

AtEase

FreeFall

Team 10

Deliverable 4

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1. Introduction

Being a university student is one of the best experiences a person can have during their lifetime. The people that enjoy it the most are the ones that have all the resources they need to be able to achieve at the level that they want to. One resource that students have a hard time acquiring is study material. Especially, prescribed textbooks. There are a lot of bookstores in and around university campuses throughout South Africa, and most of them have pricey prescribed textbooks. Students that cannot afford to buy textbooks rely on library services which may not be always available, and other students to borrow them. There has been an increased trend in universities, where students sell their old textbooks at a much lower price. This has proven to be helpful to those that cannot afford brand new books, but the market has become too saturated and there is a need to make acquiring textbooks easy, fast and affordable; in a way that students and merchants can trust. FreeFall is an emerging organization that provides prescribed textbooks solutions for university students. It introduces the AtEase application which will make it easier for students and merchants to find each other and do business. FreeFall aims to enable students to equip themselves with study material and turn their university experience into what it should be.

2. Company/Industry Background

Being a student requires that you manage your time, and only squeezing the necessary tasks in your daily schedule. Organizing study material has always been a task that is time-consuming and stressful. Traveling from one bookstore to another checking if certain textbooks are available in stock, comparing prices and going from one site to another looking for free digital textbooks makes it evident that it takes a lot for a student to make one textbook purchase. Imagine the struggle of attempting to buy multiple textbooks. There are bursaries and grants that give students money for textbooks, with the most notable being NSFAS. NSFAS funds most of the university and college students in South Africa. In 2019 a decision was made by NSFAS to move away from using the Fundi voucher system to purchase study material, and they opted for giving students cash. This has proven to become a

problem for merchants because their sales decreased drastically after the decision was made.(Kharwa, 2019)

3. Current systems and/or procedures followed

Currently, students use their limited free time to physically go to different bookstores to acquire a quotation and then compare prices if the books are in stock. Students who prefer online versions take time to go to multiple websites to attempt to find an online version and are often unsuccessful. Current include bookfinder(https://www.bookfinder.com/) systems valore(https://www.valorebooks.com/). Bookfinder is a system where a user can go online, input the details of a book and the system will provide other websites where the book can be ordered or rented. Books available from each site are displayed in ascending order of price. Valore is an American system that finds the book and provides the user with the option to purchase/sell the book from/to them. The shortcomings that these systems have is that they do not serve as platforms that cater for the specific market which is at hand. Students need a system that caters to their specific need of getting their own prescribed textbooks instead of browsing more online stores that have millions of books in their catalogue.

4. Problem Statement

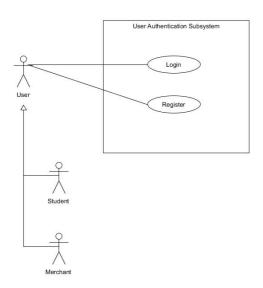
The major problem faced by students is that the current method of acquiring textbooks is inefficient in that it is time-consuming. Students have to physically go to bookstores to acquire quotes and compare prices, and there is no integrated system that involves all parties(second-hand merchants and bookstores).

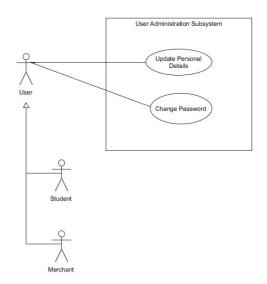
5. Proposed Solution

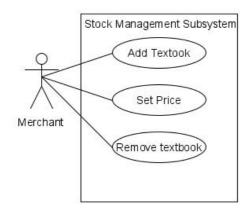
AtEase aims to solve this problem by integrating all the processes which are physically going to stores looking for relevant textbooks, physically acquiring quotes and comparing prices. These processes are involved in textbook

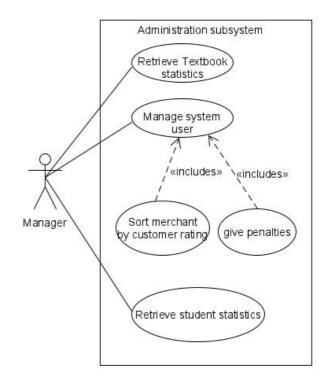
purchasing. By developing this system, students have these benefits:

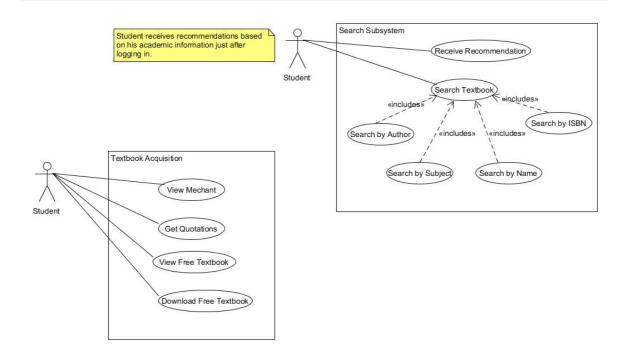
- It simplifies student's work of looking for textbooks by just log in, remotely getting quotes.
- Remotely comparing textbook prices and finding lesser prices.
- Remotely get free textbooks that are donated by other students on the system and free eBooks which are recommended by our system provided if it exists. For the students who are selling second-hand textbooks, their benefit is that they can remotely advertise textbooks they are selling on the system.

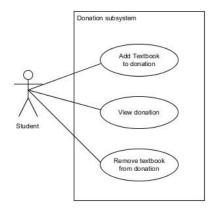


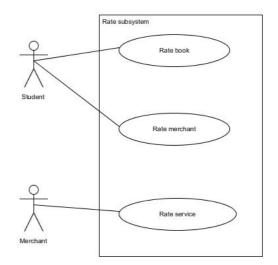




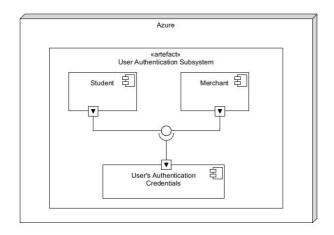


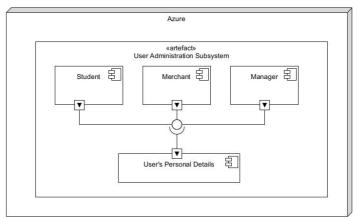




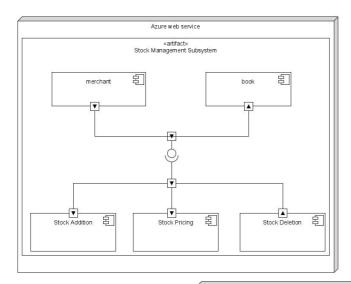


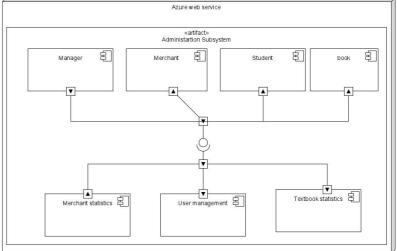
10. Usecase 1 Component Deployment Diagrams



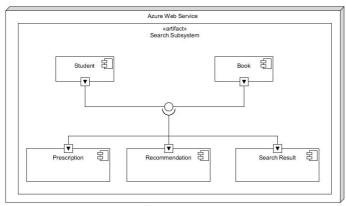


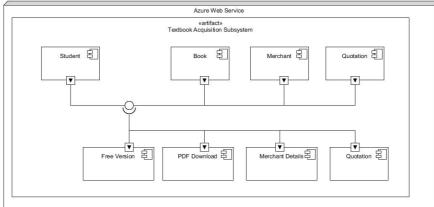
11. Use Case 2 Component and Deployment Diagram



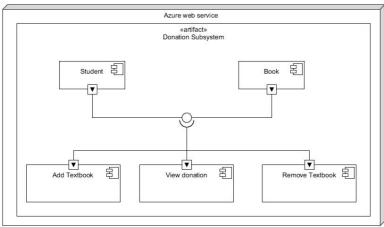


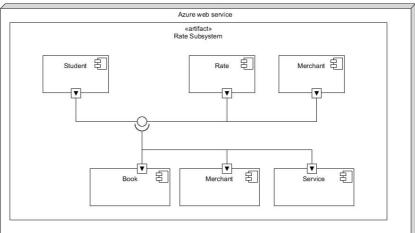
12. Usecase 3 Component Deployment Diagram



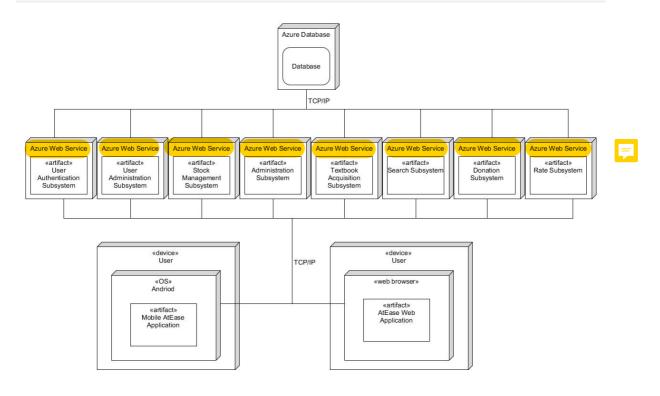


13. Usecase 4 Component Deployment Diagrams





14. Main ComponentDeployment Diagram



15. Usecase 1 Validate 📁



User Authentication Subsystem Validation

REQUIREMENTS: User must be registered in order to login.

Test 1: Student Register

Test 2: Merchant Register

Test 3: Manager Register

Test 4: User Login

Test No.	Error detected	Error Fix
1	No Errors Detected	N/A
2	No Errors Detected	N/A
3	No Errors Detected	N/A
4	No Errors Detected	N/A

User Administration Subsystem Validation

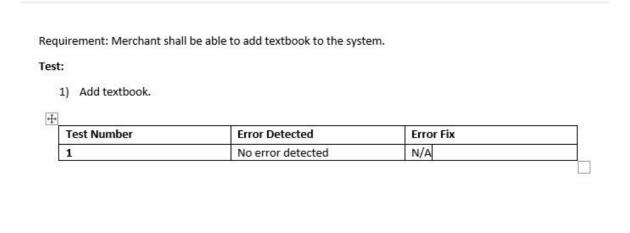
REQUIREMENTS: The user must have an account and be logged in so they can edit information.

Test 1: User updates personal details

Test 2: User changes password

Test No.	Error detected	Error Fix
1	Personal Details Update page does not come preloaded with user information.	Dynamic display must take place in order to allow the user to edit their details.
7	Personal Details Update page does not change information in database.	Make better use of the service in order to allow changes to take place in the database.
2	No Error Detected	N/A

16. Add textbook validation



17. Give penalties validation

Requirement: Manager shall have penalty implementation, performing necessary punishment for inappropriate users. Allows deleting of accounts. Removing merchant or student who receives penalties for inappropriate interactions between merchant and student. This is found from the feedbacks.

Test:

1) Give penalties.

Test Number	Error Detected	Error Fix
1	Give penalties button is not	Give penalties button will be
	implemented.	implemented to function.

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18. Remove textbook validation

) remove textbook.		
T	Error Detected	Error Fix
Test Number		

19. Retrieve student statistics validation

Requirement: Manager shall be able to retrieve student statistics, checking which student makes the most purchase.

Test:

1) Retrieve student statistics.

Test Number	Error Detected	Error Fix
1	Retrieve student statistics button is not implemented.	Retrieve student statistics button will be implemented to
	batton's not implemented.	function.

20. Retrieve textbook statistics validation

Requirement: Manager shall be able to retrieve textbook statistics, checking which textbook makes the most sales.

Test:

1) Retrieve textbook statistics.

Test Number	Error Detected	Error Fix
1	Retrieve textbook statistics	Retrieve textbook statistics
	button is not implemented.	button will be implemented to
		function.

21. Set price validation

Requirement: Merchant shall be able to set textbook price.

Test:

1) Set textbook price.

Test Number	Error Detected	Error Fix
1	Set price button is not	Set price will be implemented
	implemented.	to function.

22. Sort merchant validation

Requirement: Manager shall be able to rank merchants based on customer rating.

Test:

1) Sort merchant by rating.

Test Number	Error Detected	Error Fix
1	Sort merchant button is not	Sort merchant button will be
	implemented.	implemented to function.

23. Validations for Usecase 3 Requirements

-Requirement: Student shall be able to view and download free PDF textbook version.

-**Test1**: View free textbook slot. -**Test2**: Execute download action (button download click).

Test No.	Error Detected	Error Fix
1	The available free textbooks are not retrieved from the database and are static.	Books must be retrieved from database. Must add free book identifier on database and use it to get those books if they are available.
2	Does not use AtEase website/local links to download the free textbooks. Redirects user to other sites.	Must add free books to our database and have our own download links, which download directly from our site.

24. Validations for Usecase 3 Requirements

- -Requirement: Student shall be able to remotely get book quotations.
- -**Test1**: Add the prefered book to quotation
- **-Test2**: Click view quotation button (list of chosen books from specific merchants and their costs).
- -**Test3**: Click get quotation button and save pdf version to device.

Test No. Error Detected		Error Fix	
1	Price of book is not added to the	Must link the book to its seller, so we can receive	
	quotation.	the correct price of the book.	
2	Price, total books in quotation and	Must make sure we access the latest values of	
	total cost of books in quotation is	price, total books and total cost from database.	
	not calculated.	Make necessary calculations and avoid static data	
3	Feature for downloading pdf version	Implement the exporting of database quotation	
	of quotation is not active.	data to pdf.	

25. Validations for Usecase 3 Requirements

-Requirement: Student shall be able to search for textbooks

-**Test1**: Receive recommendations and prescribed books after login. -**Test2**: Search book by ISBN. -**Test3**: Search book by Name. -**Test4**: Search book by Author. -**Test5**: Search book by Module.

Test No.	Error Detected	Error Fix
1	Displays incorrect prescribed books and recommendations	Must change both the static recommended books and static prescribed books displayed after login, and use dynamic displaying by accessing data from database matching the user logged in.
2	Can search book by ISBN, but returns incomplete information about the book on the search result page.	The book being searched must display the merchant it belongs to and its correct price.
3	Can search book by Name, but returns incomplete information about the book on the search result page.	The book being searched must display the merchant it belongs to and its correct price.
4	Can search book by Author, but returns incomplete information about the book on the search result page.	The book being searched must display the merchant it belongs to and its correct price.
5	Can search book by Module, but returns incomplete information about the book on the search result page.	The book being searched must display the merchant it belongs to and its correct price.

26. Validations for Usecase 3 Requirements

-Requirement: Student shall be able to view merchant details

-Test1: Choose merchant and view their details

+‡+	**				
	Test No. Error Detected		Error Fix		
	1	Does not view merchant linked to a	Details show but we must add a query string to view		
		book being acquired.	the correct merchant with the required book.		

27. Usecase 4 Validate

Donation Subsystem Validation

REQUIREMENTS: User must be logged in, in order to donate.

Test 1: Add Book to Donation

Test 2: View Donation

Test 3: Remove Textbook from Donation

Test No.	Error detected	Error Fix	
1	No Errors Detected	N/A	
2	No Errors Detected	N/A	
3	No Errors Detected	N/A	

Rate Subsystem Validation

REQUIREMENTS: A textbook sale must have happened for users to access rating functionality.

Test 1: Rate Book

Test 2: Rate Merchant

Test 3: Rate Service

Test No.	Error detected	Error Fix	
1	No Implementation yet. Refer to Gantt Chart	Implement functionality	
	No implementation yet. Refer to Gantt Chart	Implement functionality	
2	No implementation yet. Refer to Gantt Chart	Implement functionality	

28. Validations for Usecase 3 Requirements

CHECKS	Completeness	Consistency	Validity	Realism
AAF	Document includes all the requirements and constraints	Requirements in the document do not conflict or have different description of the same function.	Functions proposed by stakeholders should be aligned with what the system needs to perform.	Requirements can be implemented using the knowledge of existing technology, budget and schedule.
AtEase Requirement Documentation	Only realised requirements have been documented	No conflict experienced thus far. Requirements have been allocated to their rightful subsystems.	Yes, functions proposed by stakeholders do align with the system needs, and have been documented.	30% of the implemented requirements serve as proof that existing technology, Budget and schedule will meet the rest of the requirements.
			Currently 30% of the functions have been implemented but	

29. Usecase 1 Verification

User Authentication Subsystem

#	Test Name	Input	Conditions/Test	Expected Output
1	Login	Username, Password	User exists, password correct	Authenticate user. Continue to home page.
2		Username, Password	User does not exist	Display authentication error message.
3		Username, Password	User exists, Password incorrect	Display authentication error message.
4		Username, Password	User does not exist, Password incorrect	Display authentication error message.
5	Register	User Personal Details	All personal details entered and in correct format.	Register user. Continue to login page.
6		User Personal Details	Some/All fields not filled in.	Display registration error message.
7		User Personal Details	All personal details entered. Some fields in incorrect format	Display registration error message.

30. Usecase 1 Verification

User Administration Subsystem

#	Test Name	Input	Conditions/Test	Expected Output
1	Update Personal Details	User Personal Details	All personal details entered and in correct format.	Display Update Success message.
2		User Personal Details	Some/All fields not filled in.	Display update error message.
3		User Personal Details	All personal details entered. Some fields in incorrect format	Display update error message.
4	Change Password	New Password, Confirmation Password	New Password and Confirmation Password both correct	Display password change success message. Continue to login page.
5		New Password, Confirmation Password	New Password format is incorrect.	Display change password error message.
6		New Password, Confirmation Password	New Password does not match Confirmation Password	Display password change error message.

31. Stock Management verification

Stock Management Subsystem.

#	Test name	Input	Condition/Test	Expected Output
1	Add Textbook	Textbook Name, ISBN, Author(s), Edition	Textbook exist or has been added.	Error message displayed that textbook exists in the database.
		Textbook Name, SBN, Author(s), Edition	Textbook doesn't exist and add textbook.	Display newly added textbook details in the database to the merchant.
2	Remove Textbook	Textbook name, ISBN.	If Textbook exists then it can be removed, correct Name or ISBN.	Display removed textbook to the user.
		Textbook name, ISBN.	If textbook doesn't exist, Incorrect Name or ISBN.	Display error message that user should enter correct name or ISBN.
3	Set price	Textbook name, ISBN	Textbook exist, correct Name or ISBN	Display price ranges that a user should choose in for the textbook.
		Textbook name, ISBN	Textbook doesn't exist, incorrect Name or ISBN	Display error message that user should enter correct name or ISBN in order to set textbook price.

32. Administration verification

#	Test name	Input	Condition/Test	Output
1	Retrieve Textbook Statistics.	Textbook Name or ISBN.	Textbook exist, correct name or ISBN.	Display statistics of the textbook to the user for retrievals.
		Textbook Name or ISBN.	Textbook doesn't exist, incorrect name or ISBN.	Display error message to search with correct name or ISBN for correct statistics retrievals.
2	Retrieve student Statistics.	Student ID or number	Student exists, correct student number or ID.	Display student statistics to the user for retrievals.
		Student ID or number	Student doesn't exist, incorrect student number or ID.	Display error message that the user should enter correct student number or ID.
3	Manage System User	Merchant ID	Merchant exists, correct merchant ID.	Display merchant that has been managed and giver penalty.
		Merchant ID	Merchant doesn't exist, incorrect merchant ID.	Display error message that the user should enter correct ID in order to give manage or give penalty to the merchant.

33. Usecase 3 Verification

33.1. Textbook Aquisition Subsystem

#	Test Name	Input	Condition/Test	Expected Output
1	View Merchant	Choose and click merchant of choice.	Merchant is available.	Display merchant details (Name, location and merchant type).
2		Choose and click merchant of choice.	Merchant is unavailable	Displays message notifying merchant's unavailability.
3				
4	Get Quotation	Click get quotation	PDF quotation downloads	Displays final quotation and download message.
5		Click get quotation	PDF quotation download fails	Displays error message notifying to check internet connection. Or displays check device memory message.
6				

7	View Free Textbook	Click view free textbook slot	Free textbook available	Displays free textbook details (Name, Author and Size).
		Click view free textbook slot	Free textbook unavailable	Displays empty slot, with message notifying that there is currently no free textbook available
8				
9	Download Free Textbook	Click download free textbook	PDF textbook downloads	Displays download message and saves to device.
10		Click download free textbook	PDF textbook download fails	Displays error message notifying to check internet connection. Or displays check device memory message.

34. Usecase 3 Verification

34.1. Search Subsystem

#	Test Name	Input	Condition/Test	Expected Output
1	Receive Recommendations	Username Password	Prescribed textbooks available. Recommended textbooks available.	Display prescribed textbooks for current year of study. Display recommended books.
2		Username Password	Prescribed textbooks unavailable. Recommended textbooks available.	Only display recommended books.
3			_	
4	Search Textbook	Textbook ISBN or Textbook Name or Textbook Author or Textbook Module	Search input correct and textbook is available	Display textbook details from different merchants.
5		Textbook ISBN or Textbook Name or Textbook Author or Textbook Module	Search input correct but textbook is not available.	Display message, notifying unavailability of required textbook.
6		Textbook ISBN or Textbook Name or Textbook Author or Textbook Module	Search input incorrect.	Display message, notifying correct input required.

35. Usecase 4 Verification

#	Test Name	Input	Condition/Test	Expected Output
1	Rate book	Book Rating	Operation successful	Rating added to book details
2		Book Rating	Operation unsuccessful	Student is prompt to re- enter rating
3				
4	Rate merchant	Merchant Rating	Operation successful	Rating added to merchant details
5		Merchant Rating	Operation unsuccessful	Student is prompt to re- enter rating
6				3377
7	Rate service	Service Rating	Operation successful	Rating added
8		Service Rating	Operation unsuccessful	Merchant is prompt to re- enter rating

36. Usecase 4 Verification

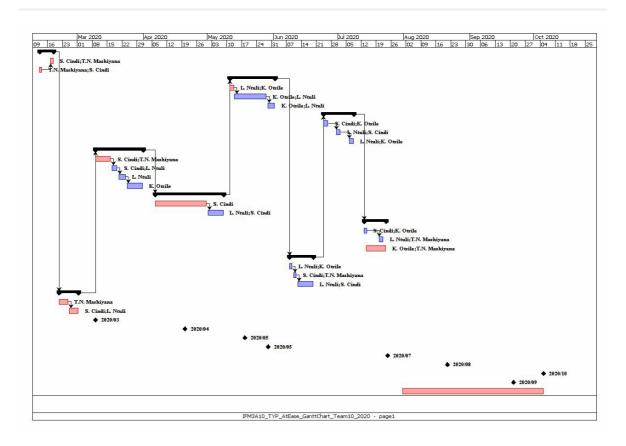
#	Test Name	Input	Condition/Test	Expected Output
1	Add textbook to donation	Textbook details and image	Operation successful	Textbook is added to database and shown on donation page
2		Textbook details and image	Operation unsuccessful	Student is prompt to re- enter textbook details and fix all errors in the details
3		8	8	
4	View donation	Click view donation	There are donations to view	Page displays the textbook(s) the student has added to donation
5		Click view donation	There are no donations to view	Page informs student that he/she has not added any textbooks and offers link to add textbook
6				SCH GOOD COLOR
7	Remove textbook from donation	Click remove (textbook	Textbook successfully removed	Textbook is set to inactive on database and removed from donated textbooks list
8		Click remove (textbook	Textbook removal unsuccessful	Student press the button again

37. Gantt Chart Spreadsheet

	6	Name	Duration	Start	Finish	Predecessors	Resource Names
	★!	☐User Authentication Su	7 days?	2020/02/12 8:00 AM	2020/02/18 5:00 PM		T.N. Mashiyana; S. Cindi; K.
2		Login	2 days?	2020/02/17 8:00 AM	2020/02/18 5:00 PM	3	S. Cindi;T.N. Mashiyana
3	5	Register	1.5 days?	2020/02/12 8:00 AM	2020/02/13 1:00 PM		T.N. Mashiyana;S. Cindi
4	*!	☐Stock Management Su	22 days?	2020/05/11 8:00 AM	2020/06/01 5:00 PM	17	K. Otsile;L. Ntuli
5	0	Add Book	2.5 days?	2020/05/11 8:00 AM	2020/05/13 1:00 PM		L. Ntuli;K. Otsile
6	•	Set Price	15.5 days?	2020/05/13 1:00 PM	2020/05/28 5:00 PM	5	K. Otsile;L. Ntuli
7	-	Remove Textbook	4 days?	2020/05/29 8:00 AM	2020/06/01 5:00 PM	6	K. Otsile;L. Ntuli
8	□ ★!	□Administration Subsys	14.5 days?	2020/06/24 8:00 AM	2020/07/08 1:00 PM	24	S. Cindi;L. Ntuli;K. Otsile;
9	8	Retrieve Textbook Stats	3 days?	2020/06/24 8:00 AM	2020/06/26 5:00 PM		S. Cindi;K. Otsile
10	-	Manage System User	2.5 days?	2020/06/30 8:00 AM	2020/07/02 1:00 PM	9	L. Ntuli;S. Cindi
11		Retrieve Student Stats	2.5 days?	2020/07/06 8:00 AM	2020/07/08 1:00 PM	10	L. Ntuli;K. Otsile
12	*!	⊟Textbook Acquisition S	23 days?	2020/03/09 8:00 AM	2020/03/31 5:00 PM	28	K. Otsile;S. Cindi;L. Ntuli;1
13	0	View Merchant	8 days?	2020/03/09 8:00 AM	2020/03/16 5:00 PM		S. Cindi;T.N. Mashiyana
14	707	Get Quotation	3 days?	2020/03/17 8:00 AM	2020/03/19 5:00 PM	13	S. Cindi;L. Ntuli
15	8	View Free Textbooks	4 days?	2020/03/20 8:00 AM	2020/03/23 5:00 PM	14	L. Ntuli
16	707	Download Free Textbook	8 days?	2020/03/24 8:00 AM	2020/03/31 5:00 PM	15	K. Otsile
17	* !	⊟Search Subsystem	32.5 days?	2020/04/06 8:00 AM	2020/05/08 1:00 PM	12	L. Ntuli;S. Cindi
18	-	Receive Recommendations	25 days?	2020/04/06 8:00 AM	2020/04/30 5:00 PM		S. Cindi
19	-	Search Textbook		2020/05/01 8:00 AM	2020/05/08 1:00 PM	18	L. Ntuli:S. Cindi
20	□	Donation Subsystem		2020/07/13 8:00 AM	2020/07/23 5:00 PM	8	K. Otsile; T.N. Mashiyana;
21	HIII A.	Add Textbook To Donati	2 days?		2020/07/14 5:00 PM		S. Cindi;K. Otsile
22	6	View Donations	2.5 days?	2020/07/20 8:00 AM	2020/07/22 1:00 PM	21	L. Ntuli;T.N. Mashiyana
23	-	Remove Book From Don	10 days?	2020/07/14 8:00 AM	2020/07/23 5:00 PM	and a second	K. Otsile; T.N. Mashiyana
24	*!	□Rate Subsystem	12 days?		2020/06/19 5:00 PM	4	K. Otsile;L. Ntuli;S. Cindi;
25		Rate Book	2 days?	2020/06/08 8:00 AM	2020/06/09 5:00 PM		L. Ntuli;K. Otsile
26	-	Rate Merchant		2020/06/10 8:00 AM	2020/06/11 5:00 PM	25	S. Cindi;T.N. Mashiyana
27	707	Rate Service	8 days?		2020/06/19 5:00 PM	26	L. Ntuli;S. Cindi
28	*	□User Administration		2020/02/21 8:00 AM	2020/03/01 1:00 PM	1	T.N. Mashiyana;L. Ntuli;S.
29		Change Password	5 days?	2020/02/21 8:00 AM	2020/02/25 5:00 PM		T.N. Mashiyana
30	707	Update Personal Details	4.5 days?		2020/03/01 1:00 PM	29	S. Cindi;L. Ntuli
31	707	Deliverable 1		2020/03/09 8:00 AM	2020/03/09 8:00 AM	1	
32	8	Deliverable 2		2020/04/20 8:00 AM	2020/04/20 8:00 AM		
33	6	Deliverable 3		2020/05/18 8:00 AM	2020/05/18 8:00 AM		
34	8	Deliverable 4		2020/05/29 8:00 AM	2020/05/29 8:00 AM		
	101	Alpha Deliverable		2020/07/24 8:00 AM	2020/07/24 8:00 AM		4
		Beta Deliverable		2020/08/21 8:00 AM	2020/08/21 8:00 AM		
35	707			2020/10/05 8:00 AM	2020/10/05 8:00 AM		
35 36		Final Deliverable	0 days				
35 36 37	•	100000000000000000000000000000000000000	1000	NO TRANSPORTED AND ADDRESS OF THE PROPERTY.	2020/09/21 8:00 AM		
35 36		Final Deliverable Documentation Testing and Debugging	0 days	2020/09/21 8:00 AM 2020/07/31 8:00 AM	2020/09/21 8:00 AM 2020/10/05 5:00 PM		



38. Gantt Chart



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