

Black Box Testing

Equivalence Class & Boundary Value Testing

Use case 1: Login Account

Equivalence Class for Username:

Valid EC	Existing Username
Invalid EC	Empty field or non-existing Username

Equivalence Class for Password length:

Valid EC	Correct password
Invalid EC	Empty field or wrong password

Test Case 1	Invalid Credential		
Test Scenario	Login Account	Test Case ID	Login-1
Test Description	Login with invalid credential (Assume that correct username is "Test123" and password is "qwertyui")	Test Priority	Medium
Prerequisite	Stable Internet Connection	Post-Requisite	NA

No.	Username	Password	Expected Output	Actual Output	Test Result
1	Empty field	qwertyui	Displays error message: Username must not be empty	Displays error message: Username must not be empty	Pass
2.	Test12	qwertyui	Displays error message: Invalid Credential	Displays error message: Invalid Credential	Pass
3.	Test123	Empty field	Displays error message: Invalid Credential	Displays error message: Invalid Credential	Pass
4.	Test123	qwe	Displays error message: Invalid Credential	Displays error message: Invalid Credential	Pass

Test Case 2	Login successfully		
Test Scenario	Login Account	Test Case ID	Login-2
Test Description	Login with valid credential (Assume that correct username is “Test123” and password is “qwertyui”)	Test Priority	Medium
Prerequisite	Stable Internet Connection	Post-Requisite	NA

No.	Username	Password	Expected Output	Actual Output	Test Result
1	Test123	qwertyui	Displays success message: Welcome back Test123	Displays success message: Welcome back Test123	Pass

Use case 2: Plan Route – Select Distance

Equivalence Class for Distance:

Valid EC	$1 \leq \text{Distance} \leq 30$
Invalid EC	$\text{Distance} < 1$ or $\text{Distance} > 30$

Boundary Values:

Valid EC	Value on boundary values	1, 30
	Lower boundary	0, 1, 2
	Upper boundary	29, 30, 31

Final input values for Distance:

- Valid: {1, 30}
- Invalid: {0, 31}

Test Case 1	Invalid Distance		
Test Scenario	Plan Route – Select Distance	Test Case ID	Select Distance -1
Test Description	User selects invalid distance	Test Priority	Medium

Prerequisite	Stable Internet Connection User is authenticated	Post-Requisite	NA
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No.	Distance	Expected Output	Actual Output	Test Result
1	0	Displays error message: Run distance must be between 1 km and 30 km	Displays error message: Run distance must be between 1 km and 30 km	Pass
2	31	Displays error message: Run distance must be between 1 km and 30 km	Displays error message: Run distance must be between 1 km and 30 km	Pass

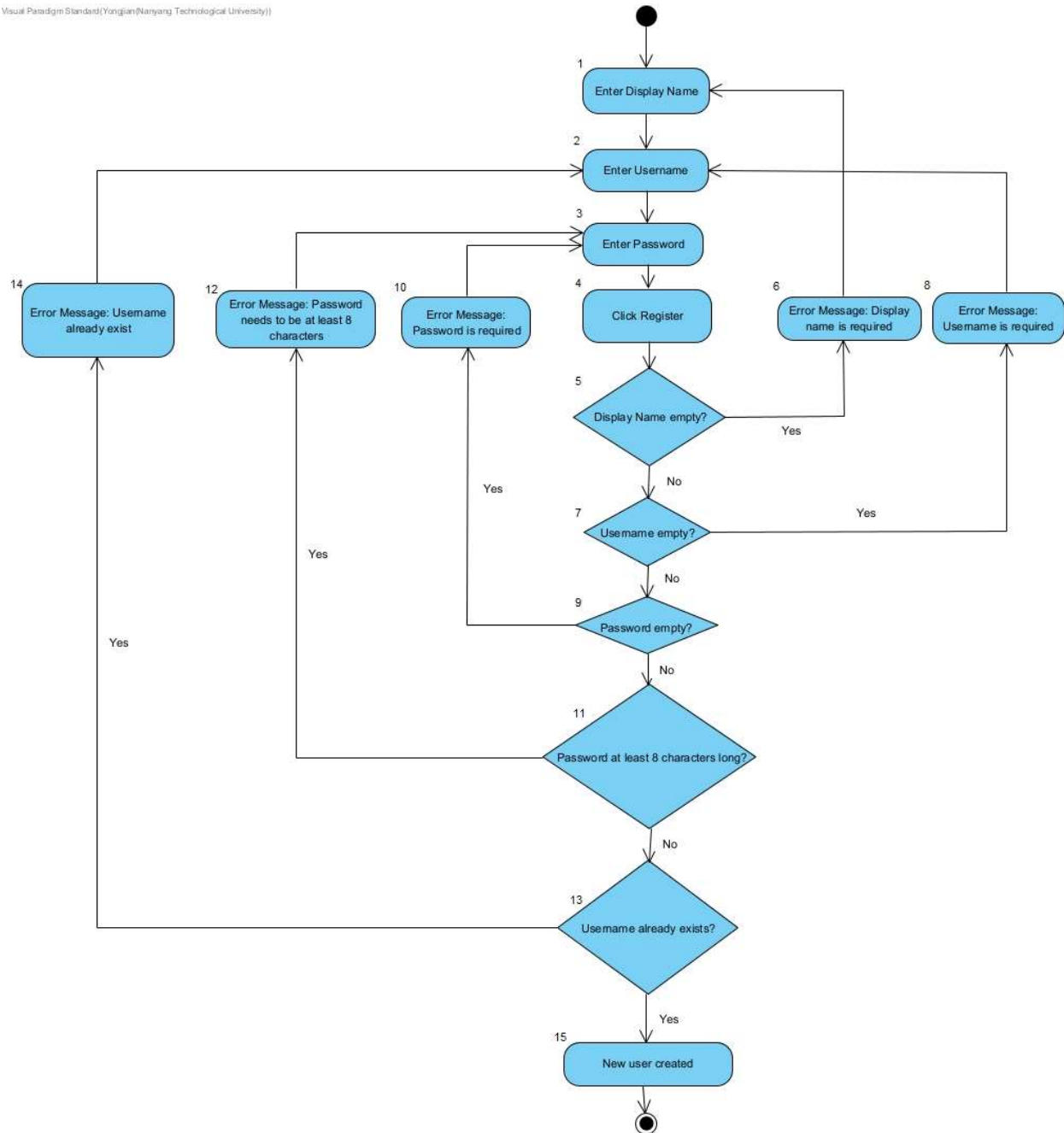
Test Case 2	Valid Distance		
Test Scenario	Plan Route – Select Distance	Test Case ID	Select Distance -2
Test Description	User selects valid distance	Test Priority	Medium
Prerequisite	Stable Internet Connection User is authenticated	Post-Requisite	NA

No.	Distance	Expected Output	Actual Output	Test Result
1	1	User is able to select landmark	User is able to select landmark	Pass
2	30	User is able to select landmark	User is able to select landmark	Pass

White Box Testing

Use case 1: Register Account

Visual Paradigm Standard (Yongjian(Nanyang Technological University))



Control Flow Graph

Table of Basis Paths

No.	Basis Path	Path Description
1	1 → 2 → 3 → 4 → 5 → 6	Empty Display Name
2	1 → 2 → 3 → 4 → 5 → 7 → 8	Empty Username
3	1 → 2 → 3 → 4 → 5 → 7 → 9 → 10	Empty Password
4	1 → 2 → 3 → 4 → 5 → 7 → 9 → 11 → 12	Password does not fulfil length requirement
5	1 → 2 → 3 → 4 → 5 → 7 → 9 → 11 → 13 → 14	Username already exists
6	1 → 2 → 3 → 4 → 5 → 7 → 9 → 11 → 13 → 15	User successfully registered

Test Case 1	Empty Display Name		
Test Scenario	Register Account	Test Case ID	Register-1
Test Path	1 → 2 → 3 → 4 → 5 → 6	Test Priority	Medium
Prerequisite	Stable Internet Connection	Post-Requisite	NA

No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	Click Register without entering Name	-	Displays error message: Name must not be empty	Displays error message: Name must not be empty	Pass

Test Case 2	Empty Username		
Test Scenario	Register Account	Test Case ID	Register-2
Test Path	1 → 2 → 3 → 4 → 5 → 7 → 8	Test Priority	Medium
Prerequisite	Stable Internet Connection	Post-Requisite	NA

No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	Click Register without entering	Name field is not empty	Displays error message: Username must not be empty	Displays error message: Username must not be empty	Pass

	Username				
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Test Case 3	Empty Password			
Test Scenario	Register Account	Test Case ID	Register-3	
Test Path	1 → 2 → 3 → 4 → 5 → 7 → 9 → 10	Test Priority	Medium	
Prerequisite	Stable Internet Connection	Post-Requisite	NA	

No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	Click Register without entering Password	Name and Username field are not empty	Displays error message: Password must not be empty	Displays error message: Password must not be empty	Pass

Test Case 4	Password does not fulfil length requirement			
Test Scenario	Register Account	Test Case ID	Register-4	
Test Path	1 → 2 → 3 → 4 → 5 → 7 → 9 → 11 → 12	Test Priority	Medium	
Prerequisite	Stable Internet Connection	Post-Requisite	NA	

No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	Click Register without entering Password of at least 8 characters long	Name and Username field are not empty, Password is less than 8 characters long	Displays error message: Password needs to be at least 8 characters long	Displays error message: Password needs to be at least 8 characters long	Pass

Test Case 5	Username already exists			
Test Scenario	Register Account	Test Case ID	Register-5	
Test Path	1 → 2 → 3 → 4 → 5 → 7 → 9 → 11 → 13	Test Priority	Medium	

	→ 14		
Prerequisite	Stable Internet Connection	Post-Requisite	NA

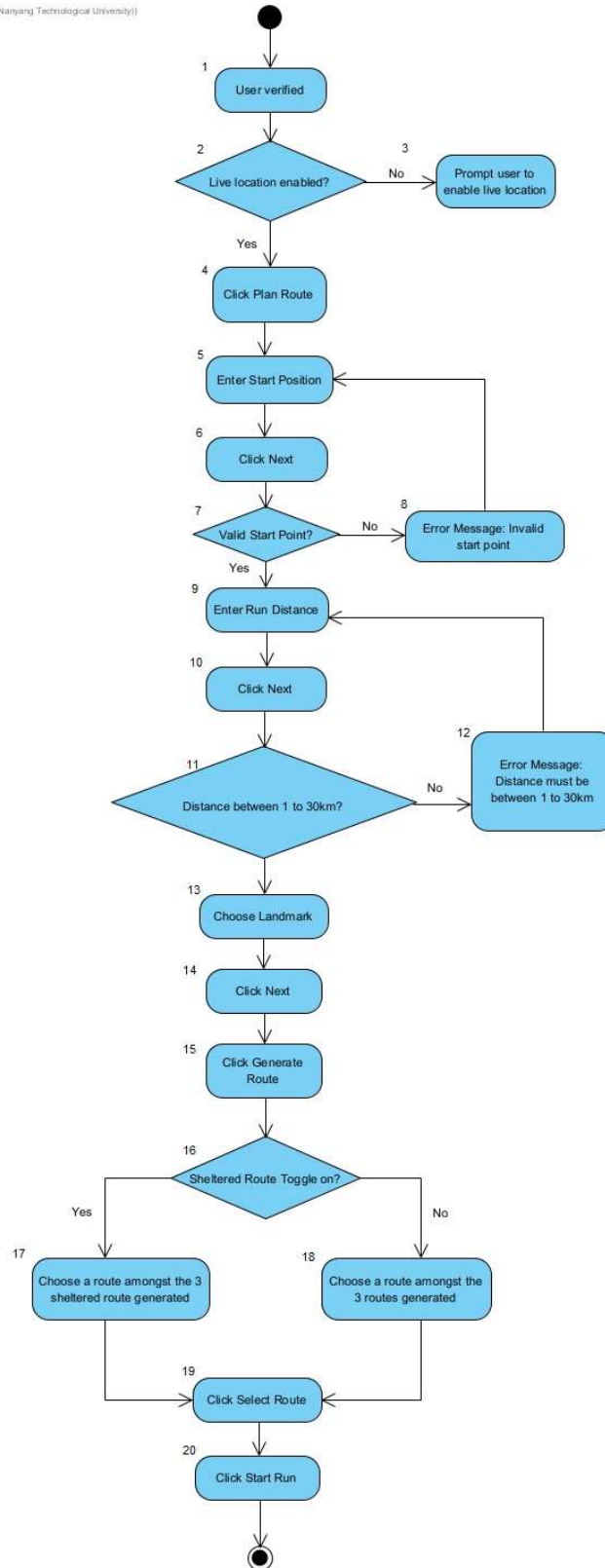
No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	Click Register using a Username that was previously used for account creation	Name field is not empty, Password is at least 8 characters long, Username field already exists	Displays error message: Username already exists	Displays error message: Username already exists	Pass

Test Case 6	User successfully registered		
Test Scenario	Register Account	Test Case ID	Register-5
Test Path	1 → 2 → 3 → 4 → 5 → 7 → 9 → 11 → 13 → 15	Test Priority	Medium
Prerequisite	Stable Internet Connection	Post-Requisite	NA

No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	Click Register using complete and correct user details	Name field is not empty, Password is at least 8 characters long, Username field is unique	Displays success message: User successfully created	Displays success message: User successfully created	Pass

Use case 2: Plan Route

Visual Paradigm Standard (Yonglan/Nanyang Technological University)



Control Flow Graph

Table of Basis Paths

No.	Basis Path	Path Description
1	1 → 2 → 3	Live location not enabled
2	1 → 2 → 4 → 5 → 6 → 7 → 8	Invalid start point
3	1 → 2 → 4 → 5 → 6 → 7 → 9 → 10 → 11 → 12	Invalid run distance
4	1 → 2 → 4 → 5 → 6 → 7 → 9 → 10 → 11 → 13 → 14 → 15 → 16 → 17 → 19 → 20	Generate sheltered route
5	1 → 2 → 4 → 5 → 6 → 7 → 9 → 10 → 11 → 13 → 14 → 15 → 16 → 18 → 19 → 20	Generate non-sheltered route

Test Case 1	Live location not enabled		
Test Scenario	Plan Route	Test Case ID	Plan Route-1
Test Path	1 → 2 → 3	Test Priority	Medium
Prerequisite	Stable Internet Connection User is authenticated	Post-Requisite	NA

No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	User login to the app without enabling location tracking	-	Displays message: Please enable location permission in setting to use the app	Displays message: Please enable location permission in setting to use the app	Pass

Test Case 2	Invalid start point		
Test Scenario	Plan Route	Test Case ID	Plan Route-2
Test Path	1 → 2 → 4 → 5 → 6 → 7 → 8	Test Priority	Medium
Prerequisite	Stable Internet Connection User is authenticated	Post-Requisite	NA

No.	Action	Inputs	Expected Output	Actual Output	Test Result
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1	User enters a starting location that cannot be found	Invalid location	Displays message: Please enter a valid location	Displays message: Please enter a valid location	Pass
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Test Case 3		Invalid run distance			
Test Scenario	Plan Route	Test Case ID	Plan Route-3		
Test Path	1 → 2 → 4 → 5 → 6 → 7 → 9 → 10 → 11 → 12	Test Priority	Medium		
Prerequisite	Stable Internet Connection User is authenticated	Post-Requisite	NA		

No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	User enters a run distance shorter than 1km	Run distance: 0.1 km	Displays error message: Run distance must be between 1 km and 30 km	Displays error message: Run distance must be between 1 km and 30 km	Pass
2	User enters a run distance longer than 30km	Run distance: 50 km	Displays error message: Run distance must be between 1 km and 30 km	Displays error message: Run distance must be between 1 km and 30 km	Pass

Test Case 4		Generate sheltered route			
Test Scenario	Plan Route	Test Case ID	Plan Route-4		
Test Path	1 → 2 → 4 → 5 → 6 → 7 → 9 → 10 → 11 → 13 → 14 → 15 → 16 → 17 → 19 → 20	Test Priority	High		
Prerequisite	Stable Internet Connection User is authenticated	Post-Requisite	NA		

No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	User chooses to generate sheltered route	User turns on “Sheltered route” toggle before generating route	Three sheltered routes are displayed for user selection	Three sheltered routes are displayed for user selection	Pass

Test Case 5	Generate non-sheltered route			
Test Scenario	Plan Route	Test Case ID	Plan Route-5	
Test Path	1 → 2 → 4 → 5 → 6 → 7 → 9 → 10 → 11 → 13 → 14 → 15 → 16 → 18 → 19 → 20	Test Priority	High	
Prerequisite	Stable Internet Connection User is authenticated	Post-Requisite	NA	

No.	Action	Inputs	Expected Output	Actual Output	Test Result
1	User chooses to generate non-sheltered route	User turns off “Sheltered route” toggle before generating route	Three non-sheltered routes are displayed for user selection	Three non-sheltered routes are displayed for user selection	Pass