

AITCS

Homepage: http://publisher.uthm.edu.my/periodicals/index.php/aitcs e-ISSN :2773-5141

Fascia Fitness Application: Internal Transformation

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DOI: https://doi.org/10.30880/aitcs.2023.04.01.077 Received 14 June2022; Accepted 07 June 2023; Available online 30 June 2023

Abstract: Fascia fitness website is specifically designed to help peoples that are suffering from chronic pain, injuries and to build up performance for the sports that is played by an individual. However, the website had a difficulty in registration due to inconsistency, it was not convenient and the website lacks security and data privacy. Therefore, a well composed fascia fitness application is required to address the mentioned problems, the new application should have the ability to manage the data including the customer's privacy and solving the register and login error that occurs often in the fascia fitness website. This fascia fitness application will be more secure and more functional to the customers. The main purpose of this fascia fitness application is to design and build an effective application to improve every aspect that was lacking in the fascia fitness website and also to benefit the users by becoming injury free. The methodology that was used is Agile model as it has the potential finish the system efficiently as this project is considered as small project and the project should be delivered in a short period of time. The application is developed using Object Oriented Approach (OOP) which is Java programming language in Android Studio. This application will let the user to register and sign into the account. After that, user will be able to choose the desired program to start the exercise. Users also can choose video and tips for a better understanding about fascia. Through this application, user will get the benefit by checking the progress status which will lead them to be more injury free and boost performance.

Keywords: Fascia Fitness Application, Agile model, Object Oriented Approach (OOP), Java, Android Studio

1. Introduction

Fascia is a skinny casing of connective tissue that surrounds and holds each organ, blood vessel, bone, nerve fiber and muscle in place. The tissue does additional than give internal structure; connective tissue has nerves that create it virtually as sensitive as skin. Fascia is much more than "plastic wrap around the muscles." The more you move, the worse your muscle injuries and joint problems feel. Movement helps to relieve fascia adhesions, which also react well to heat therapy, which helps to restore

the tissue's flexibility. Adhesions can get worse over time for certain people, causing the fascia to squeeze and twist the muscles it surrounds [2].

Fascia fitness website is a website specifically designed to help peoples that are suffering from chronic pain, injuries and to build up performance for the sports that is played by an individual. The customers can purchase their desired plan from the website, and this helps them recover from the chronic pain and injuries and boosts in their performance as evidence has been showed in the fascia fitness website. However, the inconsistency of the maintenance of the fascia fitness website, problem arise such as login error and purchase error and a hard time to manage data privacy of the customers. Therefore, Therefore, a well composed fascia fitness application is required to address the mentioned problems, the new application should have the ability to manage the data including the customers privacy and solving the register and login error that occurs often in the fascia fitness website. This fascia fitness application will be more secure and more functional to the customers.

The objective of this project is to develop a training module using fascia fitness application to prevent any injuries, to monitor fascia connection level of a specific user and to guide a proper way for the user to do fascia training using fascia fitness application. Besides that, there are two scopes for this application as the first would be user scope and administrator. Besides that, there are several functional and module scope that will be explained detail in system analysis and design.

This article is organized into five sections. The first segment explains the context of the project. The second section clarifies the analysis of literature. For the third part, the methodology is explained. The study and design of the application is illustrated in the fourth section. In the last segment is the conclusion.

2. Related Work

In this current modern age of Information Technology and communication system, people have made it a habit of using computer and computer application. Mobile applications have a worldwide positive influence. People in developed countries are becoming more facilitated because of mobile applications, while people in underdeveloped countries are updating themselves and creating a new sort of IT infrastructure [3]. Mobile applications are simple, user-friendly, low-cost, downloadable, and run on most mobile phones, including low-cost and entry-level phones. The mobile application has a wide range of applications because to its extensive functionality, which includes calling, texting, browsing, chatting, social network communication, audio, video, and games, among others [3].

In this case study, most users are familiar with the basic's exercises with instructions and examples of physical activity such as sit-ups, plank, pushups, and some other fitness exercise. Common injuries after workout sessions are low back pain, shoulder strain, knee pain, elbow pain and much more. This is a sign that shows the body is starting to become dysfunctional as the human body is much more capable [4]. Besides that, athletes' groin injuries are becoming more universally recognized in sports, particularly in football. A study of football injuries in Gothenberg found that 5% of all injuries occurred in the groin area, both acute and chronic. The researchers looked at seventeen distinct groups [5]. In order to overcome common injuries no matter for average joe or athletes, the purpose fascia fitness application is to make sure the users that are suffering from chronic injuries are able to heal permanently and This fascia fitness exercise has been undergone by experts and it is a low-risk exercise that will not cause any injuries but it will heal the injuries instead.

Android applications are designed to be used on Android-based Operating System (OS). It covers the fundamentals, such as how to set up a development environment and how to obtain the necessary tools and add-ons. The thesis is intended to act as a guide for intermediate developers who are looking for solutions to challenges that aren't covered in existing textbooks. Android is a mobile device platform that includes an operating system and a Software Development Kit (SDK). It started as a small software

startup that Google bought and is now controlled by the Open Handset Alliance (OHA), which Google is a member of. A description of Android is provided, as well as its benefits and drawbacks [6].

Application can be more reliable than website in terms of security. For example, recently fascia training academy system which can be referred to **Table 1**. The system was attacked by a cyber-incident. From this incident it will be much better to create an application as it is more reliable and much more secure compared to website. Besides that, application is much more convenient compared to browsing through a website as it takes much more time to load than in application.

Studies are also conducted on these existing equivalent applications. This is to see the good and suitable features that can be implemented into new applications. Three (3) current system and its comparison to the proposed application are shown in **Table 1**. Three existing system are Fascia Training Academy system, Secret of athleticism and Football truth system. The five (5) modules are defined for the proposed system will be used to compare all three (3) website and one (1) application, which are user login and registration, program module, tips module, video module and progress module. Conclude how I use this result for the project development.

System	Fascia Training Academy	Secret of athleticism	Football truth	Fascia Fitness Application
User Login & Registration	×	V	V	V
Program	×	$\sqrt{}$	×	\checkmark
Tips	×	×	$\sqrt{}$	\checkmark
Video	×	\checkmark	×	$\sqrt{}$
Progress	×	×	\checkmark	$\sqrt{}$
Database	$\sqrt{}$	×	$\sqrt{}$	$\sqrt{}$

Table 1: System's Comparison

3. Methodology

This project has employed agile software development model. Agile model is suitable for this project and it has the potential finish the system efficiently as this project is considered as small project and the project should be delivered in a short period of time [7]. **Table 2** shows each of the phase of agile model method has its own tasks and output that need to produce during the entire project development.

Main stages T	ask Activities	C	Output
Iteration 1:	Planning: Scheduling the estimated	-	Gantt Chart which can refer to
Focus on	time for each iteration		appendix.
completing			
registration module -	Requirement Analysis: Collect the	-	List of user requirement such as
function and all the	required information to meet user		suitable interface design, progress
module's interface.	requirement such as suitable interface		update and proper guidance for the
	design, track progress and proper		fascia training module.
	guidance for the fascia training.		

Table 2: System Development Activities

Main stages	Task Activities	Output
	 Design: UX/UI design for registration module which includes full name, age, email address and password Building/Development: Develop registration module function which includes the function of full name, age, email address and password using Android Studio. 	 Interface for registration module which includes username, full name, email address and password Fascia fitness application (prototype version 1.0)
	- Testing: test the application for any bugs such as registration error and database error	 Prototype debugging and update with supervisor to revise the next version of the prototype.
Iteration 2: Focus on completing all the modules' function	- Planning: Diagram drawing using online tools such as registration error and database error.	- Use-case diagram, UML Diagram, Activity Diagram, Sequence Diagram, Flowchart and system architecture.
and enhanced user interface	- Requirement Analysis: Collect the required information to meet user requirement second phase which are knowledge base facts such as fascia, suitable exercise, and fascia connection level.	 List of user requirement second phase which are knowledge base facts such as fascia, suitable exercise, and fascia connection level.
	 Design: UX/UI design for all the modules in the application which are program module, video module, tips module, and progress module. Building/Development: Developing 	 Updated interfaces for all the module such as program module, video module, tips module, and progress module. Fascia fitness application (prototype
	all the function for program module, video module, tips module, and progress module using Android Studio	version 2.0)
	- Testing: test the application for any bugs such as timer bug when exercise, video bug, and progress update bug etc.	- Prototype debugging and update wit supervisor to revise the next version of the prototype.
Iteration 3: Focus on	- Planning: Final project management such as thesis report	- Full report of documented results
enhancing progress	- Requirement Analysis: Analyse the required information which includes all	- Features/Unit functionality documen which includes all the previous user

Main stages	Task Activities	Output
module and extra	the previous user requirement to match	requirement to match with the current
features	with the current fascia application	fascia fitness application (prototype)
	(prototype)	
	- Design: Enhanced previous design for	- Interface of final version for all
	program module, progress module, tips	modules such as program module,
	module, and an additional quiz module for	progress module, tips module, and an
	final version	additional quiz module for final
		version
	- Building/Development:	- Fascia Fitness Application (prototype
	- Develop and enhance progress	final version)
	module, program module, tips	
	module and an additional quiz	
	module using Android Studio	
	- Testing: Unit testing and acceptance	- Feedback from the user about the
	testing	final prototype and test all the cases.
		- Final prototype debugging and update
		to the latest version
Final application	- Launch application	- No errors or bugs

Requirement analysis is the method of evaluating requirements that the designed system needs to meet, or the result of the proposed system's user expectation. Table 3 and Table 4 show the functional and non-functional requirements, respectively. Table 5 lists all the data that will be collected by the system.

Table 3 listed 5 modules which includes user scope which is register and login module as one and the function scope. The main module of the proposed system is program module and followed by tips and quiz module, video module and lastly progress module. Next, **Table 4** shows 3 requirements for the non-functional of the proposed system. The requirements are Operational, performance and security.

There are two types of data collected by the system: Personal Data and System Data. Generally, personal data will only collect 4 items, they are full name, age, Phone number, and email address.

Table 3: Functional Requirements

No	Module	Description
1	Registrat ion & User Login	 The application should allow the new user to register an account before login. The application should alert the user for any invalid input The application should display error when the empty field is not filled. The application should allow the users to login into the system using valid email and valid password
2	Program	 The application should validate email and password to be precise. The application should redirect user to program once successful login The application should display the main interfaces when the user logged in. The application should display four types of programs that is available. The application should display specific user's full name from the database accordingly

No	Module	Description
		• The application should consist of three exercises in each program that is available.
		• The application should let the user to give feedback.
		 The application should consist of timer and gif format image for the user to do the exercise precisely.
		• The application should allow the admin to create, edit, delete and update the program.
		• The application should allow the admin to create, edit, delete, and update the program.
3	Video	The application should display proper video guidance for the user.
		The application should allow the user to choose the desired video guidance.
		 The application should allow the admin to create, edit, delete and update the video guidance.
4	Tips and	 The application should display extra beneficial tips to let the user
	Quiz	recover much faster from the exercise.
		• The application should allow the user to take quiz to gain the
		necessary knowledge.
		The application should allow the admin to create, edit, delete, and
		update the quiz.
5	Progre	 The application should display user details before update the progress.
	ss	The application should allow the user to choose the correct sensation based on the
		exercise that has been done in program module.
		• The application should ask the user to answer few questions to identify the correct
		fascia connection level of the specific user.
		The application should allow the user to upload and change profile picture.
		• The application should allow the admin to create, edit, delete, and update the progress.

Table 4: Non-Functional Requirements

No	Requirement	Description
1	Operational	The application should be user friendly.
		 The application should be easily maintained and updated.
2	Performance	• The application should be able to use anytime when there is an Internet.
		 The application accesses the picture and videos from the database that makes the storage of application much smaller.
3	Security	• The developers are the only one to generate report if there is any error or bugs
		 The user can only access their own account with valid email and valid password.

System analysis and design is conducted using object-oriented approach. The diagram produced is UML (use case and class diagram).

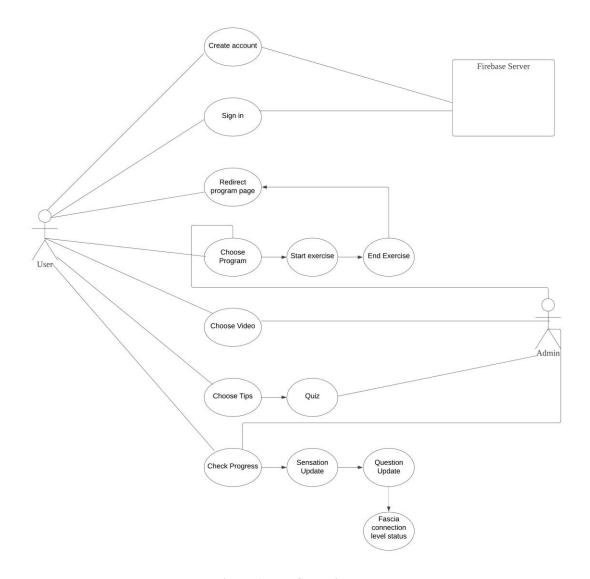


Figure 1: Use Case Diagram

Figure 1 illustrates use case diagram for the fascia fitness application. There are two entities involved which are the user and admin and there is a firebase server to store the data. Users can create an account and login into the application. After that, users can choose the program that desire and start exercise. Besides that, there are video and tips option to guide the user to make sure the exercise is done correctly. There is also an additional quiz module for the user to have a better understanding of the tip's module. Finally, users can update their progress to identify the current fascia connection level status. While the admin is able to create, edit and update all of the module to ensure if the content is up to date.

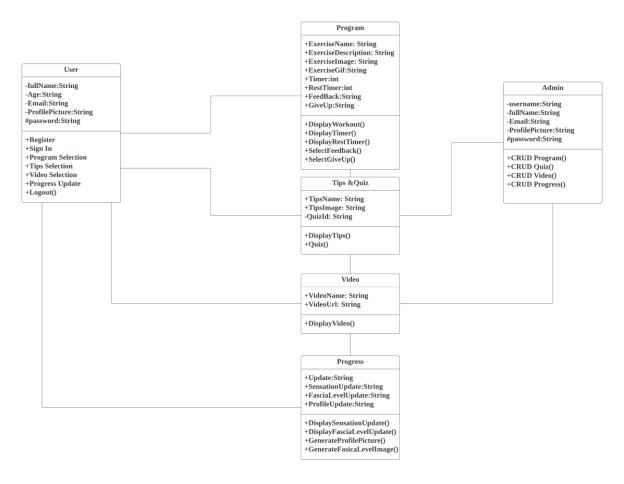


Figure 2: UML Class Diagram

Figure 2 illustrates UML class diagram for fascia fitness application. There are five class which is User, Program, Progress, Tips and Video. The attributes only contain in user class as user only needs to key in information for registration and login purpose. Besides that, for the other class most of them are operations that will occur when the user is choosing an option.

"Program" module has eight attributes such as ExerciseName, ExerciseDescription, ExerciseImage, ExerciseGif, Timer, RestTimer, Feedback and Giveup. The user chooses the given program and after that the system will redirect to exercise page which contains the exercise names and image. After the user clicked on start exercise button, exercise will start, and the timer will start. The exercise gif and description will guide the user to do the exercise. If the user cannot continue the exercise, there is a give up option for the user and the option that the user chose will be saved to the database. After finishing the exercise, the user must submit feedback option and it will be saved in the database.

"Tips and Quiz" module has three attributes such as TipsName, TipsImage and QuizId. From this module, user can either choose tips or quiz. If the user chooses tips, there would be tips category for the user to choose from. The purpose of tips is to make sure that the user understands fascia and at the same time able to recover much faster from the exercise that has been done in the program module. Before entering the quiz module, the user must make sure the tips are fully understood. The quiz consists of several questions to make sure that the user understands the tips module.

"Video" module has two attributes such as VideoName and VideoUrl. The user can choose the desired video guidance for the exercise that the user face difficulty. After that, the system displays the video with YouTube plugin. Admin can update and delete the video if the video is out of date.

"Progress" module has four attributes such as Update, SensationUpdate, FasciaLevelUpdate and ProfilePicture. The user can update their progress by clicking on the update button. Before that, the user has an option to update profile picture. This profile picture will be saved into the user's database. After clicking the update button, user will be redirected to sensation update and after that the user will be redirected to answer few questions to identify current fascia connection level. The application will display the latest fascia connection level status in the progress page.

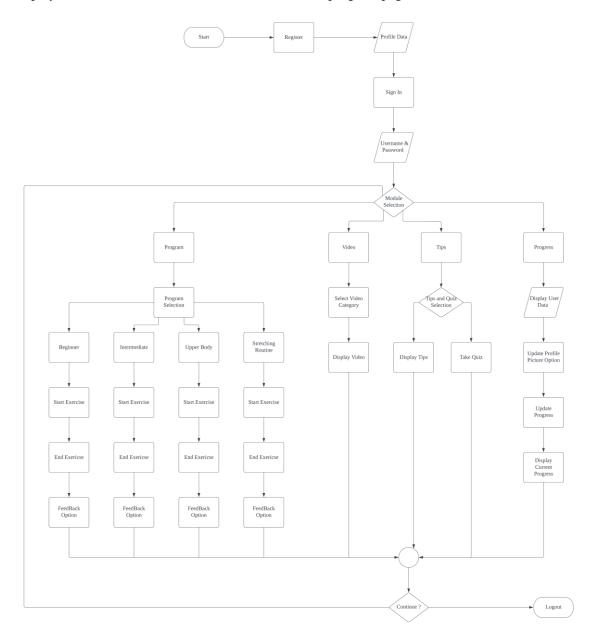


Figure 3: System Flowchart for Fascia Fitness Application

As seen in **Figure 3**, on the login screen, the system will start. The user must first have an account to proceed to login page and then the user can go to the program. Users can choose the suitable program and start exercise. After the exercise, users are required to submit the feedback option and the data will be save into database and the users will redirect to program. Users can choose video module for guidance purpose as there are important for the users to grab this new knowledge. There's also tips and quiz module, this is to let the user to have a better understanding of the tips given and recover at a higher rate. Besides that, the user can also take part in the quiz to gain the knowledge that was learned from the tip's module. Finally, users can update the progress by pressing the update button to update

the sensation that the user did in the program module. After that, the user will be answering a few questions that will determine the user's fascia connection level status. The user can also update and change profile picture by pressing the edit button in the progress module.

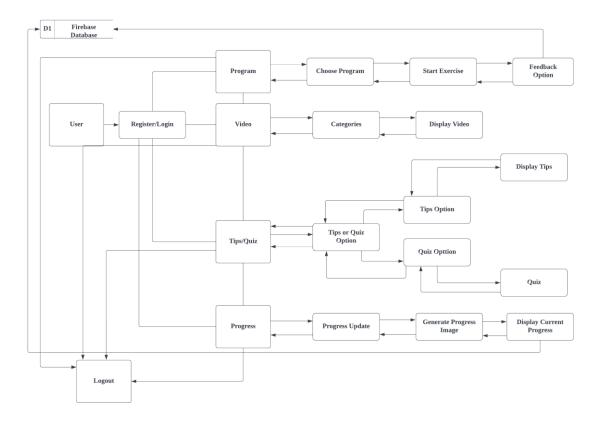


Figure 4: System Architecture for Fascia Fitness Application

Database schema for the application is listed in the following:

- i. User (UniqueId, age, fullName, email, password, profile picture)
- ii. Program (UniqueId, Feedback GiveUp)
- iii. Tips and Quiz (UniqueId, QuizId)
 iv. Progress (UniqueId, Profile, Sensation, FasciaLevel)

Figures 5, 6, 7, 8, 9 and 10 demonstrates the user interface for the login module, register module, program module, video module, tips and quiz module and progress module.

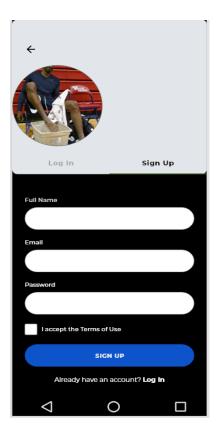


Figure 5: Register Module Interface



Figure 7: Program Module Interface

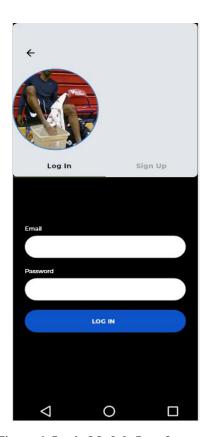


Figure 6: Login Module Interface



Figure 8: Tips and Quiz Module Interface

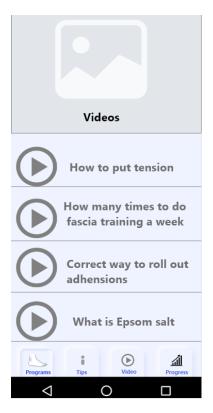


Figure 9: Video Module Interface

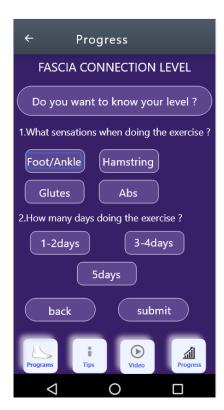


Figure 10: Progress Module Interface

4. Results and Discussion

Implementation is the execution of a plan, method or any design, idea, model, specification, standard, or policy to do something [8]. Therefore, implementation is an action that must follow any initial idea to make something really happen. In this application, it will be built in the developer's laptop which is using Firebase Realtime database.

Testing is to find out how things are going. As far as humans concerned, the test indicates the degree of knowledge or skill that has been acquired. In computer hardware and software development, testing is used at key checkpoints throughout the process to determine whether the goal is achieved [9].

A test case is a set of operations performed on the application to determine whether it meets the system requirements and runs correctly. The purpose of test cases is to determine whether different functions in the application perform as expected, and to confirm that the application meets all relevant requirements such as guidelines, customer requirements and the standard [10]. The process of writing test case can reveal errors and defects in the application. Table 4 shows the list of test cases that was done to identify if there is any errors or defects in the application.

Table 1: Example of presenting data using a table

No.	Test Cases	Description	Output
TEST_1	100(registration module)	<u> </u>	1

1.	TEST_100_001	Verify if the user can key in the small or capital letters in full name and username.	Pass
2.	TEST_100_002	Verify if the user can key in the special characters in username.	Fail
3.	TEST_100_003	Verify if the user can key in the numbers in username.	Pass
4.	TEST_100_004	Verify if the user can pass when the username already exists in the database	Pass
5.	TEST_100_005	Verify if the user can pass when the user does not key in numbers, special characters, small and capital letters when creating passwords	Pass
6.	TEST_100_006	Verify if the user can pass when the user password field is empty.	Fail
7.	TEST_100_007	Verify if the user can submit a register form when all the requirements are empty.	Fail
8.	TEST_100_008	Verify if the user can pass when the email already exists in the database.	Fail
TEST	_200 (login module)		
1.	TEST_200_001	Verify if the user can login with the valid email and valid password.	Pass
2.	TEST_200_002	Verify if the user can login with the invalid username and correct password.	Fail
3.	TEST_200_003	Verify if the user can login with the invalid username and correct password.	Fail
TEST.	_300 (program module -	– beginner program)	
1.	TEST_300_001	Verify if the application can display program's image from database.	Pass
2.	TEST_300_002	Verify if the user can start the exercise by clicking the start button	Pass
3.	TEST_300_003	Verify if the application can display image of the exercise from database.	Pass
4.	TEST_300_004	Verify if the user can click the next button after finishing the exercise.	Pass
5.	TEST_300_005	Verify if the application displays Gif format picture.	Pass
6.	TEST_300_006	Verify if the application displays instruction after the user clicked question mark.	Pass
7.	TEST_300_007	Verify if the application redirects to rest timer after next button is clicked by the user.	Pass
8.	TEST_300_008	Verify if the user can select give up option after clicking back button in the exercise page.	Pass
9.	TEST_300_009	Verify if the user can pause in beginner exercise page.	Fail
10.	TEST_300_0010	Verify if the user can select given feedback option and after that click done button to proceed to program module.	Pass
11.	TEST_300_0011	Verify if the user does not select given feedback option and after that click done button to proceed to program module	Fail
12.	TEST_300_0012	Verify if the application lets the user to input feedback and send it to the database.	Pass
TEST	_400 (program module -	– intermediate program)	
1.	TEST_400_001	Verify if the user can start the exercise by clicking the start button	Pass

2.	TEST_400_002	Verify if the application can display image of the exercise from database.	Pass
3.	TEST_400_003	Verify if the user can click the next button after finishing the exercise.	Pass
4.	TEST_400_004	Verify if the application displays Gif format picture.	Pass
5.	TEST_400_005	Verify if the application displays instruction after the user clicked question mark.	Pass
6.	TEST_400_006	Verify if the application redirects to rest timer after the timer runs finished.	Pass
7.	TEST_400_007	Verify if the user can select give up option after clicking back button in the exercise page.	Pass
8.	TEST_400_008	Verify if the user can pause in intermediate exercise page.	Pass
9.	TEST_400_009	Verify if the user can select given feedback option and after that click done button to proceed to program module.	Pass
10.	TEST_400_0010	Verify if the user does not select given feedback option and after that click done button to proceed to program module	Fail
11.	TEST_400_0011	Verify if the application lets the user to input feedback and send it to the database.	Pass
TEST	$\Gamma_{-}500$ (tips and quiz modu	ıle)	
1.	TEST_500_001	Verify if the user can select tips or quiz option.	Pass
2.	TEST_500_002	Verify if the user can select more than one tips category at the same time.	Fail
3.	TEST_500_003	Verify if the user can select tips category option.	Pass
4.	TEST_500_004	Verify if the application can display the tips after the user clicked tips category option.	Pass
5.	TEST_500_005	Verify if the user can take quiz in the quiz page.	Pass
6.	TEST_500_006	Verify if the application displays the question and given option from the database.	Pass
7.	TEST_500_007	Verify if the application changes color when the user selects given option.	Pass
TEST	Γ_600(video module)		
1.	TEST_600_001	Verify if the user can select video option in the application.	Pass
2.	TEST_600_002	Verify if the application redirects user to video category page after clicked video option.	Pass
3.	TEST_600_003	Verify if the application displays the video with YouTube plugin.	Pass
TEST	Γ_700(progress module)		
1.	TEST_700_001	Verify if the application displays the user information from the database.	Pass
2.	TEST_700_002	Verify if the user can update or change profile picture and save it to database.	Pass
3.	TEST_700_003	Verify if the user can update sensation lower body by selecting more than 2 option.	Fail
4.	TEST_700_004	Verify if the user can update sensation lower body by selecting 2 options or less.	Pass
5.	TEST_700_005	Verify if the user can update sensation upper body by selecting more than 2 option.	Fail

6.	TEST_700_006	Verify if the user can update sensation lower body by selecting 2 options or less.	Pass
7.	TEST_700_007	Verify if the user can answer question page without following the necessary format	Fail
8.	TEST_700_008	Verify if the user can answer question page by following the necessary format	Pass
9.	TEST_700_009	Verify if the application displays correct fascia connection level according to the answers by the user	Pass

There is a total of 52 case tested in the application. After testing, there were 13 case that failed while the others passed. Most of the reason for the failed case were, the user did not follow the format of the module in the application.

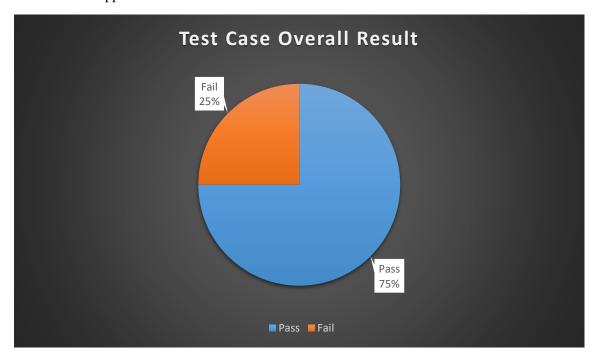


Figure 11: Pie Chart Overall Result

5. Conclusion

The main objective of this project is to create a fascia fitness application that helps most of the people no matter the age to prevent them from having any sorts of injuries that is listed as common in nowadays. Besides that, the other purpose of fascia fitness application is to overcome the problems that was developed through website as the website is not convenient, not secure etc. The fascia fitness application is considered a big step forward as it moves from website to application. Fascia Fitness Application is a convenient app although it requires internet connection, but it is much more convenient compared to browsing in a website. There are also several disadvantages such as Fascia Fitness Application is the application does not have a history of exercise module in the program module. This might be difficult for the users to identify the exercise that has been done before in the program module.

There are also some recommendations for the Fascia Fitness Application so that the application will be always a reliable application. The recommendations are such as fascia fitness application is to create a decision support system for the application. As the purpose of feedback option in program module of the application is to create a DSS system in the future. This is because the DSS system will be created based on the feedback that was given by the user to create an ideal program for the user. Fascia Fitness

Application is to create a schedule for the user based on the fascia connection level of a specific user. For example, the application can generate an ideal schedule for the user to exercise based on the given information by the user.

Acknowledgment

The authors would like to thank the Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia for its support.

Appendix A (Optional)

A1Gantt Chart

	®	Name	Duration	Start	Finish
1		☐ Iteration 1	160 days?	10/19/21 8:00 AM	5/30/22 5:00 PM
2	=	Planning: Find case study a	2 days?	10/19/21 8:00 AM	10/20/21 5:00 PM
3	5	Requirement Analysis: con	29 days?	10/20/21 8:00 AM	11/29/21 5:00 PM
4	0	Design: UX/UI design for re	4 days?	11/30/21 8:00 AM	12/3/21 5:00 PM
5	•	Develop/Building: develop (4 days?	12/6/21 8:00 AM	12/9/21 5:00 PM
6	-	Testing: test for any bugs	6 days?	12/10/21 8:00 AM	12/17/21 5:00 PM
7		Iteration 2	51 days?	12/20/21 8:00 AM	2/28/22 5:00 PM
8		Planning: Draw Use case D	6 days?	12/20/21 8:00 AM	12/27/21 5:00 PM
9		Requirement Analysis: mod	10 days?	12/28/21 8:00 AM	1/10/22 5:00 PM
10		Design: UX/UI design for al	10 days?	1/11/22 8:00 AM	1/24/22 5:00 PM
11		Develop/Building: develop	20 days?	1/25/22 8:00 AM	2/21/22 5:00 PM
12	•	Testing: test for any bugs	5 days?	2/22/22 8:00 AM	2/28/22 5:00 PM
13		Iteration 3	55 days?	3/1/22 8:00 AM	5/16/22 5:00 PM
14	•	Planning: Document finalize	5 days?	3/1/22 8:00 AM	3/7/22 5:00 PM
15	6	Requirement Analysis: che	5 days?	3/8/22 8:00 AM	3/14/22 5:00 PM
16	8	Design: previous version w	10 days?	3/15/22 8:00 AM	3/28/22 5:00 PM
17	0	Develop/Building: focus pro	30 days?	3/29/22 8:00 AM	5/9/22 5:00 PM
18	•	Testing: final testing such a	15 days?	5/10/22 8:00 AM	5/30/22 5:00 PM

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