CS341: : Software Quality Assurance and Testing Semester 2, 2024

Assignment 1 - Software Testing

Group Members:

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Campus: Laucala

Mode: Face-to-Face

Part 3
1. Functionality Testing
Feature 1: Login/Registration

Test Case ID	Test Case name	Test procedure	Expected Result	Actual Result	Pass/Fail
TC1	Valid login credentials	1. Open app 2. Enter valid email and password 3. Tap login	User successfully logs in	Successfully opened app and entered valid email and password and it successfully logged into the system.	**PASS**
TC2	Invalid login credentials	1. Enter invalid credentials 2. Tap login	Error message displayed	After entering the invalid credentials, the system allows me to log in into the system with invalid credentials.	**FAIL**
TC3	Password field masking	1. Enter password 2. Check password field	Password is hidden (masked)	Entered password and password field was masked (encrypted).	**PASS**
TC4	Password reset	1. Tap "Forgot Password" 2. Enter registered email	Reset link sent to the email	Tapped on forgot password and entered registered email and reset link was sent through the email.	**PASS**
TC5	Login with empty fields	1. Leave email and password fields empty 2. Tap login	Error message displayed	Left both email and password fields empty and tried login in but it did not allow me to press log in button.	**PASS**
TC6	Register new user with valid data	1. Tap register 2. Fill valid details 3. Tap submit	User successfully registered	Entered using valid data and filled all the required fills, it has **successfully registered**.	**PASS**
TC7	Register with invalid email format	1. Enter invalid email 2. Tap submit	Error message displayed	Entered using invalid email and filled all the required fills, it showed error messaged "**invalid email address**".	**PASS**
TC8	Register with existing Username	1. Enter username already in use 2. Tap submit	Error: username already exists	Entered using existing username and filled all the required data, it showed error messaged "**username already exists**".	**PASS**
TC9	Email mismatch during registration	1. Enter Email that do not match 2. Tap submit	Error: Email do not match	Entered mismatch email , it showed error messaged "**Email do no match**".	**PASS**
TC10	Password reset for unregistered email	1. Tap "Forgot Password" 2. Enter unregistered email	Error: Email not found	After entering the unregistered email address, It does not gives and error message despite it will send the email if email was registered.	**FAIL**

Feature 1: Login/Registration screenshots

TC 1

TC 2

TC 3

TC 4

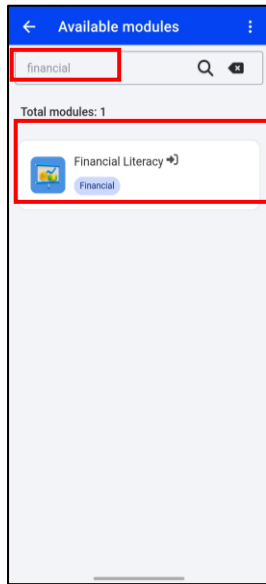### TC 5

TC 6

TC 7

TC 8

TC 9

TC 10

Feature 2: Modules Search and Enrolment

Test Case ID	Test Case name	Test procedure	Expected Result	Actual Result	Pass/Fail
TC1	Search for available modules	1. Open app 2. Search with valid modules name	Relevant modules displayed	Searched "Financial" modules displayed.	**PASS**
TC2	Search with invalid modules name	1. Enter invalid modules name 2. Tap search	Error or no results found	Searched invalid modules "Cybersecurity" did not displayed because it did not exist.	**PASS**
TC3	modules enrolment with valid input	1. Select modules 2. Tap "Enroll"	Enrollment confirmation displayed	Selected a modules as "Financial literacy" and it enrolled successfully.	**PASS**
TC4	Search with blank input	1. Leave search field blank 2. Tap search	All modules displayed	Despite leaving the field blank all modules were displayed	**PASS**
TC5	Verify modules details	1. Select modules 2. View course description	Modules details displayed correctly	The course details show clear message.	**PASS**
TC6	Modules filtering by category	1. Select modules category filter under my modules 2. View results	Modules filtered by selected category	Selected a module and filtered as "in progress" it filtered.	**PASS**
TC7	Enroll with no prerequisites	1. Select modules with no prerequisites 2. Tap "Enroll"	Successfully enrolled without issues	Selected modules with no prerequisites and it successfully enrolled without issues.	**PASS**
TC8	Check system response to network failure during Enrollment	1. Disable network 2. Attempt to enroll in modules	Error: Network connection required	Messages shows that your Device is Offline.	**PASS**
TC9	Search for modules using partial course name	1. Enter partial modules name 2. Tap search	Relevant modules with partial match displayed	Entered partial name of the module insurance and climate disaster as "clim" and it matched the module and displayed.	**PASS**
TC10	Search with special characters	1. Enter special characters in the search 2. Tap search	Error or no results found	It displayed no results found did not match any module.	**PASS**

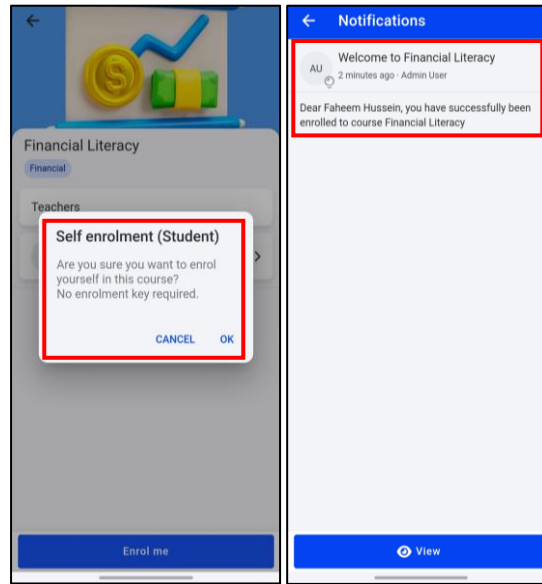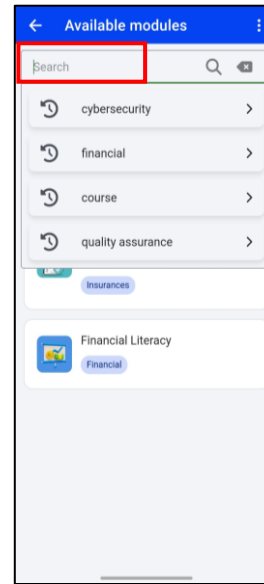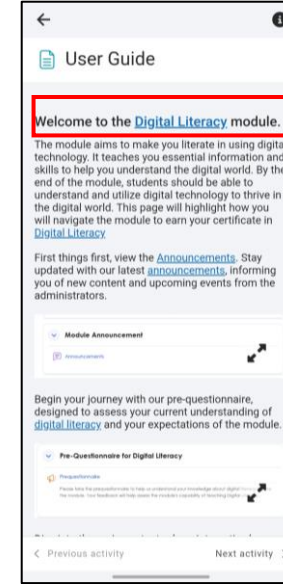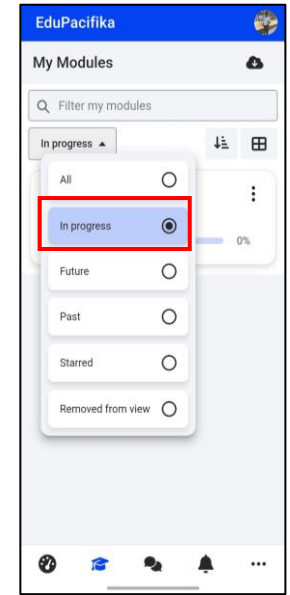# Feature 2: Modules Search and Enrolment Screenshots

TC 1

TC 2

TC 3

TC 4
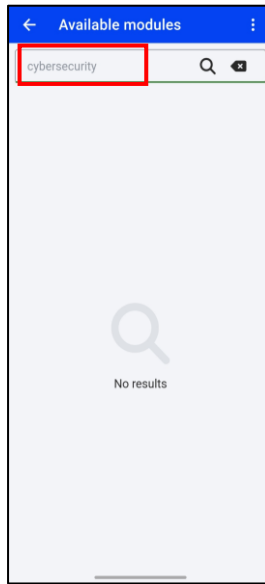
TC 5

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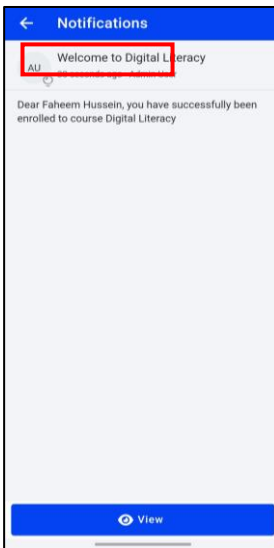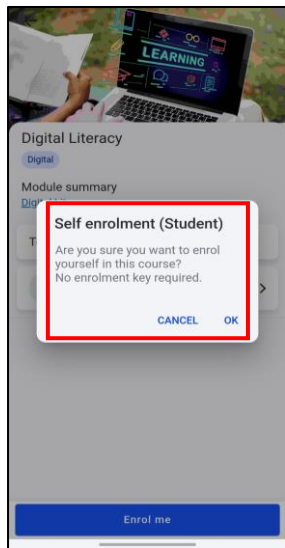
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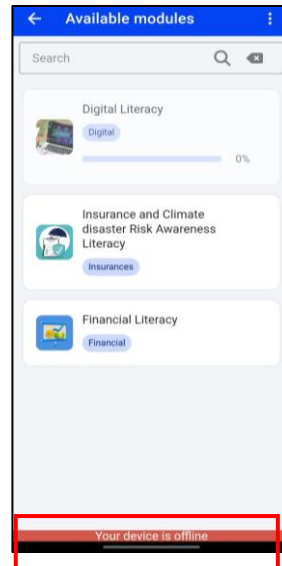
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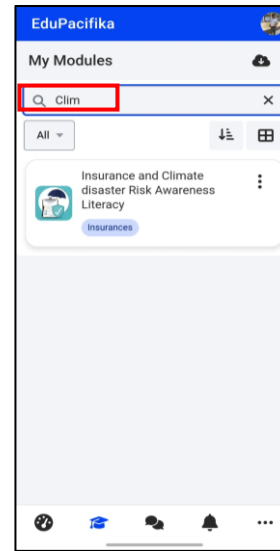
TC 5
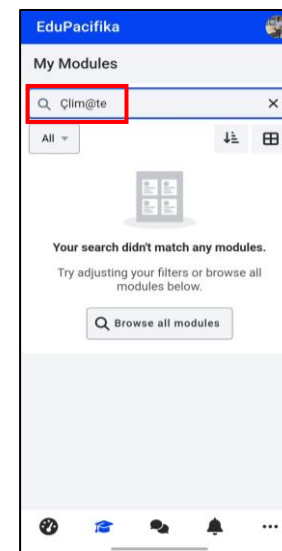
Feature 3: Dashboard/Navigation

Test Case ID	Test Case name	Test procedure	Expected Result	Actual Result	Pass/Fail
TC1	Access dashboard after login	1. Login to the app 2. Navigate to the dashboard	Dashboard loads with all options visible	Logged into the app and dashboard loads with all options visible.	**PASS**
TC2	Navigate to course list from dashboard	1. Tap "Courses" on the dashboard	Course list page loads successfully	Course list page loads successfully.	**PASS**
TC3	Navigate to profile	1. Tap "Profile" icon on the dashboard	Profile settings page opens	Successfully opens profile page.	**PASS**
TC4	Access any modules grades	1. Tap "grades" on the selected modules.	Selected modules should show grades.	When selected modules "Financial Literacy" and selected grades it shows error.	**Fail**
TC5	Send message to the admin user	1. Open dashboard 2. Scroll to the selected modules. 3. Select teachers and admin user. 4. Tap on messages and should allow to send message.	The expected results should the user be able to send message to the admin or teacher.	It did not allowed user to send message directly, but the user has to send contact request to send message.	**Fail**
TC6	Check dashboard loading time	1. Login and open dashboard	Dashboard loads within 2-3 seconds	Dashboard sections open and runs smoothly and opens within 3 seconds.	**PASS**
TC7	Navigate between sections (e.g., messages, courses)	1. Switch between different dashboard sections	Navigation is smooth without delay	When switching to dashboard sections and it navigates smoothly.	**PASS**
TC8	Access files/ from user account	1. Tap "files" from the user account 2. Then site files all data files will be available.	file page opens successfully	Accessing the file page it successfully opens the page and shows all files.	**PASS**
TC9	Search for a course from the dashboard	1. Use search bar on the dashboard 2. Enter course name	Relevant course results are displayed	Searched "financial" from dashboard and results popped up.	**PASS**
TC10	Dashboard responsiveness on screen orientation	1. Rotate device (landscape and portrait)	Dashboard adjusts correctly to orientation	The app is responsive, when device is rotated to landscape it works smoothly.	**PASS**

Feature 3: Dashboard/Navigation Screenshots

TC 1

TC 2

TC 3

TC 4

TC 5

TC 8

TC 9

TC 10

2. User Interface (UI) Testing
1. Login/Registration

The login page is well structured thought out and very intuitive. The fields of email and password are very noticeable and easily accessible. The colors used make the text and error messages highly contrasting, making everything easy to read, visually appealing. Fonts used are clear and readable, so the experience won't be spoiled in any aspect. More important, though, is the fact that the screen works responsively across different devices; everything adjusts smoothly and without elements clogging each other. That has been tested on both an iPhone 12 Pro Max and a Samsung S24 Ultra, and it was good to go on both.2. Course Search and Enrollment

2. Course Search and Enrollment:
The search page is formal and fast, the courses are listed nicely, and the filters are easy to use. Colors make sense when showing options you've selected. Course titles and descriptions can be easily located and read. Works well on smaller screens; adjusts nicely when you rotate your device.

3. Dashboard/Navigation
Because of how the dashboard is laid out, main sections are easily accessible. The colours separate different sections, making everything easy to find. Text is clear, icons are of the right size-things can be seen all in one glance. It also adjusts smoothly on different devices. The responsiveness it adjusts smoothly on different devices.

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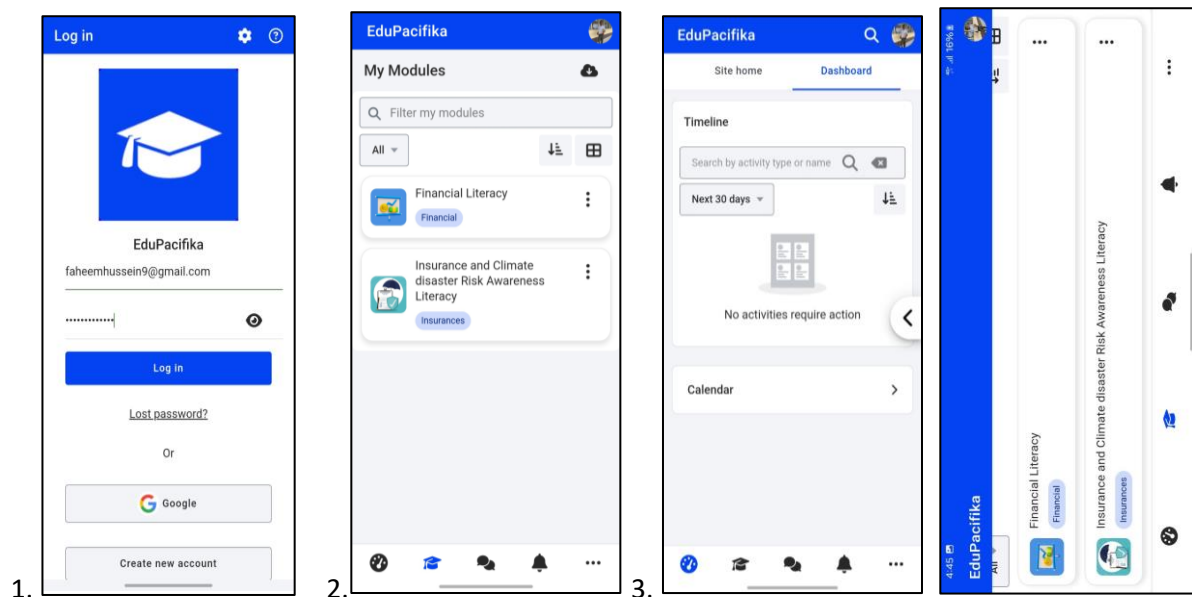
3. User Experience (UX)

1. Ease of Navigation- While going through Login/Registration, it was smooth for the users whereby they can have access to the login fields very quickly and proceed further. Course Search and Enrollment: Course search feature is well integrated, but the filters could be made more apparent for ease of use by users. Dashboard and Navigation: Transitioning between sections is smooth and doesn't really need many improvements; labels denoting each section are clear.
2. Intuitive: Features in the application are intuitive; things such as Login and Course Search are rather easy to find by the users. However, there would be elements that would be much more noticeable-for instance, help/support.
3. Overall User Experience: The overall feel of the application would be that it is just okay; hence, it would be user-friendly and responsive. Overall, the user flow would feel natural; at the same time, it can be improved to optimize the searching filter to reach help features quickly.
4. The areas that need Improvements is highlight Filters, Filters in the course search feature can be more prominent and Accessibility Adding tooltips or help icons in less clear sections would aid new users. Most importantly the Help/Support feature should be placing the help option in a more visible spot for users needing assistance.

Performance Testing

Loading Time: The login and registration screens load within 2-3 seconds once you fill out the details and click to go inside the system. The lists of courses come up when searching in about 3-5 seconds. Transition from one section of the dashboard to another is smooth. Everything comes up in approximately 2 seconds. Memory Usage: Such an app would generally consume around 367MB memory usage as it has many interactive features that display dynamic content. Battery Consumption:
- It takes about 4.5% of your battery in an hour, which is generally just a decent spending by an app of this nature.

Network Conditions: First and foremost, it will not lag when connected with Wi-Fi , 4G has a few minor transition delays, loading from within a course, I assume, of around 1-2 seconds. 3G has longer page load delays of up to 10 seconds and sometimes with timeouts.

Performance Issues: In the application, there is some sluggishness over 3G. But on 4G and Wi-Fi, it is okay. On rather slow networks like 3G, one may need to compress or otherwise decrease the size of the data requests for optimization of application performance.
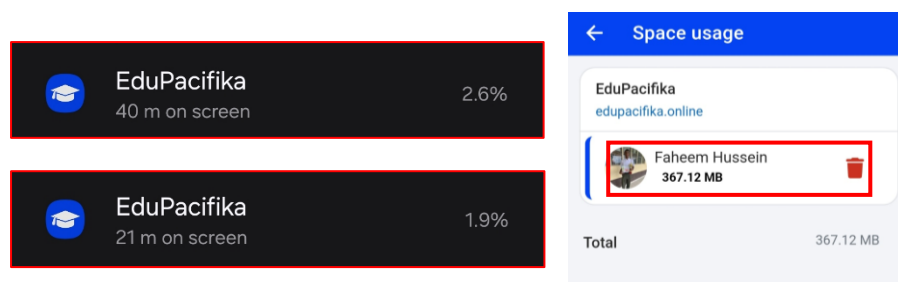
Bug Reporting

Bugs/Crashes Encountered:

1. **Login Screen:** Everything was completely fine.
2. **Course Search:** Delayed response when filtering by multiple categories only on 3G.
3. **Slow Performance on 3G:** Noticeable delay in loading content on slower networks.

Recommendations for Improvement:

1. Optimize data loading times, especially for slower networks.
2. Implement crash handling.
3. Streamline the course filter functionality for faster response times.

Question 4
2 Test Techniques Chosen are:
Boundary Value Analysis is basically one of the testing techniques wherein concentration revolves around the "boundary" or edge values of input ranges to ensure that the software acts with correctness at these critical points. **For example**, in a voter registration application, where the legal age is 21, BVA will test ages right on the boundary, such as a person who is just 21 years old, a person who is 20 years old-just under the age, and a person who is 22 years old-just over the age. It helps bring those bugs out that might appear when users come near a legal limit.

In contrast, **equivalence partitioning** is a test design technique that involves the division of input data into groups or "partitions." Every group is thus expected to behave in a similar way hence, only one test from each group is needed. **For example**, where the application requires a birth year to determine eligibility, EP would begin by establishing valid and invalid partitions of inputs. Valid inputs will be all those years when the user is above or exactly 21 years old, and invalid ones would be the years where the user is younger than 21. This is how large ranges of values could be tested without testing all of them.

1. Boundary Value Analysis (BVA)
Test Cases Based on BVA:

Test Case ID	Input Parameters	Expected Result	Valid/Invalid
BVA1	Birth Year: 2003, Birth Month: Oct, Status: Citizen, Country: Fiji	"You are eligible to vote"	Boundary year of 21 years exactly. **(valid)**
BVA2	Birth Year: 2004, Birth Month: Dec, Status: Citizen, Country: Fiji	"Sorry, you are not eligible to vote now"	One year below the boundary. **(invalid)**
BVA3	Birth Year: 2002, Birth Month: Jan, Status: Permanent Residence, Country: Fiji	"You are eligible to vote"	Birth year one year older than the boundary. **(valid).**
BVA4	Birth Year: 2003, Birth Month: Nov, Status: Citizen, Country: Fiji	"Sorry, you are not eligible to vote now"	Birth year within the boundary but late month **(invalid).**
BVA5	Birth Year: 2001, Birth Month: Dec, Status: Work Permit, Country: Fiji	"Sorry, you are not eligible to vote now"	**Valid** birth year but **invalid** status (Work Permit).
BVA6	Birth Year: 1999, Birth Month: Jun, Status: Permanent Residence, Country: USA	"You are eligible to vote"	Valid birth year and status but different country.

2. Equivalence Partitioning (EP)
Test Cases Based on EP:

Test Case ID	Input Parameters	Expected Result	Valid/Invalid
EP1	Birth Year: 1990, Birth Month: Jan, Status: Citizen, Country: Fiji	"You are eligible to vote"	All inputs are **valid** for the citizen older than 21 years old.
EP2	Birth Year: 2005, Birth Month: Mar, Status: Citizen, Country: Fiji	"Sorry, you are not eligible to vote now"	Birth year and month are **invalid** its under 21.
EP3	Birth Year: 1985, Birth Month: Jul, Status: Student Visa, Country: Fiji	"Sorry, you are not eligible to vote now"	**Valid** birth year but **invalid** status (Student Visa cannot vote).
EP4	Birth Year: 2001, Birth Month: Feb, Status: Permanent Residence, Country: Australia	"You are eligible to vote"	Permanent Resident in a different country than Fiji (**valid** for voting).
EP5	Birth Year: 1980, Birth Month: Jun, Status: Work Permit, Country: Fiji	"Sorry, you are not eligible to vote now"	**Valid** birth year but **invalid** status (Work Permit cannot vote).
EP6	Birth Year: 2003, Birth Month: Sep, Status: Permanent Residence, Country: USA	"Sorry, you are not eligible to vote now"	**Invalid** year (under 21) and **valid** status but different country.

Conclusion:

To conclude between Equivalence Partitioning and Boundary Value Analysis **BVA** has better coverage for age limit test cases. Testing well at and around the boundary(21 years) should be considered, it is very crucial directly impacts its eligibility whereas **EP** provides wider coverage in testing the various users' statuses - Student Visa, Work Permit, and so on, providing combinations of country and status, which reduces redundancy tests by partitioning input groups. Both techniques are often in that boundary conditions and equivalence classes are covered, hence robust.

Final Project Report Mark Allocation Sheet

After our group discussion, we recommend the following mark allocation to each group member, based on level of contribution throughout this phase of the project.

Project Manager: <u>Shoheb Begg</u>

Student ID	Percentage of final points
S11208379	100%
S11208640	100%

Signed

Student Name	Student ID	Signature	Date
Shoheb Begg	S11208379	*S.Begg*	23/09/2024
Faheem Hussein	S11208640	*FAHEEM*	23/09/2024