

Use Case Testing for EduTrack UserManager

To validate the EduTrack application using use case testing, we will follow these steps:

1. **Identify the Test Cases:** Based on the typical user interactions with the system.
2. **Design the Test Suites:** Include the necessary test cases.
3. **Execute the Test Cases:** Implement and run the test cases.
4. **Visualize the Use Case:** Using PlantUML for better visual implementation.

Test Suites and Test Cases

Use Case 1: User Signup and Login

| Steps | Description |
|------------------------------|--|
| Main Success Scenario | |
| 1 | A: User signs up with valid credentials. |
| 2 | S: System validates the credentials. |
| 3 | A: User logs in with the credentials. |
| 4 | S: System validates the login and allows access. |
| Extensions | |
| 1a. | A: User signs up with invalid credentials. |
| | S: System displays error message and prevents signup. |
| 2a. | A: User logs in with invalid credentials. |
| | S: System displays error message and prevents login. |

Use Case 2: User Profile Update

| Steps | Description |
|------------------------------|---|
| Main Success Scenario | |
| 1 | A: User logs in with valid credentials. |
| 2 | S: System validates the login. |
| 3 | A: User updates the profile information. |
| 4 | S: System validates and saves the new profile information. |
| Extensions | |
| 1a. | A: User tries to update profile with invalid information. |
| | S: System displays error message and prevents update. |

Use Case 3: User Logout

| Steps | Description |
|------------------------------|--|
| Main Success Scenario | |
| 1 | A: User logs in with valid credentials. |
| 2 | S: System validates the login. |
| 3 | A: User logs out. |
| 4 | S: System logs out the user and ends the session. |
| Extensions | |
| 1a. | A: User tries to logout without logging in. |
| | S: System displays error message and prevents logout. |

Use Case 4: User Account Deletion

| Steps | Description |
|-----------------------|--|
| Main Success Scenario | |
| 1 | A: User logs in with valid credentials. |
| 2 | S: System validates the login. |
| 3 | A: User deletes the account. |
| 4 | S: System removes the user's account. |
| Extensions | |
| 1a. | A: User tries to delete account without logging in. |
| | S: System displays error message and prevents account deletion. |

Java Code for Use Case Testing

```
package PathTesting;

import Proj_375_Classes.UserManager;
import static org.junit.jupiter.api.Assertions.*;
import org.junit.jupiter.api.BeforeEach;
import org.junit.jupiter.api.Test;

public class UseCaseTest {

    private UserManager userManager;

    @BeforeEach
    public void setUp() {
        userManager = new UserManager();
    }

    @Test
    public void testSignupAndLogin() {
        System.out.println("Running test case: Signup and Login...");
        assertTrue(userManager.signup("user1", "Password1!", "Password1!",
"user1@example.com", "User One"));
        assertFalse(userManager.isLoggedIn("user1")); // Initially, user is not logged in
        userManager.signin("user1", "Password1!");
        assertTrue(userManager.isLoggedIn("user1"));
    }

    @Test
    public void testProfileUpdate() {
        userManager.signup("user2", "Password1!", "Password1!", "user2@example.com",
"User Two");
        userManager.signin("user2", "Password1!");
        System.out.println("Running test case: Profile Update...");
        assertTrue(userManager.updateProfile("user2", "newemail@example.com", "New
Name"));
        assertTrue(userManager.isLoggedIn("user2"));
    }

    @Test
    public void testLogout() {
        userManager.signup("user3", "Password1!", "Password1!", "user3@example.com",
"User Three");
        userManager.signin("user3", "Password1!");
```

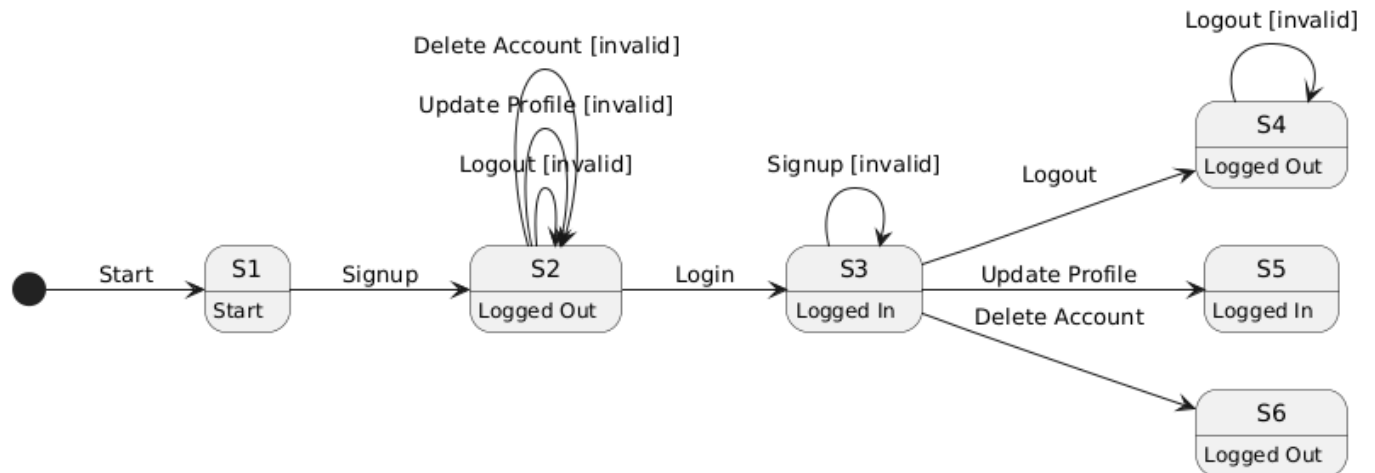
```

    System.out.println("Running test case: Logout...");
    userManager.logout("user3");
    assertFalse(userManager.isLoggedIn("user3"));
}

@Test
public void testDeleteAccount() {
    userManager.signup("user4", "Password1!", "Password1!", "user4@example.com",
"User Four");
    userManager.signin("user4", "Password1!");
    System.out.println("Running test case: Delete Account...");
    assertTrue(userManager.deleteAccount("user4"));
    assertFalse(userManager.isLoggedIn("user4"));
}
}

```

PlantUML Diagram for Use Case



This approach ensures thorough testing of the user management functionality in the EduTrack application, covering both normal and edge cases.