Software Engineering

Project Name - **PowerUp**

Presented By

Team PowerRanger

Team Members:
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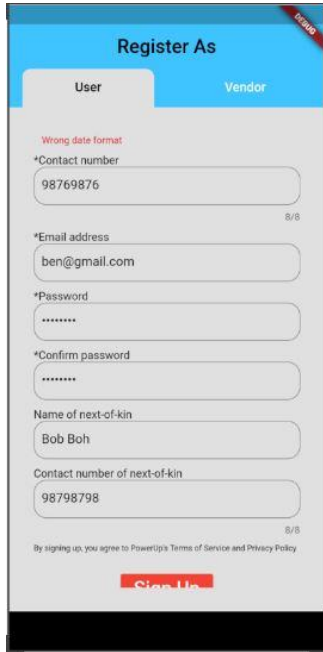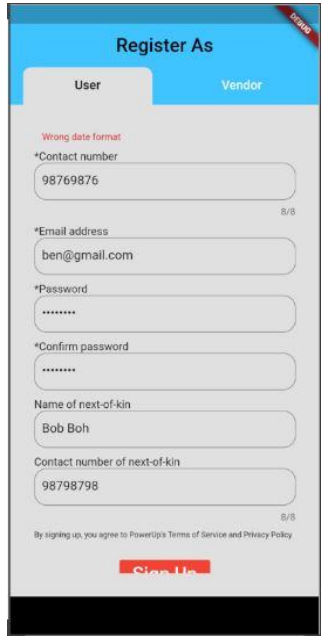Syed Anas Majid (U1922039A)
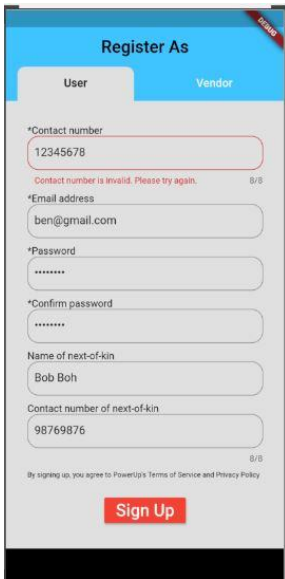Jessica Halim (U1921511D)

Content Page
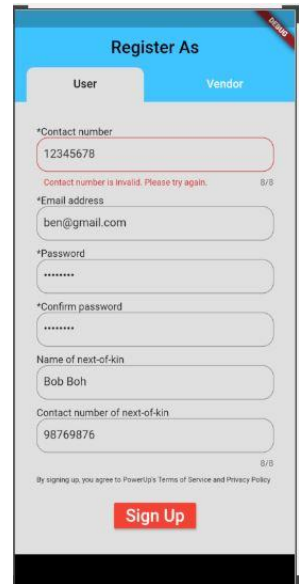
Black Box Testing

User Registration

    1) Wrong Date format

Input Fields	Inputs:	Expected Output:	Actual Output:
Last Name:	Boh		
First Name:	Ben		
Date Of birth:	12/12/1998 9		
Contact Number:	98769876		
Email Address	ben@gmail.com		
Password:	P@ss123@		
Confirm Password:	P@ss123@		
Name of next-of-kin:	Bob Boh		
Contact number of next-of-kin:	98798798		

    2) Invalid Number

Input Fields	Inputs:	Expected Output:	Output:
Last Name:	Boh		
First Name:	Ben		
Date Of birth:	12/12/1998		
Contact Number:	12345678		
Email Address	ben@gmail.com		
Password:	P@ss123@		
Confirm Password:	P@ss123@		
Name of next-of-kin:	Bob Boh		
Contact number of next-of-kin:	98769876		
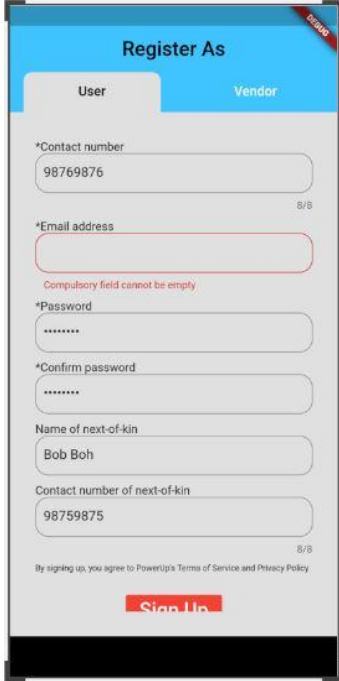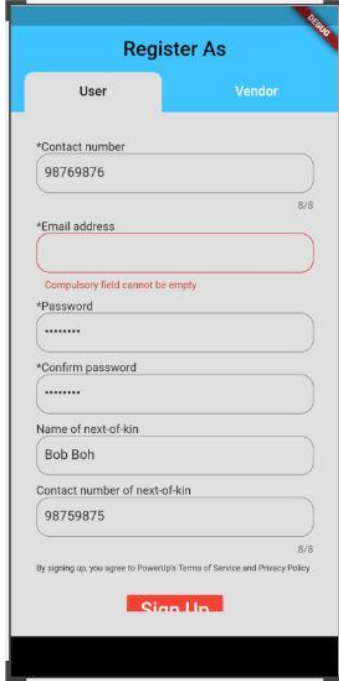
3) Invalid Password

Input Fields	Inputs:	Expected Output:	Actual Output:
Last Name:	Boh		
First Name:	Ben		
Date Of birth:	12/12/1998		
Contact Number:	98989898		
Email Address	ben@gmail.com		
Password:	123		
Confirm Password:	123		
Name of next-of-kin:	Bob Boh		
Contact number of next-of-kin:	98798798		
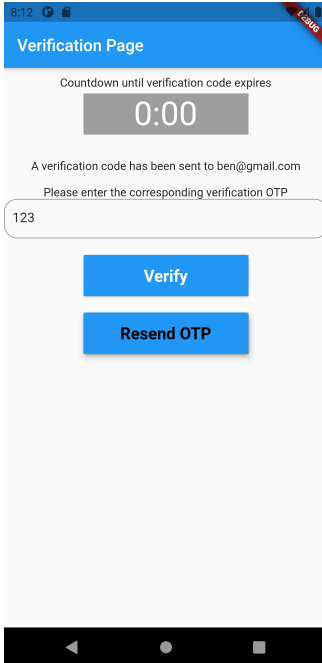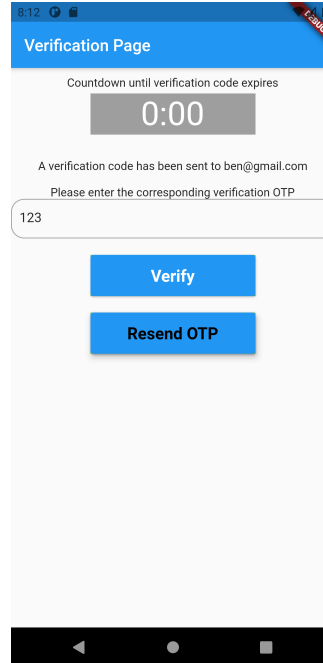
4) Password Do not Match

Input Fields	Inputs:	Expected Output:	Actual Output:
Last Name:	Boh		
First Name:	Ben		
Date Of birth:	12/12/1998		
Contact Number:	98765432		
Email Address	ben@gmail.com		
Password:	P@ss123@		
Confirm Password:	P@ss123		
Name of next-of-kin:	Bob Boh		
Contact number of next-of-kin:	98769876		
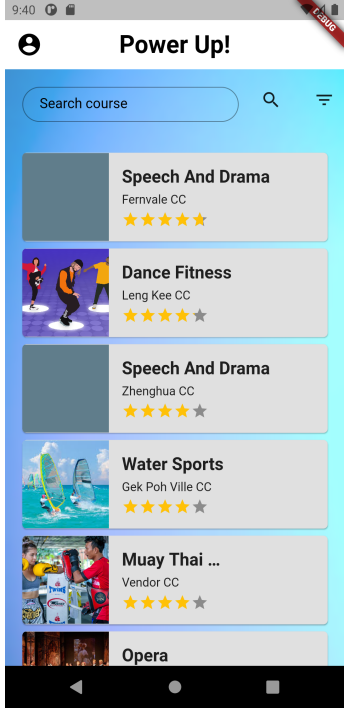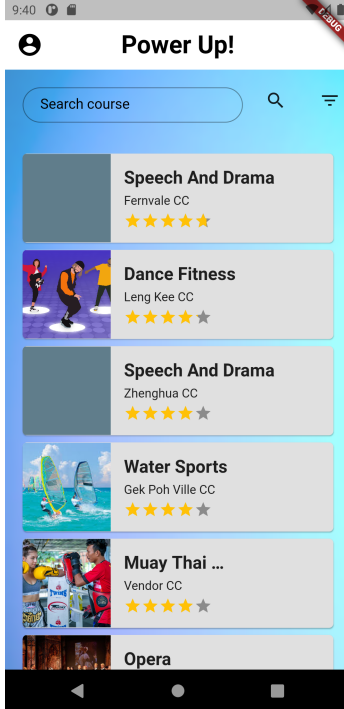
5) Incomplete Field (any incomplete fields will yield this result)

Input Fields	Inputs:	Expected Output:	Actual Output:
Last Name:	Boh		
First Name:	Ben		
Date Of birth:	12/12/1998		
Contact Number:	98769876		
Email Address	-empty-		
Password:	P@ss123@		
Confirm Password:	P@ss123@		
Name of next-of-kin:	Bob Boh		
Contact number of next-of-kin:	98759875		

6) Unsuccessful Verification

Input Fields	Inputs:	Expected Output:	Actual Output:
Verification:	123		
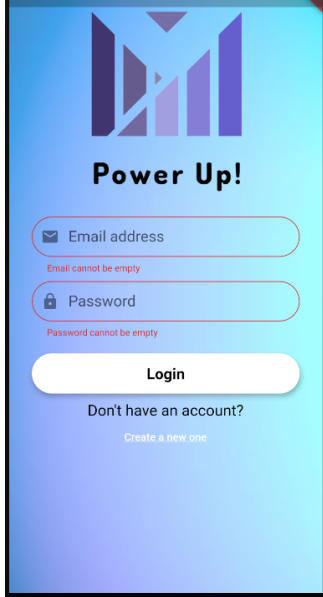
7) Successful Verification

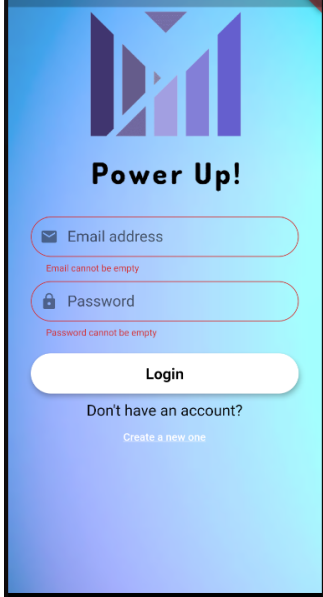| Input Fields	Inputs:	Expected Output:	Actual Output:
Verification:	409278		
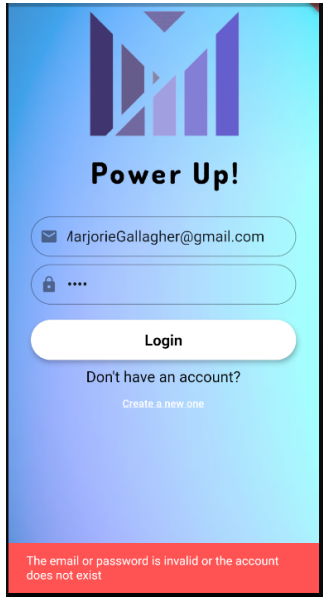
Login

1) Incomplete Fields (any incomplete fields will yield this result)

Input Fields	Input	Expected Output:	Actual Output:
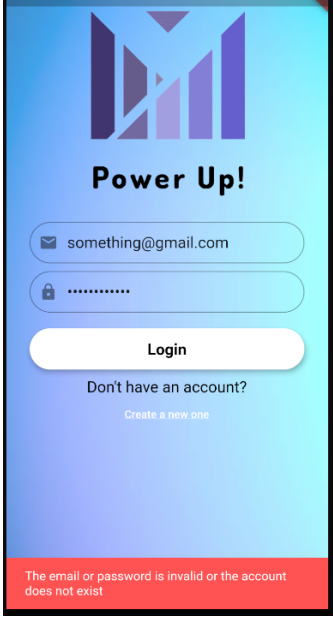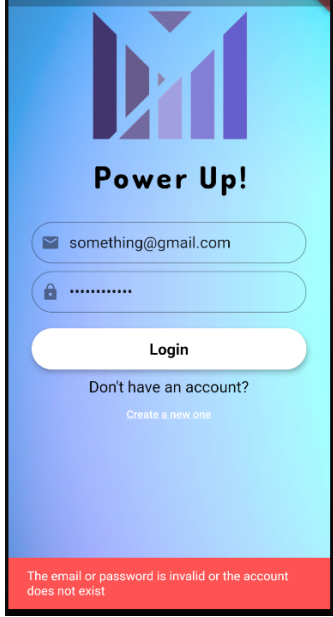
Username	-empty-		
Password	-empty-		

2) Valid Username, incorrect password
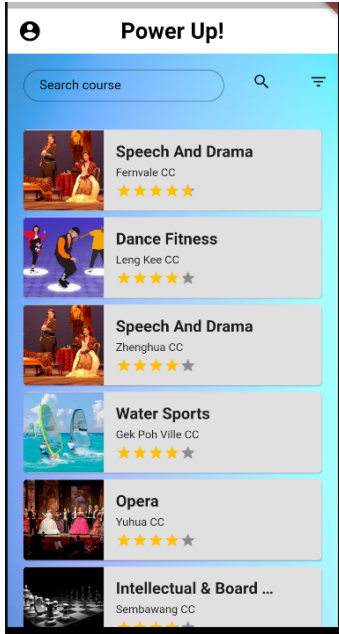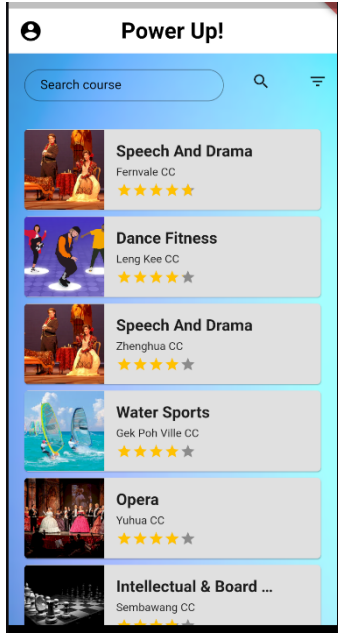
Input Fields	Input	Expected Output:	Actual Output:
Username	MarjorieGallagher@gmail.com		
Password	1234		

3) Invalid Username, valid password

Input Fields	Input	Expected Output:	Actual Output:

Username	something@gm ail.com		
Password	Marjorie Gallagher		

4) <u>**Valid username and password**</u>

Input Fields	Input	Expected Output:	Actual Output:
Username	MarjorieGallagher@ gmail.com		
Password	Marjorie Gallagher		

Add Course (Vendor)

1) Main Course Details

Title	Description	Location	Url Image	Age Group	Fees	Reg Deadline	Start Date	Expected Output	Actual = Expd?
If any of the above fields are empty (or incomplete)								'Compulsory field cannot be empty'	✓
Crafts 101	Welcome to the world of crafts!	26 Lorong Avenue, Singapore 989777	N.A.	13-18	20.30	20/10/2021	20/11/2021	'Input is not a URL.'	✓
Crafts 101	Welcome to the world of crafts!	26 Lorong Avenue, Singapore 989777	https://icatcare.org/app/uploads/2018/07/Thinking-of-getting-a-cat.png	13-18	Not sure	20/10/2021	20/11/2021	'Please input a number'	✓
Crafts 101	Welcome to the world of crafts!	26 Lorong Avenue, Singapore 989777	https://icatcare.org/app/uploads/2018/07/Thinking-of-getting-a-cat.png	13-18	20.30	'20.10.2021' or 'Not sure' or '20/10/21'	20/11/2021	'Wrong date input'	✓
Crafts 101	Welcome to the world of crafts!	26 Lorong Avenue, Singapore 989777	https://icatcare.org/app/uploads/2018/07/Thinking-of-getting-a-cat.png	13-18	20.30	20/10/2021	'20.11.2021' or 'Not sure' or '20/11/21'	'Wrong date input'	✓

2) Session details

Session Count	Class Size	Start Date	Start Time	Expected Output	Actual O/P = Expected?
3	10.3	20/11/2021	10:30	'Please only	✓

				input whole numbers.'	
3	10	'20.11.2021' or 'Not sure' or '20/11/21'	10:30	'Wrong date format'	✓
3	10	20/11/2021	'24:40' or '8:61' or 'Not sure' or ':40' or '9'	'Wrong date format'	✓

Whitebox Testing

User Registration

    1) Control Flow Graph:
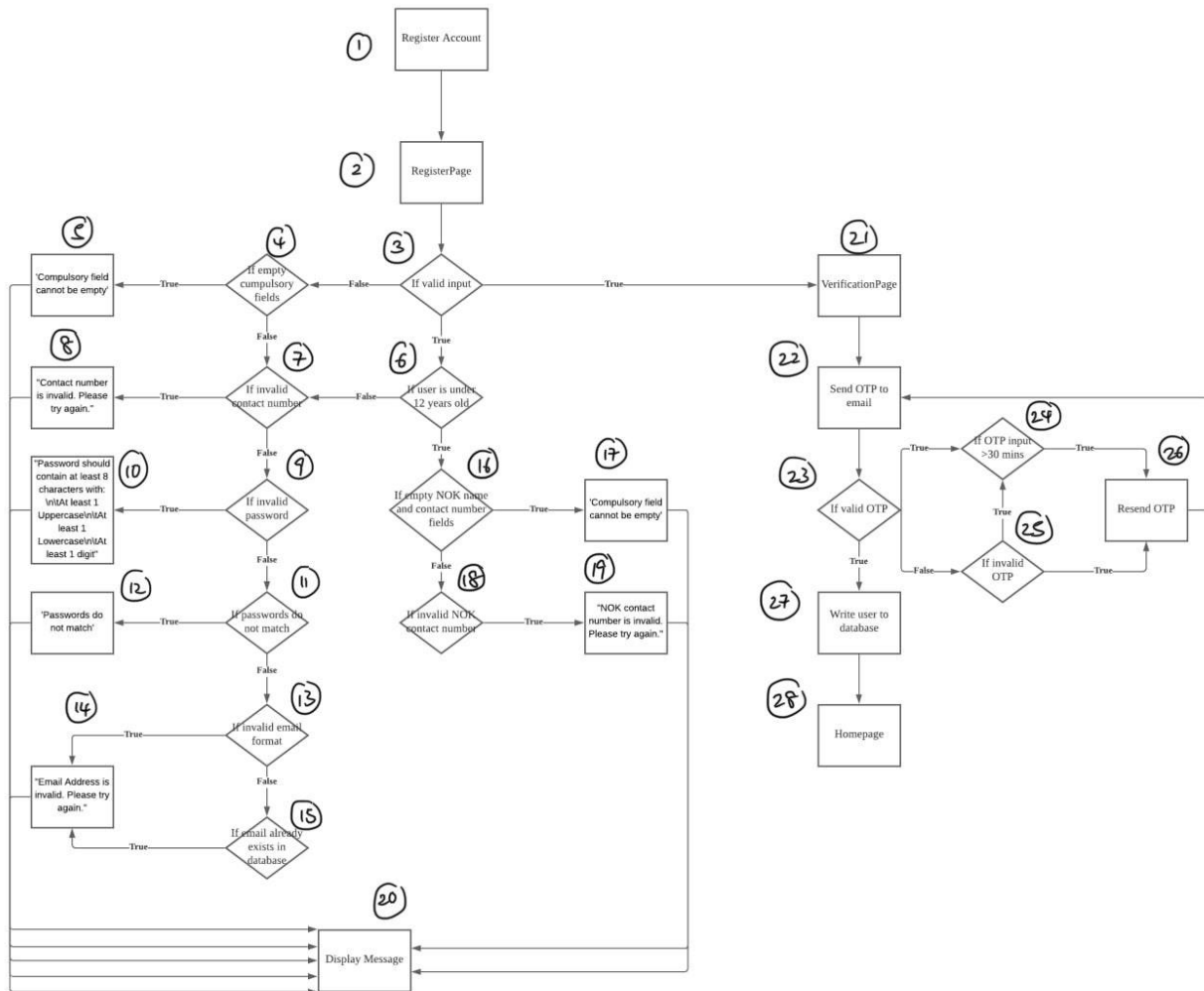
Test cases:

    a.   User is above 12 years old and registers for a new account and inputs all information correctly.

    b.   User is above 12 years old and registers for a new account and inputs all but OTP correctly, user requests to resend OTP.

    c.   User does not input compulsory fields correctly.

    d.   User is above 12 years old and inputs OTP after 30 minutes have elapsed.

    e.   User is below 12 years old and does not input NOK name and NOK contact number fields.

    f.   User is below 12 years old and does not input NOK name and NOK contact number fields correctly.

Execution Paths:
A.1,2,3,21,22,23,27,28
B.1,2,3,21,22,25,26,22,23,27,28
C.1,2,3,4,5,20 or 1,2,3,4,7,8,20 or 1,2,3,4,7,9,10,20 or 1,2,3,4,7,9,11,12,20 or 1,2,3,4,7,9,11,13,14,20 or 1,2,3,4,7,9,11,13,15,14,20
D.1,2,3,21,22,24,26,22,23,27,28
E.1,2,3,6,16,17,20
F.1,2,3,6,16,18,19,20

Cyclomatic Complexity:
[Edges] = 38
[Nodes] = 28
[Edges - Nodes + 2] = [38 – 28 + 2] = 12

2) <u>**Data Flow Testing:**</u>

```
I/flutter ( 3648): Register button pressed
```

```
I/flutter ( 3648): Submit button pressed
I/flutter ( 3648): sendOtp() in RegisterPage called
I/flutter ( 3648): Email checked by email_auth package
I/flutter ( 3648): sendOtp in email_auth package called
I/flutter ( 3648): Email ID is valid
I/flutter ( 3648): Called isValidContactNum() in LoginRegisterController with args {98745642}
I/flutter ( 3648): 98745642
I/flutter ( 3648): isValidContactNum() returned: true
I/flutter ( 3648): Called isValidEmail() in LoginRegisterController with args {anas.majid@gmail.com}
I/flutter ( 3648): getAllUsers() in DBHelper called
I/flutter ( 3648): Called isValidPassword() in LoginRegisterController with args {Hello123#}
I/flutter ( 3648): isValidPassword() returned: true
I/flutter ( 3648): User object and Otp passed to VerificationPage
I/flutter ( 3648): Hello
I/flutter ( 3648): anas.majid@gmail.com
I/flutter ( 3648): isValidEmail() returned: true
I/flutter ( 3648): _startTimer() in VerificationPage called
```

```
I/flutter ( 3648): Resend OTP button pressed
I/flutter ( 3648): sendOtp() in VerificationPage called
I/flutter ( 3648): Email checked by email_auth package
I/flutter ( 3648): sendOtp in email_auth package called
I/flutter ( 3648): Email ID is valid
I/flutter ( 3648): verify() in VerificationPage() called
I/flutter ( 3648): Validation Falied
I/flutter ( 3648): Code entered compared with email
I/flutter ( 3648): verify() returned: false
I/flutter ( 3648): OTP sent successfully !
```

```
I/flutter ( 3648): Verify button pressed
I/flutter ( 3648): verify() in VerificationPage() called
I/flutter ( 3648): Validation success the user can be validated
I/flutter ( 3648): Code entered compared with email
I/flutter ( 3648): verify() returned: true
I/flutter ( 3648): User object passed to Homepage
I/flutter ( 3648): Called createUser() in LoginRegisterController with args {Sam Smith, 12/12/2000, anas.majid@g
mail.com, 98745642, Hello123#, , -1}
I/flutter ( 3648): 98745642
I/flutter ( 3648): -1
I/flutter ( 3648): Called generateHash() in LoginRegisterController with args {Hello123#}
I/flutter ( 3648): generateHash() returned: f7c54239efa1b3abb6c08d5df98fe28dca78eeff298f22bba0a3d856edb9dd32
I/flutter ( 3648): Called saveUser() in DBHelper with args {Sam Smith, 12/12/2000, 98745642, f7c54239efa1b3abb6c
08d5df98fe28dca78eeff298f22bba0a3d856edb9dd32, , -1}
I/flutter ( 3648): saveUser() in DBHelper has written user data to database
I/flutter ( 3648): DBHelper returned: {Sam Smith, 12/12/2000, 98745642, f7c54239efa1b3abb6c08d5df98fe28dca78eeff
298f22bba0a3d856edb9dd32, , -1}
I/flutter ( 3648): createUser() returned: User object
```

Add Course (Vendor)
1) Control Flow Graph
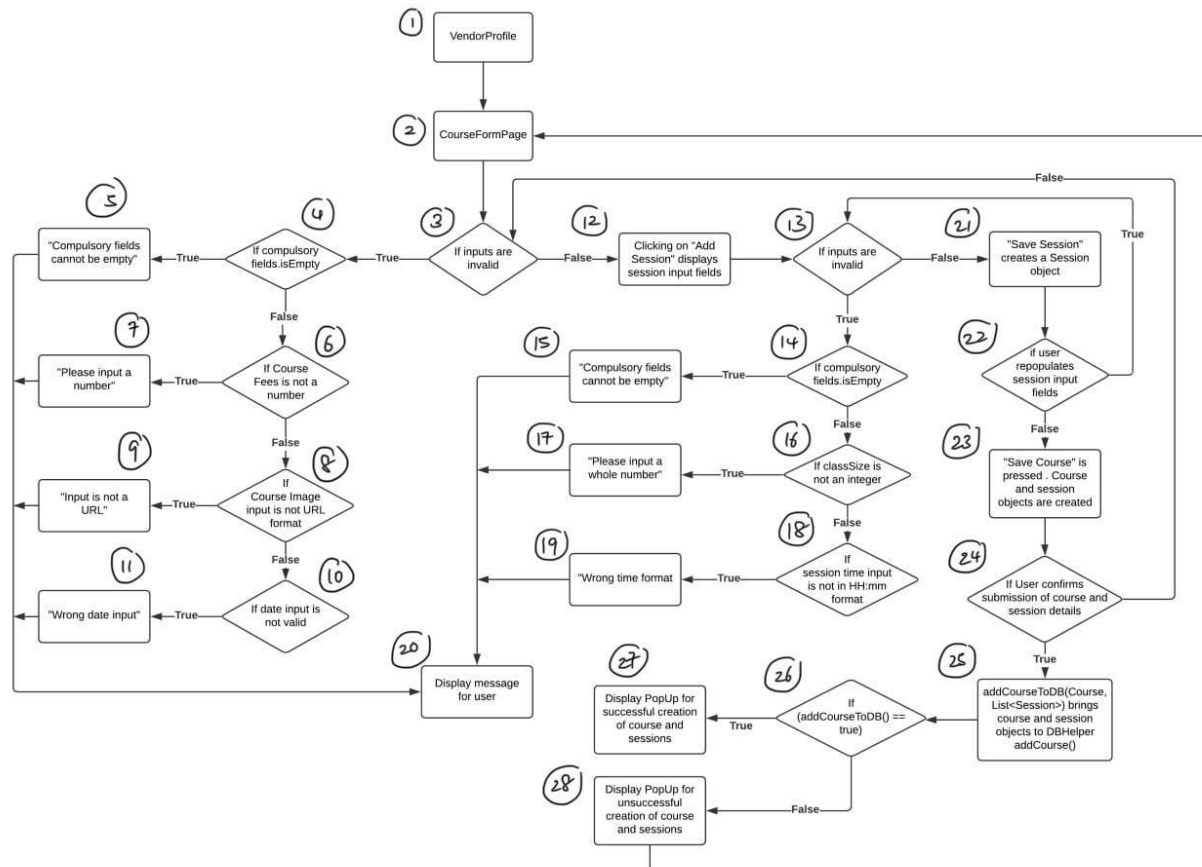
Test cases:

A.User does not input course input fields correctly.

B.User does input course correctly but session input fields incorrectly.

C.User adds more than one session to the course and repopulates session input fields

D. User confirms submission of course and session details. Course and session objects are not successfully created(if addCourseToDB() == false)

E. User confirms submission of course and session details. Course and session objects are successfully created(if addCourseToDB() == true)

Execution paths:

A:1,2,3,4,5,20 or ,1,2,3,4,6,7,20 or 1,2,3,4,6,8,9,20 or 1,2,3,4,5,6,8,10,11,20

B:1,2,3,12,13,14,15,20 or 1,2,3,12,13,14,16,17,20 or 1,2,3,12,13,14,16,18,19,20

C: 1,2,3,12,21,22,13,21,22,23,24,25,26,28

D:1,2,3,12,13,21,22,23,24,25,26,28

E:1,2,3,12,13,21,22,23,24,25,26,27

Cyclomatic Complexity:

[Edges] = 36

[Nodes] = 28

[Edges - Nodes + 2] = [36 – 28 + 2] = 10

2) Data Flow Testing

```
I/flutter (13907): Confirm Button in CourseFormPage is clicked.
I/flutter (13907): addCourseToDB is called
I/flutter (13907): addCourseToDB bringing in the following Course and Session(s) objects to DBHelper:
I/flutter (13907): Course Title: Learning CZ2006
I/flutter (13907): Course Description:Creating New Course
I/flutter (13907): Location:Nanyang Technological University,Age Group:19-25 Years,Course Fees: $1400.0
I/flutter (13907): Start Date: 12/12/2021,Registration Deadline: 12/12/2021
```

```
I/flutter (13907): Session 1: 11/12/2021, 23:30, class size: 23
I/flutter (13907): Session 2: 11/12/2021, 08:00, class size: 23
```

```
I/flutter (13907): end of addCourseToDB() in VendorController. Returning outcome of saving new course and course sessions
I/flutter (13907): addCourse() in DBHelper is called
I/flutter (13907): saveCourse() is called from within addCourse()
I/flutter (13907): saveCourse() in DBHelper is called
I/flutter (13907): End of saveCourse(). Course details written and saved to database
I/flutter (13907): getLatestCourseID() is called from within addCourse()
I/flutter (13907): getLatestCourseID() is called
I/flutter (13907): Returning latest/Maximum courseID: 24 to addCourse()
I/flutter (13907): addCourse() receives latest/Maximum courseID: 24
I/flutter (13907): saveSession() is called from within addCourse()
I/flutter (13907): saveSession() is called
I/flutter (13907): saveSession has written and a saved a session under 24 to Database
I/flutter (13907): saveSession() is called from within addCourse()
```

(continued next page)

```
I/flutter (13907): saveSession() is called
I/flutter (13907): saveSession has written and a saved a session under 24 to Database
I/flutter (13907): saveSession() is called from within addCourse()
I/flutter (13907): saveSession() is called
I/flutter (13907): saveSession has written and a saved a session under 24 to Database
I/flutter (13907): End of addCourse(). New course and course sessions are saved in Database
I/flutter (13907): addCourse() in DBHelper and addCourseToDB() in VendorController returns: true
```

Register/Withdraw
1) Control Flow Graph
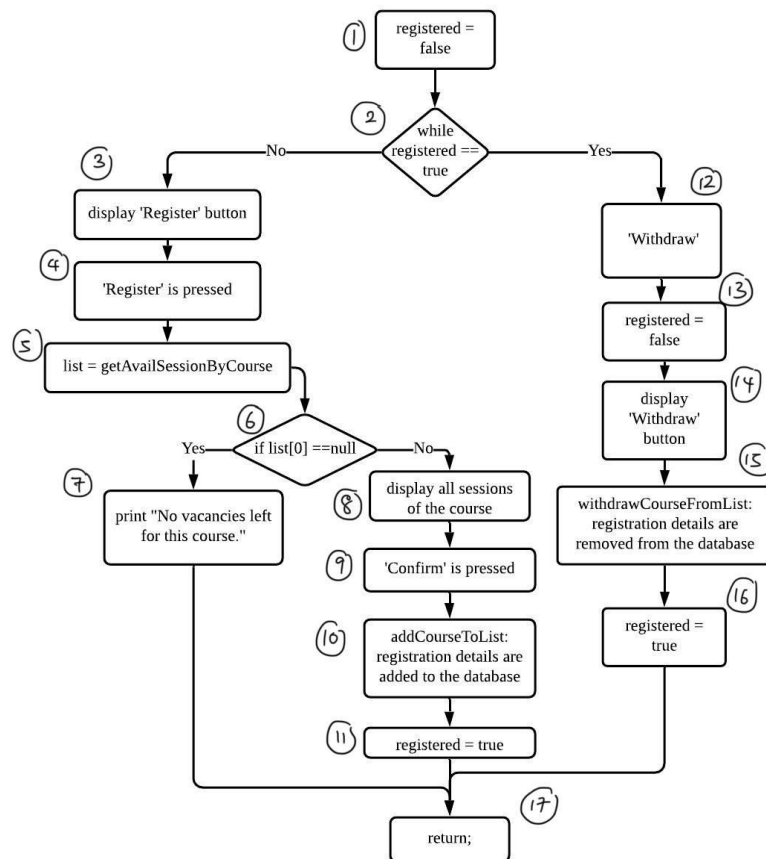
Test Cases:

A: User has not registered for a course yet and vacancies exist for at least one session of the chosen course.

B: User has not registered for a course yet but vacancies do not exist for all sessions of the chosen course.

C: User has already registered for the course and chooses to withdraw from the chosen Course.

Execution Paths:

A: 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 17
B: 1, 2, 3, 4, 5, 6, 7, 17
C: 1, 2, 12, 13, 14, 15, 16, 17

Cyclomatic Complexity:

[Edges] = 18
[Nodes] = 17
[Conditions + 1] = 3
[Edges - Nodes + 2] = 3

2) Data Flow Testing

Path A: Successful registration for a session of chosen Course


```
Run:     main.dart ×                                          ☼ —
  ■   ► Console  ⚡ ↻  ◉                                        ▦
  📌  ↑   I/flutter ( 8146): Registered is false.
      ↓   I/flutter ( 8146):   Register button is displayed.
          I/flutter ( 8146):   Any available sessions retrieved via
      ⇥    'getAvailSessionByCourse'.
      ⇊   I/flutter ( 8146):   Available sessions:
          I/flutter ( 8146): 40
      🖨   I/flutter ( 8146): 41
      🗑   I/flutter ( 8146): 42
          I/flutter ( 8146):     There are available sessions.
          I/flutter ( 8146):       Available sessions are displayed.
          I/flutter ( 8146):       User confirms registration.
          I/flutter ( 8146):       'addCourseToList' in UserController calls
           DBHelper to add the registration details to the database.
          I/flutter ( 8146):       'saveRegister' in DBHelper is used to save the
           registration entry into the database.
          I/flutter ( 8146):       Registered is set to true.
          I/flutter ( 8146): End of manual trace.
 ≡ TODO   ▣ Terminal   🎯 Dart Analysis   ≡ 0: Messages   ► 4: Run
```

Path B: No available sessions for chosen Course


```
Run:     main.dart ×                                          ☼ —
  ■   ► Console  ⚡ ↻  ◉                                        ▦
  📌  ↑   I/flutter ( 8146): Registered is false.
      ↓   I/flutter ( 8146):   Register button is displayed.
          I/flutter ( 8146):     No available sessions.
      ⇥   I/flutter ( 8146):       Error message: 'There are no more vacancies for
           this course' is displayed.
      »   I/flutter ( 8146): End of manual trace.
 ≡ TODO   ▣ Terminal   🎯 Dart Analysis   ≡ 0: Messages   ► 4: Run
```

Path C: Chosen course has already been registered for → Withdraw


```
Run:     main.dart ×                                          ☼ —
  ■   ► Console  ⚡ ↻  ◉                                        ▦
  📌  ↑   I/flutter ( 8418): Registered is true.
      ↓   I/flutter ( 8418):   Withdraw button is displayed.
          I/flutter ( 8418):   'withdrawCourseFromList' in UseController calls
      ⇥    DBHelper to remove registration entry from database.
      ⇊   I/flutter ( 8418):    'deleteRegisterByUser' finds the correct
           registration entry and removes it from the database.
      »   I/flutter ( 8418): End of manual trace.
 ≡ TODO   ▣ Terminal   🎯 Dart Analysis   ≡ 0: Messages   ► 4: Run
```