

Test Cases and Testing Results

1. Black Box Testing for UserCtrl Class

1.1. RegisterInterface

1.1.1. Boundary Value Testing for Password Length

Valid EC	<ul style="list-style-type: none">• 8 to 16 (inclusive)
Invalid EC	<ul style="list-style-type: none">• Less than 8• More than 16

Two Boundary Values	8 (Lower Boundary) 16 (Upper Boundary)
Lower Boundary (8)	7, 8, 9
Upper Boundary (16)	15, 16, 17

Final Input Values for Test Cases

Password Length:

- Valid inputs: 8, 16
- Invalid inputs: 7, 17

1.1.2. Equivalence Class Testing for Password

Valid EC	<ul style="list-style-type: none">• A valid password with length of 8 to 16, one uppercase character and one special character E.g. Abc12345!
Invalid EC	<ul style="list-style-type: none">• Password missing one uppercase character E.g. abc12345678!• Password missing one special character E.g. Abc1234567890abc

Final Input Values for Test Cases

Password:

- Valid input:
 1. Abc12345!
- Invalid Input:
 1. abc12345678!
 2. Abc1234567890abc

1.1.3. Equivalence Class Testing for Confirm Password

Valid EC	<ul style="list-style-type: none">Confirm password is identical with a valid password of length 8 to 16, one uppercase character and one special character E.g. Abc12345!
Invalid EC	<ul style="list-style-type: none">Confirm password is different from the valid password of length 8 to 16, one uppercase character and one special character E.g. Abc123456!

1.1.4. Equivalence Class Testing for Email

Valid EC	<ul style="list-style-type: none">A valid email address with '@***.com' E.g. user1@gmail.com
Invalid EC	<ul style="list-style-type: none">Email address missing domain name E.g. user1@.comEmail address missing '.com' E.g. user1@gmailEmail address without '@' symbol E.g. user1.com

Final Input Values for Test Cases**Email:**

- Valid input:
 2. user1@gmail.com
- Invalid Input:
 3. user1@.com
 4. user1@gmail
 5. user1.com

1.1.5. Equivalence Class Testing for Username Already Exists

Registered Username	Username: existingUser
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Valid EC	<ul style="list-style-type: none"> New username E.g. user1
Invalid EC	<ul style="list-style-type: none"> Existing Username E.g. existingUser

Final Input Values for Test Cases

Email:

- Valid input:
 - Username: user1
- Invalid Input:
 - Existing Username: existingUser

1.1.6. Equivalence Class Testing for Email Already Exists

Registered Email	Email: existingUser@gmail.com
Valid EC	<ul style="list-style-type: none"> New email E.g. user1@gmail.com
Invalid EC	<ul style="list-style-type: none"> Existing Email E.g. existingUser@gmail.com

Final Input Values for Test Cases

Email:

- Valid input:
 - Email: user1@gmail.com
- Invalid Input:
 - Existing Email: existingUser@gmail.com

1.1.7. Test Valid Inputs

Assume that there is already one registered account that has:

- Username: existingUser
- Email: existingUser@gmail.com

Username	Email	Password	Confirm Password	Password Length	Expected Result	Actual Result
user1	user1@gmail.com	Password: "Abcd123!"	Password: "Abcd123!"	8	Account is created successfully; System displays "Registration	Account is created successfully; System displays "Registration

					successful" and user is directed to Profile Creation Interface	successful" and user is directed to Profile Creation Interface
user2	user2@gmail.com	Password: "Abcdef123456789!"	Password: "Abcdef123456789!"	16	Account is created successfully; System displays "Registration successful" and user is directed to Profile Creation Interface	Account is created successfully; System displays "Registration successful" and user is directed to Profile Creation Interface

1.1.8. Test Invalid Inputs

Assume that there is already one registered account that has:

- Username: existingUser
- Email: existingUser@gmail.com

Username	Email	Password	Confirm Password	Password Length	Expected Result	Actual Result
user1	user1@gmail.com	Password: "Abc123!"	Password: "Abc123!"	7	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."
user2	user2@gmail.com	Password: "Abcdef1234567890!"	Password: "Abcdef1234567890!"	17	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."
user3	user3@gmail.com	abc12345678!	abc12345678!	12	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."
user4	user4@gmail.com	Abc1234567890abc	Abc1234567890abc	16	System displays: "Your password must contain at least 8 characters, at least 1	System displays: "Your password must contain at least 8 characters, at least 1

					uppercase character, and at least 1 special character.”	uppercase character, and at least 1 special character.”
user5	user5@gmail.com	Abc12345!	Abc123456!	9	Registration unsuccessful; System displays “Passwords do not match!”	Registration unsuccessful; System displays “Passwords do not match!”
user6	user6@.com	Abc12345!	Abc12345!	9	System displays: “Please enter a valid email address.”	System displays: “Please enter a valid email address.”
user7	user7@gmail	Abc12345!	Abc12345!	9	System displays: “Please enter a valid email address.”	System displays: “Please enter a valid email address.”
user8	user8.com	Abc12345!	Abc12345!	9	System displays: “Please enter a valid email address.”	System displays: “Please enter a valid email address.”
existing User	user9@gmail.com	Abc12345!	Abc12345!	9	Registration unsuccessful; System displays “Registration failed. Username or email already exists.”	Registration unsuccessful; System displays “Registration failed. Username or email already exists.”
user10	existingUser@gmail.com	Abc12345!	Abc12345!	9	Registration unsuccessful; System displays “Registration failed. Username or email already exists.”	Registration unsuccessful; System displays “Registration failed. Username or email already exists.”

1.2. ProfileCreationInterface

1.2.1. Boundary Value Testing for Height

Valid EC	<ul style="list-style-type: none"> 1 to 300
Invalid EC	<ul style="list-style-type: none"> Less than 1 More than 300

Two Boundary Values	1 (Lower Boundary) 300 (Upper Boundary)
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Lower Boundary (1)	0, 1, 2
Upper Boundary (300)	299, 300, 301

Final Input Values for Test Cases

Height:

- Valid inputs: 1, 300
- Invalid Inputs: 0, 301

1.2.2. Boundary Value Testing for Weight

Valid EC	<ul style="list-style-type: none"> • 1 to 700
Invalid EC	<ul style="list-style-type: none"> • Less than 1 • More than 700

Two Boundary Values	1 (Lower Boundary) 700 (Upper Boundary)
Lower Boundary (1)	0, 1, 2
Upper Boundary (700)	699, 700, 701

Final Input Values for Test Cases

Weight:

- Valid inputs: 1, 700
- Invalid Inputs: 0, 701

1.2.3. Boundary Value Testing for Age

Valid EC	<ul style="list-style-type: none"> • 1 to 150
Invalid EC	<ul style="list-style-type: none"> • Less than 1 • More than 150

Two Boundary Values	1 (Lower Boundary) 150 (Upper Boundary)
Lower Boundary (1)	0, 1, 2
Upper Boundary (150)	149, 150, 151

Final Input Values for Test Cases

Age:

- Valid inputs: 1, 150
- Invalid Inputs: 0, 151

1.2.4. Equivalence Class Testing for Missing Gender

Valid EC	<ul style="list-style-type: none">• Female• Male
Invalid EC	<ul style="list-style-type: none">• Missing Gender

Final Input Values for Test Cases

Gender:

- Valid input:
 1. Female
 2. Male
- Invalid Input:
 1. Missing Gender

1.2.5. Equivalence Class Testing for Missing Activity Level

Valid EC	<ul style="list-style-type: none">• Sedentary• Lightly Active• Moderately Active• Very Active• Super Active
Invalid EC	<ul style="list-style-type: none">• Missing Activity Level

Final Input Values for Test Cases

Activity Level:

- Valid input:
 1. Sedentary
 2. Lightly Active
 3. Moderately Active
 4. Very Active
 5. Super Active
- Invalid Input:
 1. Missing Activity Level

2.4. Test Valid Inputs

Name	Age	Gender	Height (cm)	Weight (kg)	Activity Level	Expected Output	Actual Output
user1	1	Male	1	1	Sedentary	System displays "Profile updated successfully!"	System displays "Profile updated successfully!"
user2	1	Female	300	1	Lightly Active	System displays "Profile updated successfully!"	System displays "Profile updated successfully!"
user3	1	Male	300	700	Moderately Active	System displays "Profile updated successfully!"	System displays "Profile updated successfully!"
user4	150	Female	1	1	Very Active	System displays "Profile updated successfully!"	System displays "Profile updated successfully!"
user5	150	Male	300	1	Super Active	System displays "Profile updated successfully!"	System displays "Profile updated successfully!"
user6	150	Female	300	700	Sedentary	System displays "Profile updated successfully!"	System displays "Profile updated successfully!"
User7	150	Male	1	700	Lightly Active	System displays "Profile updated successfully!"	System displays "Profile updated successfully!"
user8	1	Female	1	700	Moderately Active	System displays "Profile updated successfully!"	System displays "Profile updated successfully!"

2.5. Test Invalid Inputs

Name	Age	Gender	Height (cm)	Weight (kg)	Activity Level	Expected Output	Actual Output
user1	1	(blank)	300	700	Sedentary	System displays "Please fill in the blank fields."	System displays "Please fill in the blank fields."
user2	1	Male	300	700	(blank)	System displays "Please fill in the blank fields."	System displays "Please fill in the blank fields."
user3	1	Female	0	1	Lightly Active	System displays "Value must be greater than or equal to 1."	System displays "Value must be greater than or equal to 1."
user4	150	Male	0	1	Moderately Active	System displays "Value must be greater than or equal to 1."	System displays "Value must be greater than or equal to 1."
user5	1	Female	0	700	Very Active	System displays "Value must be greater than or equal to 1."	System displays "Value must be greater than or equal to 1."
user6	150	Male	0	700	Super Active	System displays "Value must be greater than or equal to 1."	System displays "Value must be greater than or equal to 1."
user7	1	Female	301	1	Sedentary	System displays "Value must be less than or equal to 300."	System displays "Value must be less than or equal to 300."
user8	150	Male	301	1	Lightly Active	System displays "Value must be less than or equal to 300."	System displays "Value must be less than or equal to 300."
user9	1	Female	301	700	Moderately Active	System displays "Value must be less than or equal to 300."	System displays "Value must be less than or equal to 300."

user10	150	Female	301	700	Very Active	System displays "Value must be less than or equal to 300."	System displays "Value must be less than or equal to 300."
user11	1	Male	1	0	Super Active	System displays "Value must be greater than or equal to 1."	System displays "Value must be greater than or equal to 1."
user12	1	Female	300	0	Sedentary	System displays "Value must be greater than or equal to 1."	System displays "Value must be greater than or equal to 1."
user13	150	Male	1	0	Lightly Active	System displays "Value must be greater than or equal to 1."	System displays "Value must be greater than or equal to 1."
user14	150	Female	300	0	Moderately Active	System displays "Value must be greater than or equal to 1."	System displays "Value must be greater than or equal to 1."
user15	1	Male	1	701	Very Active	System displays "Value must be less than or equal to 700."	System displays "Value must be less than or equal to 700."
user16	1	Female	300	701	Super Active	System displays "Value must be less than or equal to 700."	System displays "Value must be less than or equal to 700."
user17	150	Male	1	701	Sedentary	System displays "Value must be less than or equal to 700."	System displays "Value must be less than or equal to 700."
user18	150	Female	300	701	Lightly Active	System displays "Value must be less than or equal to 700."	System displays "Value must be less than or equal to 700."
user19	0	Male	1	1	Moderately Active	System displays "Value must be	System displays "Value must be

						greater than or equal to 1.”	greater than or equal to 1.”
user20	0	Female	300	1	Very Active	System displays “Value must be greater than or equal to 1.”	System displays “Value must be greater than or equal to 1.”
user21	0	Male	1	700	Super Active	System displays “Value must be greater than or equal to 1.”	System displays “Value must be greater than or equal to 1.”
user22	0	Female	300	700	Sedentary	System displays “Value must be greater than or equal to 1.”	System displays “Value must be greater than or equal to 1.”
user23	151	Male	1	1	Lightly Active	System displays “Value must be less than or equal to 150.”	System displays “Value must be less than or equal to 150.”
user24	151	Female	300	1	Moderately Active	System displays “Value must be less than or equal to 150.”	System displays “Value must be less than or equal to 150.”
user25	151	Male	1	700	Very Active	System displays “Value must be less than or equal to 150.”	System displays “Value must be less than or equal to 150.”
user26	151	Female	300	700	Super Active	System displays “Value must be less than or equal to 150.”	System displays “Value must be less than or equal to 150.”

1.3. LoginInterface

1.3.1. Equivalence Class Testing for Incorrect Username

Registered Username	Username: existingUser
Valid EC	<ul style="list-style-type: none"> Matching Registered Username E.g. existingUser

Invalid EC	<ul style="list-style-type: none"> Incorrect Username E.g. existinguser
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Final Input Values for Test Cases

Username:

- Valid input:
 - Matching Registered Username: existingUser
- Invalid Input:
 - Incorrect Username: existinguser

1.3.2. Equivalence Class Testing for Incorrect Password

Registered Password	Password: Abc12345!
Valid EC	<ul style="list-style-type: none"> Matching Password E.g. Abc12345!
Invalid EC	<ul style="list-style-type: none"> Incorrect Password E.g. Abcd12345!

Final Input Values for Test Cases

Password:

- Valid input:
 - Matching Password: Abc12345!
- Invalid Input:
 - Incorrect Password: Abcd12345!

3.3. Test Valid Inputs

Assume that there is already one registered account that has:

- Username: existingUser
- Password: Abc12345!

Username	Password	Expected Output	Actual Output
existingUser	Abc12345!	User is logged in successfully; System displays "Login successful." User is directed to MyPlan Interface	User is logged in successfully; System displays "Login successful." User is directed to MyPlan Interface

3.4. Test Invalid Inputs

Assume that there is already one registered account that has:

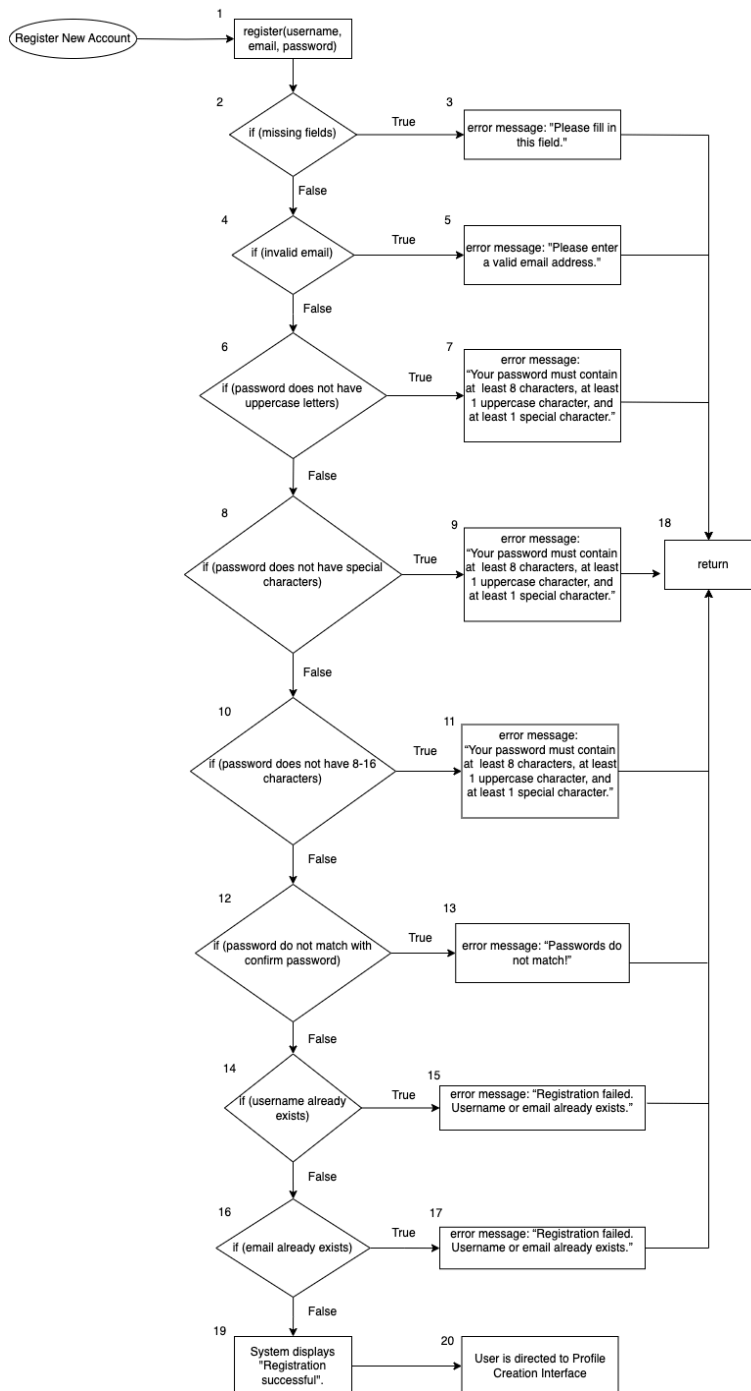
- Username: existingUser
- Password: Abc12345!

Username	Password	Expected Output	Actual Output
existinguser	Abc12345!	Login unsuccessful; System displays "Login failed: Invalid username or password."	Login unsuccessful; System displays "Login failed: Invalid username or password."
existingUser	Abcd12345!	Login unsuccessful; System displays "Login failed: Invalid username or password."	Login unsuccessful; System displays "Login failed: Invalid username or password."

2. White Box Testing

2.1. register() Method

2.1.1. Control Flow Graph



2.1.2. Basis Path Testing

Cyclomatic Complexity: | decision points | + 1 = 8 + 1 = 9

Basis Paths

1. Baseline path: 1, 2, 4, 6, 8, 10, 12, 14, 16, 19, 20
2. Basis Path 2: 1, 2, 3, 18
3. Basis Path 3: 1, 2, 4, 5, 18
4. Basis Path 4: 1, 2, 4, 6, 7, 18
5. Basis Path 5: 1, 2, 4, 6, 8, 9, 18
6. Basis Path 6: 1, 2, 4, 6, 8, 10, 11, 18
7. Basis Path 7: 1, 2, 4, 6, 8, 10, 12, 13, 18
8. Basis Path 8: 1, 2, 4, 6, 8, 10, 12, 14, 15, 18
9. Basis Path 9: 1, 2, 4, 6, 8, 10, 12, 14, 16, 17, 18

Test cases

Assume that there is already one registered account that has:

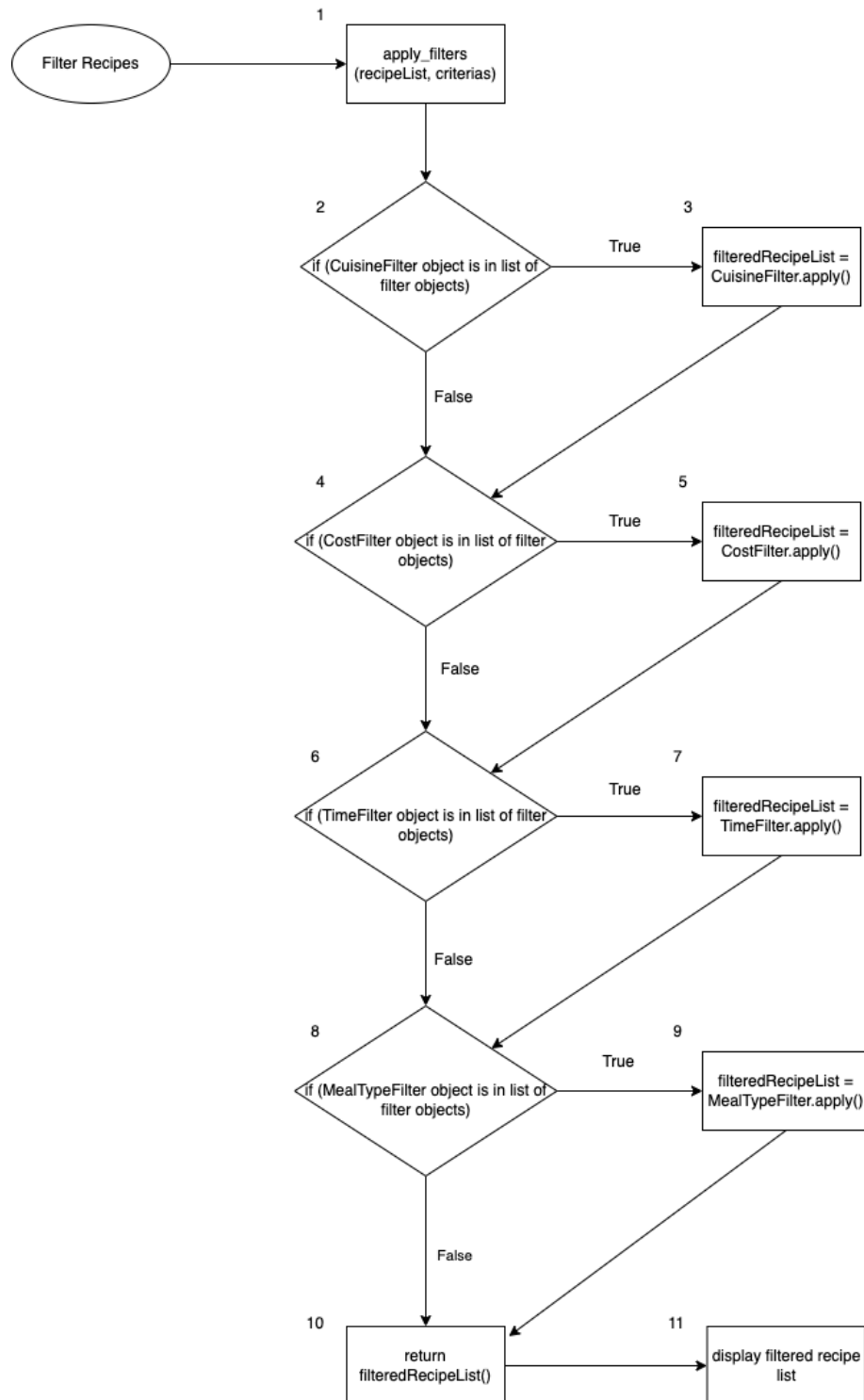
- Username: existingUser
- Email: existingUser@gmail.com

Basis Path	Username	Email	Password	Confirm Password	Expected Output	Actual Output
1	user1	user1@gmail.com	Abcd123!	Abcd123!	Account is created successfully; System displays "Registration successful" and user is directed to Profile Creation Interface	Account is created successfully; System displays "Registration successful" and user is directed to Profile Creation Interface
2	(blank)	user1@gmail.com	Abcd123!	Abcd123!	Registration unsuccessful; System displays "Please fill in this field."	Registration unsuccessful; System displays "Please fill in this field."
3	user1	user1@.com	Abc12345!	Abc12345!	System displays: "Please enter a valid email address."	System displays: "Please enter a valid email address."
4	user1	user1@gmail.	abc12345	abc12345	System displays:	System displays:

		com	678!	678!	"Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."	"Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."
5	user1	user1@gmail.com	abc12345 678	abc12345 678	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."
6	user1	user1@gmail.com	Abc123!	Abc123!	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."	System displays: "Your password must contain at least 8 characters, at least 1 uppercase character, and at least 1 special character."
7	user1	user1@gmail.com	Abc12345!	Abc1234 56!	System displays "Passwords do not match!"	System displays "Passwords do not match!"
8	existingUser	user1@gmail.com	Abc12345!	Abc1234 5!	Registration unsuccessful; System displays "Registration failed. Username or email already exists."	Registration unsuccessful; System displays "Registration failed. Username or email already exists."
9	user1	existingUser@gmail.com	Abc12345!	Abc1234 5!	Registration unsuccessful; System displays "Registration failed. Username or email already exists."	Registration unsuccessful; System displays "Registration failed. Username or email already exists."

2.2. apply_filters() Method

2.2.1. Control Flow Graph



Basis Path Testing

Cyclomatic Complexity: | decision points | +1 = 4 + 1 = 5

Basis Paths

1. Baseline path: 1, 2, 4, 6, 8, 10, 11
2. Basis Path 2: 1, 2, 3, 4, 6, 8, 10, 11
3. Basis Path 3: 1, 2, 4, 5, 6, 8, 10, 11
4. Basis Path 4: 1, 2, 4, 6, 7, 8, 10, 11
5. Basis Path 5: 1, 2, 4, 6, 8, 9, 10, 11

Test cases

Basis Path	Cuisine	Cost	Estimated Preparation Time	Meal Type	Expected Output	Actual Output
1	(blank)	(blank)	(blank)	(blank)	System displays all recipes.	System displays all recipes.
2	American	(blank)	(blank)	(blank)	System displays the recipes that match the 'Cuisine' filter.	System displays the recipes that match the 'Cuisine' filter.
3	(blank)	Min \$: 0 Max \$: 5	(blank)	(blank)	System displays the recipes that match the 'Cost' filter.	System displays the recipes that match the 'Cost' filter.
4	(blank)	(blank)	Min(minutes): 0 Max(minutes): 50	(blank)	System displays the recipes that match the 'Estimated Preparation Time' filter.	System displays the recipes that match the 'Estimated Preparation Time' filter.
5	(blank)	(blank)	(blank)	Lunch	System displays the recipes that match the 'Meal Type' filter.	System displays the recipes that match the 'Meal Type' filter.