

Decision Tables Test

To perform validation of the EduTrack application using decision table testing, we'll follow a structured approach. Let's break down the process into the steps outlined in the image and implement them with an example.

Step 1: Identify the List of Conditions

We'll identify all the conditions that our system may satisfy. For the EduTrack application, we can consider conditions related to user signup, course addition, task assignment, and scheduling.

Conditions (Condition Stubs) for User Signup:

1. C1: Username is empty
2. C2: Username length is less than 3 characters
3. C3: Username already exists
4. C4: Password and confirm password match
5. C5: Password meets complexity requirements (e.g., length, special characters)
6. C6: Email format is valid

Step 2: Identify All Combinations of True and False

Each condition can either be true (T) or false (F). We will list all possible combinations. With 6 conditions, there will be $2^6 = 64$ combinations. However, for simplicity, we'll focus on a subset of combinations that cover most scenarios.

Example Combinations:

Rule	C1	C2	C3	C4	C5	C6
1	T	F	F	F	T	T
2	F	T	F	T	T	T
3	F	F	T	T	T	T
4	F	F	F	F	F	T
5	F	F	F	T	F	F

Step 3: Identify the List of Actions

Identify the actions that the system can perform based on the conditions.

Actions (Action Stubs):

1. A1: Display "Username is empty" error
2. A2: Display "Username is too short" error
3. A3: Display "Username already exists" error
4. A4: Display "Passwords do not match" error
5. A5: Display "Password is not complex enough" error
6. A6: Display "Invalid email format" error
7. A7: Successfully create the user

Step 4: Identify the Correct Action for Each Combination

Based on the conditions, map the actions to the respective combinations.

Decision Table:

Rule	C1	C2	C3	C4	C5	C6	A1	A2	A3	A4	A5	A6	A7
1	T	F	F	F	T	T	X						
2	F	T	F	T	T	T		X					
3	F	F	T	T	T	T			X				
4	F	F	F	F	F	T				X			
5	F	F	F	T	F	F					X		
6	F	F	F	T	T	F						X	
7	F	F	F	T	T	T							X

Java Code Implementation

Here are some JUnit test cases based on the decision table:

```

package PathTesting;

import Proj_375_Classes.UserManager;

import static org.junit.jupiter.api.Assertions.*;
import org.junit.jupiter.api.Test;

public class DecisionTablesTest {
    @Test
    void testSignup() {
        UserManager userManager = new UserManager();

        // Rule 1
        assertFalse(userManager.signup("", "Password1!", "Password1!",
"test@example.com", "John Doe"));

        // Rule 2
        assertFalse(userManager.signup("ab", "Password1!", "Password1!",
"test@example.com", "John Doe"));

        // Rule 3
        userManager.signup("user1", "Password1!", "Password1!", "test@example.com",
"John Doe");
        assertFalse(userManager.signup("user1", "Password1!", "Password1!",
"test2@example.com", "Jane Doe"));

        // Rule 4
    }
}

```

```
    assertFalse(userManager.signup("user2", "Password1!", "Password2!",  
    "test@example.com", "John Doe"));
```

```
    // Rule 5  
    assertFalse(userManager.signup("user3", "pass", "pass", "test@example.com", "John  
Doe"));
```

```
    // Rule 6  
    assertFalse(userManager.signup("user4", "Password1!", "Password1!",  
    "testexample.com", "John Doe"));
```

```
    // Rule 7  
    assertTrue(userManager.signup("user5", "Password1!", "Password1!",  
    "test@example.com", "John Doe"));  
    }  
}
```

Summary

By following the decision table approach, we ensure comprehensive testing of different conditions in the user signup functionality of the EduTrack application. The Java test cases provide a practical implementation to validate each rule in the decision table.

For further experience, in the next pages, attached the full related 64 case tables.

All 64 possible combinations of the conditions for the user signup functionality:

Rule	C1	C2	C3	C4	C5	C6
1	T	T	T	T	T	T
2	T	T	T	T	T	F
3	T	T	T	T	F	T
4	T	T	T	T	F	F
5	T	T	T	F	T	T
6	T	T	T	F	T	F
7	T	T	T	F	F	T
8	T	T	T	F	F	F
9	T	T	F	T	T	T
10	T	T	F	T	T	F
11	T	T	F	T	F	T
12	T	T	F	T	F	F
13	T	T	F	F	T	T
14	T	T	F	F	T	F
15	T	T	F	F	F	T
16	T	T	F	F	F	F
17	T	F	T	T	T	T
18	T	F	T	T	T	F
19	T	F	T	T	F	T
20	T	F	T	T	F	F
21	T	F	T	F	T	T

22	T	F	T	F	T	F
23	T	F	T	F	F	T
24	T	F	T	F	F	F
25	T	F	F	T	T	T
26	T	F	F	T	T	F
27	T	F	F	T	F	T
28	T	F	F	T	F	F
29	T	F	F	F	T	T
30	T	F	F	F	T	F
31	T	F	F	F	F	T
32	T	F	F	F	F	F
33	F	T	T	T	T	T
34	F	T	T	T	T	F
35	F	T	T	T	F	T
36	F	T	T	T	F	F
37	F	T	T	F	T	T
38	F	T	T	F	T	F
39	F	T	T	F	F	T
40	F	T	T	F	F	F
41	F	T	F	T	T	T
42	F	T	F	T	T	F
43	F	T	F	T	F	T
44	F	T	F	T	F	F
45	F	T	F	F	T	T
46	F	T	F	F	T	F

47	F	T	F	F	F	T
48	F	T	F	F	F	F
49	F	F	T	T	T	T
50	F	F	T	T	T	F
51	F	F	T	T	F	T
52	F	F	T	T	F	F
53	F	F	T	F	T	T
54	F	F	T	F	T	F
55	F	F	T	F	F	T
56	F	F	T	F	F	F
57	F	F	F	T	T	T
58	F	F	F	T	T	F
59	F	F	F	T	F	T
60	F	F	F	T	F	F
61	F	F	F	F	T	T
62	F	F	F	F	T	F
63	F	F	F	F	F	T
64	F	F	F	F	F	F

This table lists all 64 combinations of the conditions (C1 to C6) for the user signup functionality in the EduTrack application.

The 64-case decision table with actions included:

Conditions (C1 to C6)

- **C1:** Username is empty
- **C2:** Username length is less than minimum (3 characters)
- **C3:** User already exists
- **C4:** Password and confirm password do not match
- **C5:** Email is invalid
- **C6:** Full name is empty

Actions (A1 to A7)

- **A1:** Display error "Username is empty"
- **A2:** Display error "Username length is less than minimum, 3 chars"
- **A3:** Display error "Username already exists"
- **A4:** Display error "Passwords do not match"
- **A5:** Display error "Invalid email address"
- **A6:** Display error "Full name is empty"
- **A7:** Sign up user successfully

Decision Table

Rule	C 1	C 2	C 3	C 4	C 5	C 6	A 1	A 2	A 3	A 4	A 5	A 6	A 7
1	T	T	T	T	T	T	X						
2	T	T	T	T	T	F	X						
3	T	T	T	T	F	T	X						
4	T	T	T	T	F	F	X						
5	T	T	T	F	T	T	X						
6	T	T	T	F	T	F	X						
7	T	T	T	F	F	T	X						
8	T	T	T	F	F	F	X						
9	T	T	F	T	T	T	X						

10	T	T	F	T	T	F	X						
11	T	T	F	T	F	T	X						
12	T	T	F	T	F	F	X						
13	T	T	F	F	T	T	X						
14	T	T	F	F	T	F	X						
15	T	T	F	F	F	T	X						
16	T	T	F	F	F	F	X						
17	T	F	T	T	T	T	X						
18	T	F	T	T	T	F	X						
19	T	F	T	T	F	T	X						
20	T	F	T	T	F	F	X						
21	T	F	T	F	T	T	X						
22	T	F	T	F	T	F	X						
23	T	F	T	F	F	T	X						
24	T	F	T	F	F	F	X						
25	T	F	F	T	T	T	X						
26	T	F	F	T	T	F	X						
27	T	F	F	T	F	T	X						
28	T	F	F	T	F	F	X						
29	T	F	F	F	T	T	X						
30	T	F	F	F	T	F	X						
31	T	F	F	F	F	T	X						
32	T	F	F	F	F	F	X						
33	F	T	T	T	T	T		X					
34	F	T	T	T	T	F		X					
35	F	T	T	T	F	T		X					
36	F	T	T	T	F	F		X					
37	F	T	T	F	T	T		X					
38	F	T	T	F	T	F		X					
39	F	T	T	F	F	T		X					

40	F	T	T	F	F	F		X					
41	F	T	F	T	T	T		X					
42	F	T	F	T	T	F		X					
43	F	T	F	T	F	T		X					
44	F	T	F	T	F	F		X					
45	F	T	F	F	T	T		X					
46	F	T	F	F	T	F		X					
47	F	T	F	F	F	T		X					
48	F	T	F	F	F	F		X					
49	F	F	T	T	T	T			X				
50	F	F	T	T	T	F			X				
51	F	F	T	T	F	T			X				
52	F	F	T	T	F	F			X				
53	F	F	T	F	T	T			X				
54	F	F	T	F	T	F			X				

55	F	F	T	F	F	T			X				
56	F	F	T	F	F	F			X				
57	F	F	F	T	T	T				X			
58	F	F	F	T	T	F				X			
59	F	F	F	T	F	T				X			
60	F	F	F	T	F	F				X			
61	F	F	F	F	T	T					X		
62	F	F	F	F	T	F					X		
63	F	F	F	F	F	T						X	
64	F	F	F	F	F	F							X

This table provides a comprehensive view of all possible combinations of conditions and their corresponding actions for the user signup functionality in the EduTrack application.