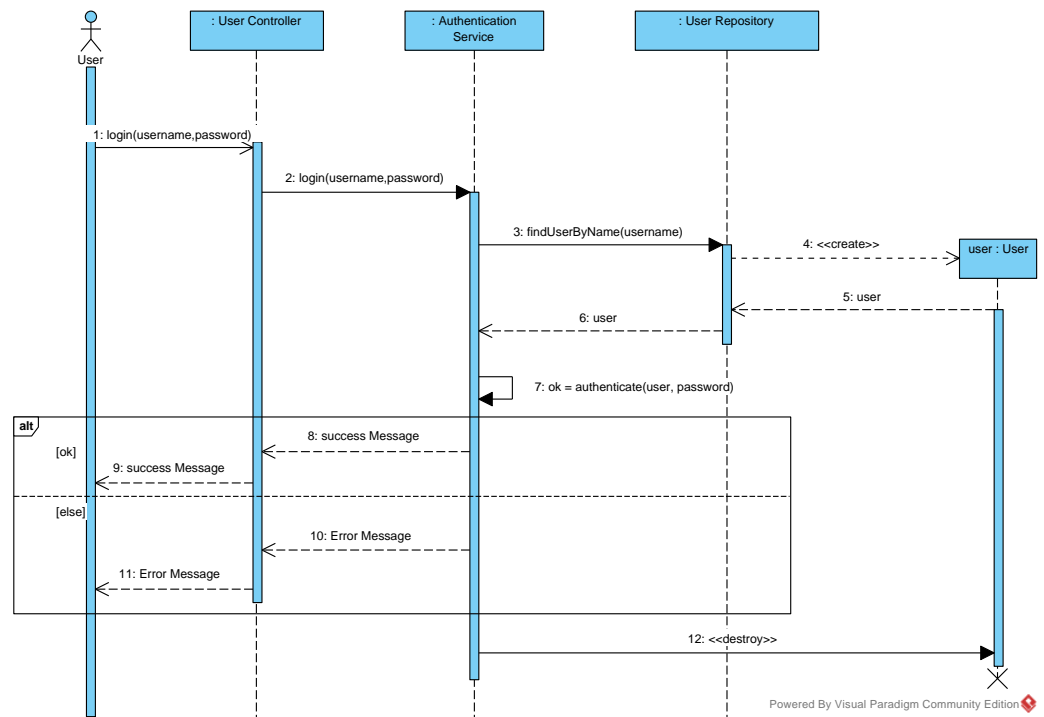
---

```
context User::subscribe(t : User)
  pre: self.subscribedUsers->excludes(t)
```

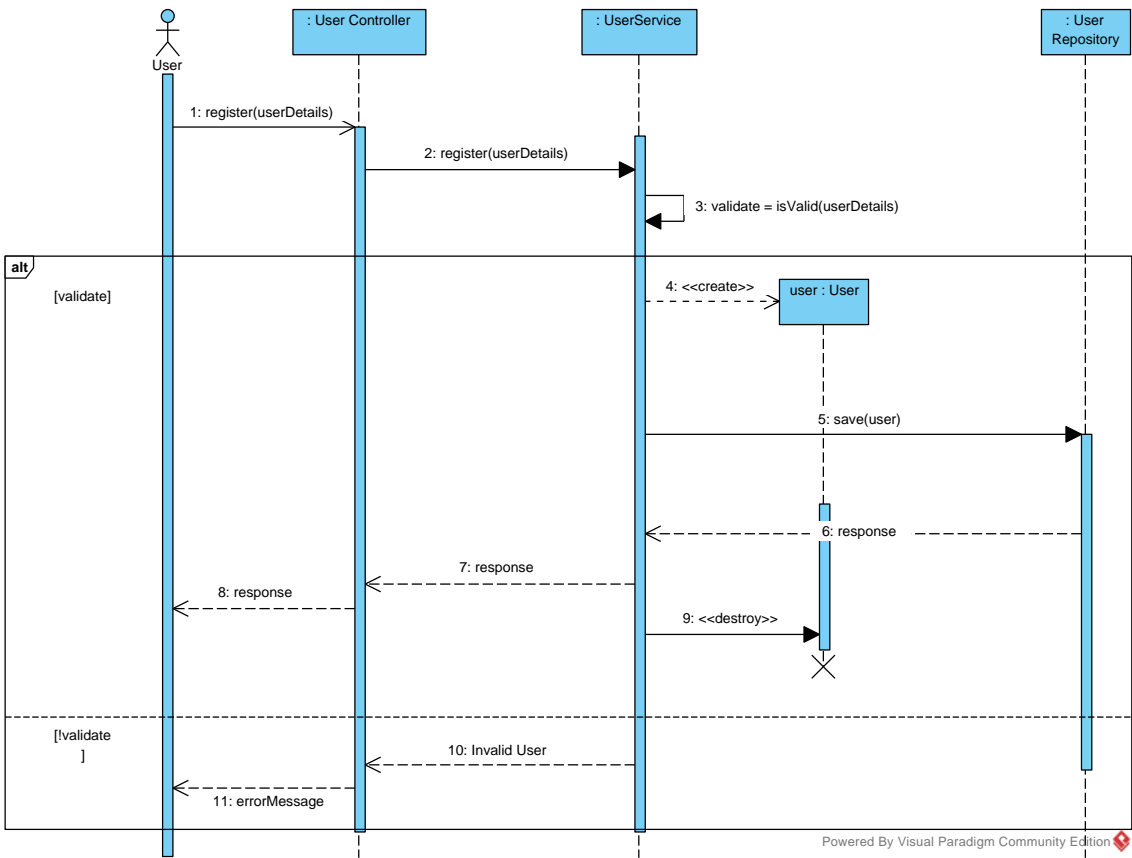
---

## 2 Sequence Diagrams

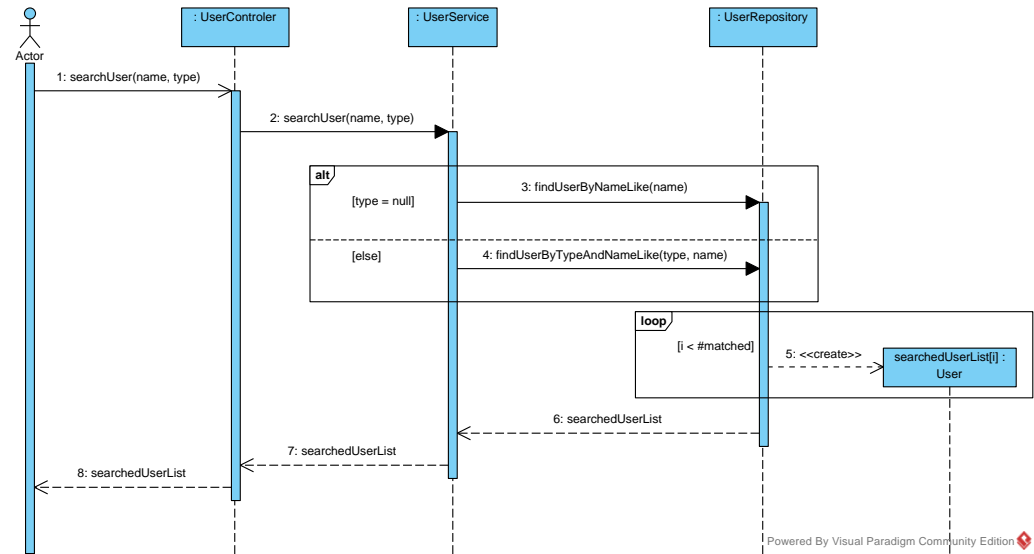
### 2.1 User Login



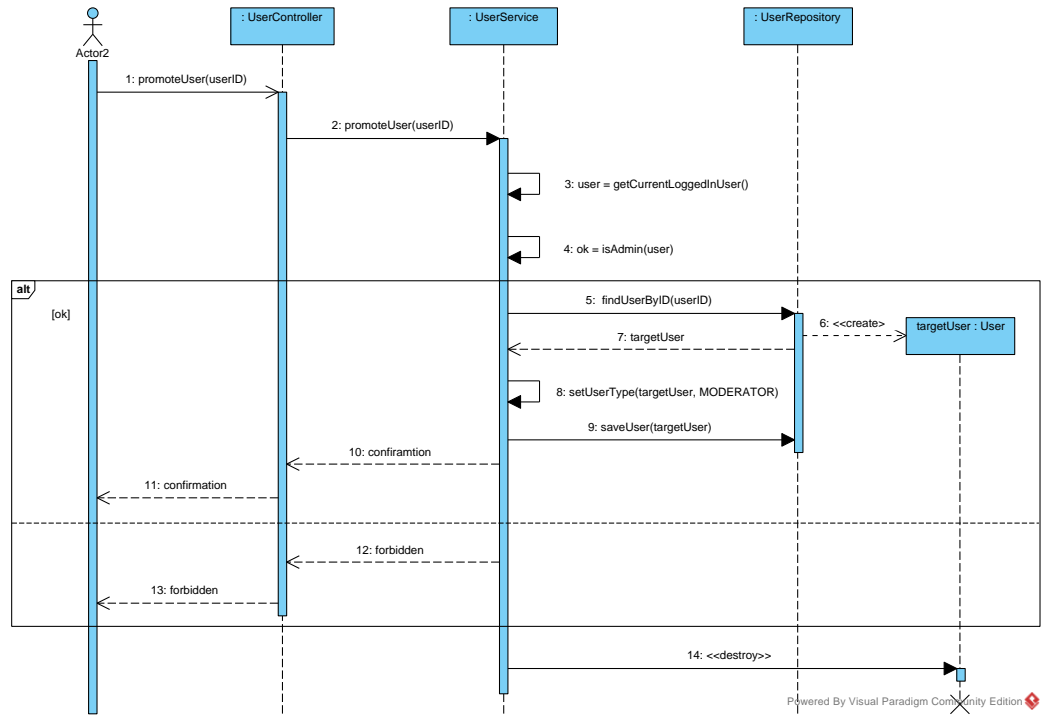
2.2 User Registration



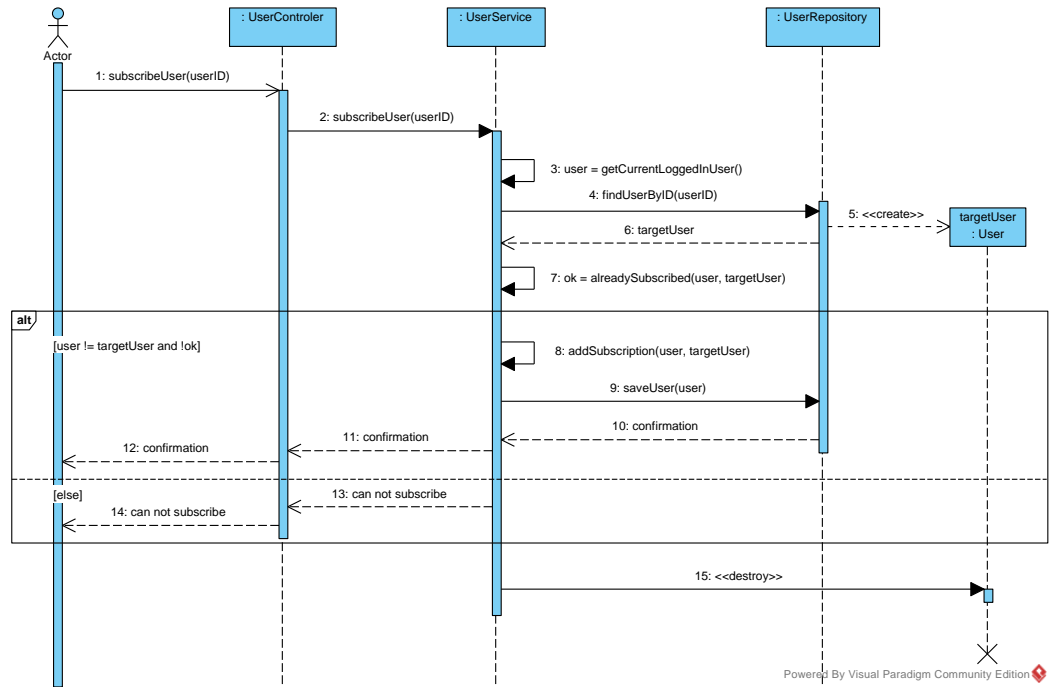
## 2.3 Search Users



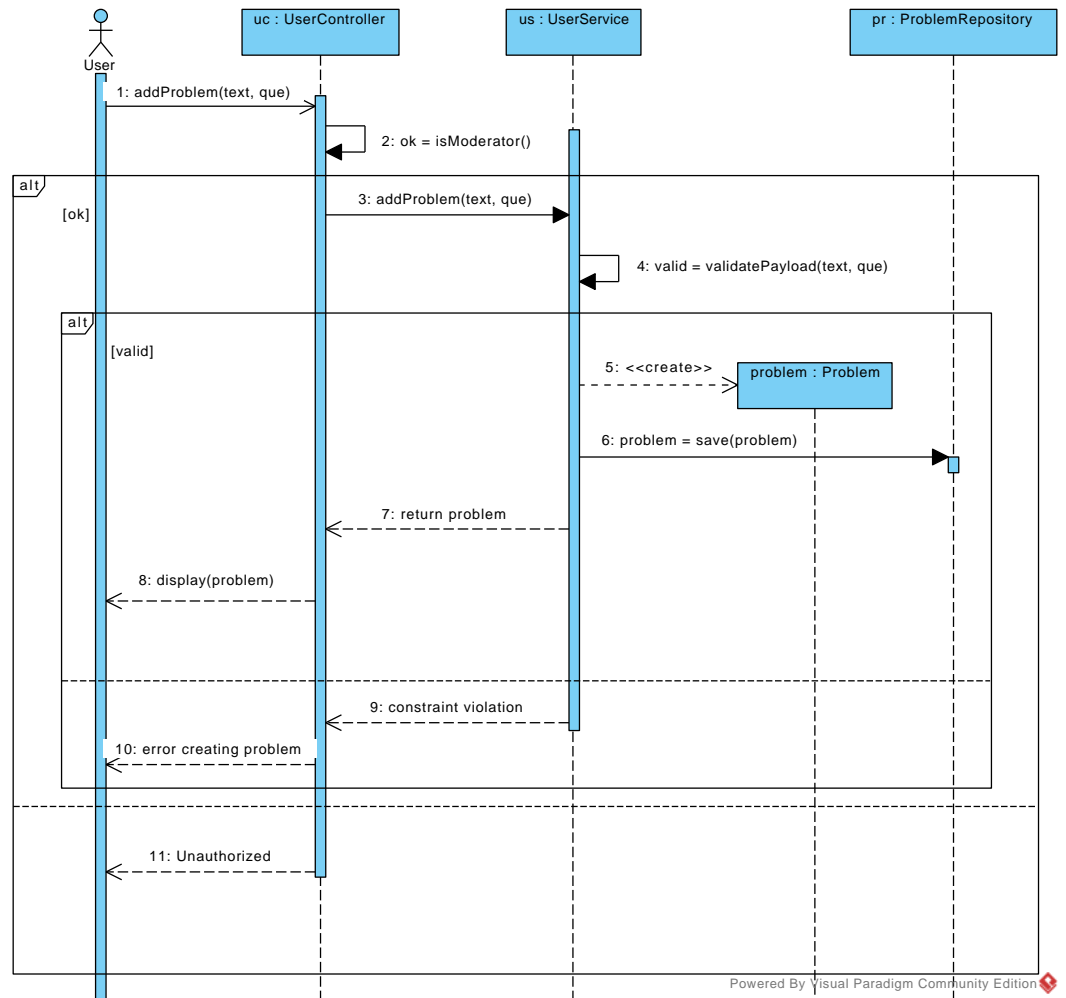
## 2.4 Promote User to Moderator



## 2.5 Subscribe a User

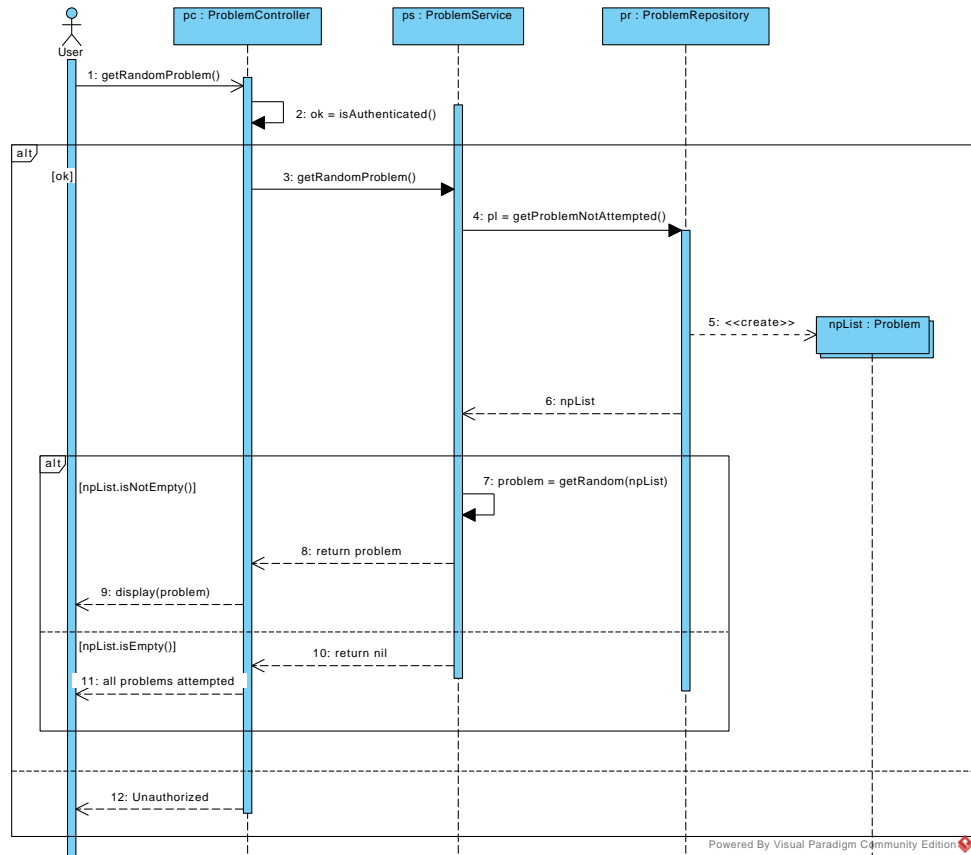


## 2.6 Add a Problem Set

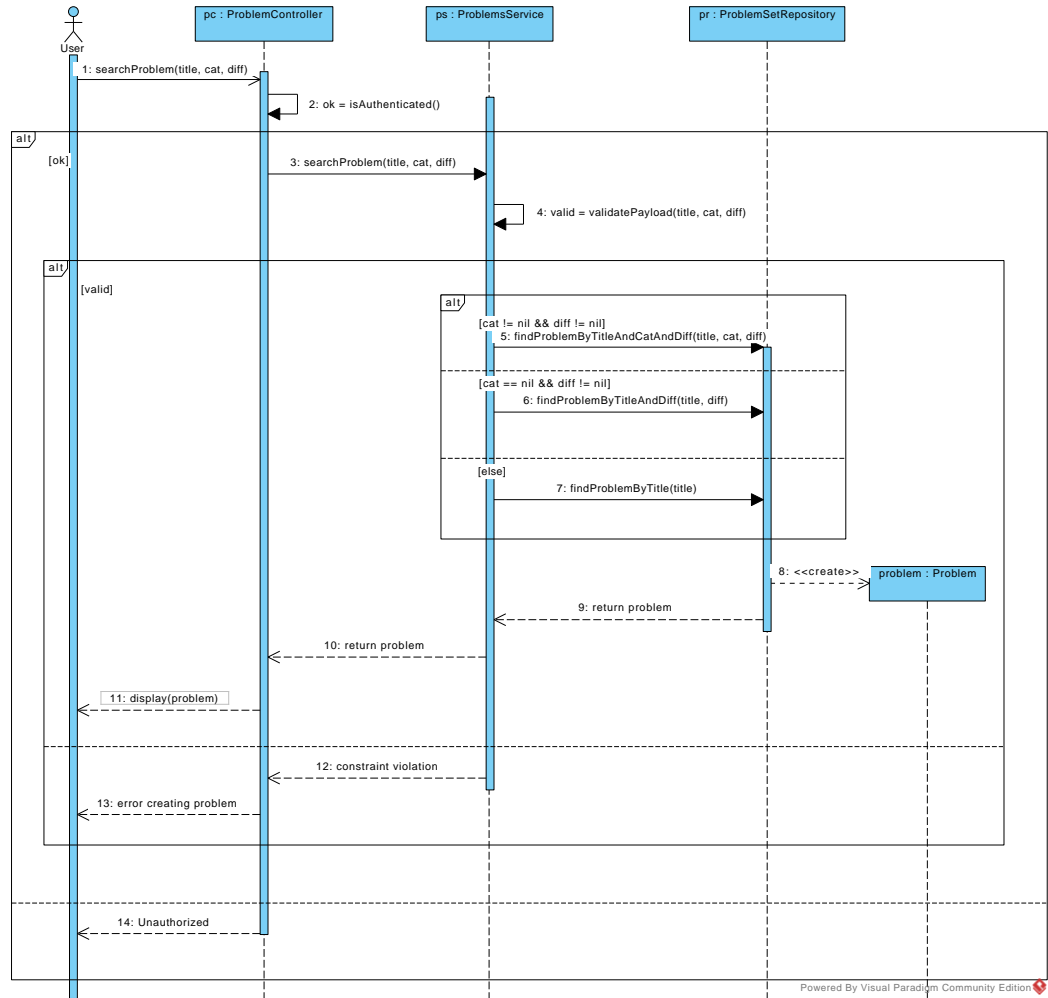




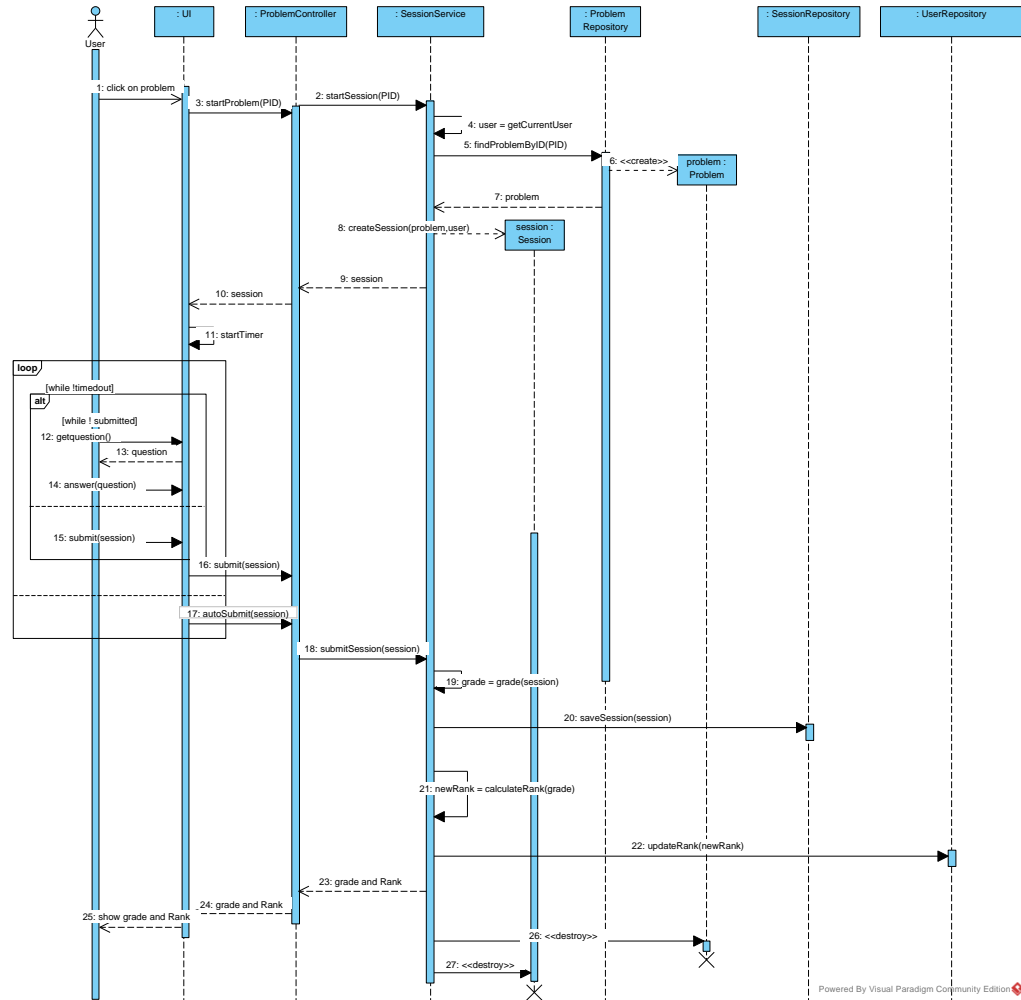
## 2.7 Get Random Problem Set



## 2.8 Search Problem Set

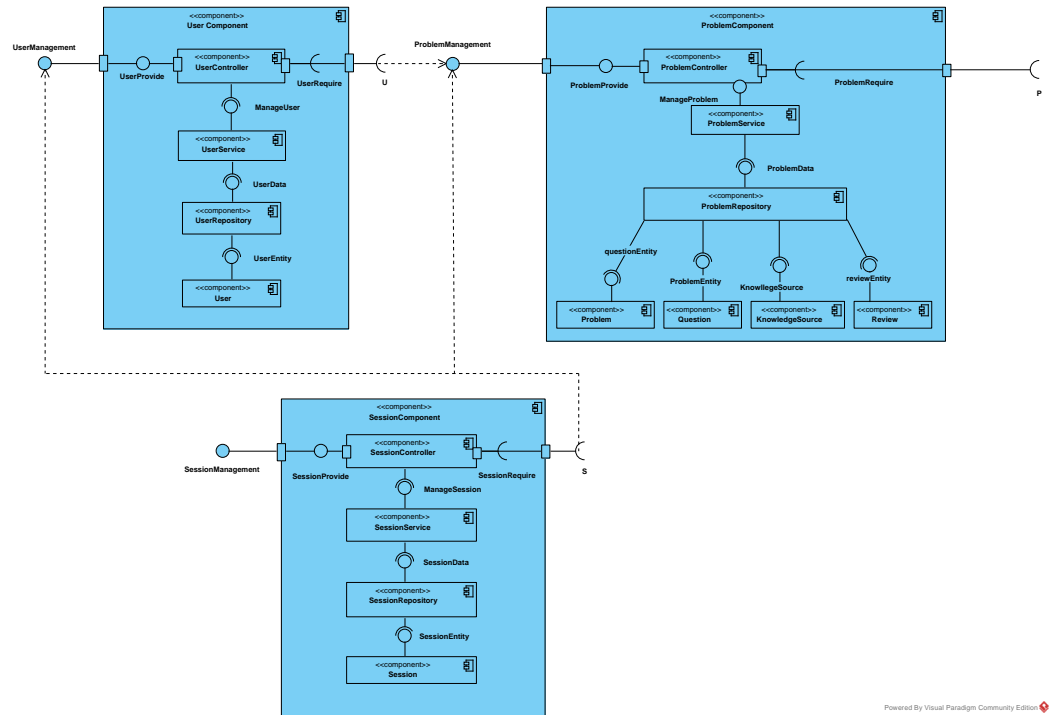


## 2.9 Participating in a Session

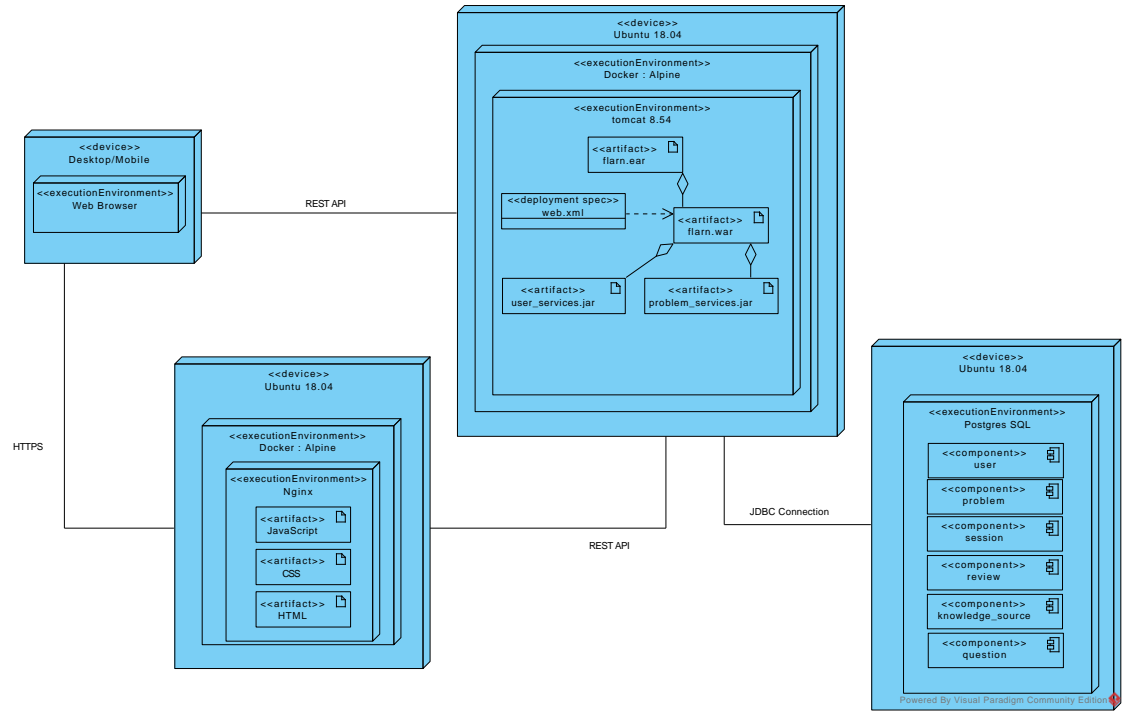


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### 3 Component Diagram



## 4 Deployment Diagram



## 5 Current Implementation

1. Domain model to entity classes.
2. Rest controllers for CRUD operations.
3. Spring security integration.
4. Business logic implementation.

## 6 Version Control and Continuous Integration

We are using Git as version control tool and we are hosting our project on Github. Here is the link to our Github repository: [FLARN](#)

We have also integrated [travis-ci](#) with our Github repository for running automatic JUnit tests. It will help us to review each pull request before merging into master.

The screenshot shows the Travis CI interface for the repository 'diptadas / flarn-backend'. The top navigation bar includes links to Dashboard, Changelog, Documentation, and Help. A search bar is present for repositories. The main content area is divided into tabs: Current, Branches, Build History (selected), and Pull Requests. The Build History tab shows a list of builds with their status, commit hash, and duration. The left sidebar shows 'My Repositories' with a list of repositories, including 'diptadas/flarn-backend'.

Build Status	Branch	Commit	Message	Duration	Time
✓ #5 passed	master	668f5f6	Set default user type	1 min 38 sec	14 minutes ago
✓ #4 passed	master	de42286	Merge pull request #10 from diptadas/travis	1 min 46 sec	about 2 hours ago
✓ #2 passed	travis	df99825	Update travis jdk version	1 min 40 sec	about 3 hours ago
✗ #1 errored	travis	093dfdd	Added travis config	17 sec	about 3 hours ago

## 7 Individual works

1. **Dipta Das:** Add Problems, entity design. (15 hr)
2. **Clinton Yeboah:** User authentication, user registration. (15 hr)
3. **Frimpong Boadu:** User subscriptions, documentation. (15 hr)