



# AskMissy

*Your Personalized Book Finder*



# CONTENTS

## Introduction

Meet The Team.....	4
Background.....	5

## The Problem

The Problem.....	6
Problem Characteristics.....	7

## The Solution

The Solution.....	8
Solution Characteristics.....	9-11
Solution Flow Chart.....	12

## AskMissy Major Functions

RWP vs. Prototype.....	13-14
Prototype Major Functional Component Diagram (MFCD).....	15
API Diagram.....	16



# CONTENTS

## AskMissy Prototype Development

Database.....	17
Development Tools.....	18-20
Sprint.....	21
Customer Risks.....	23-24
Technical Risks.....	25-26
Security Risks	

## Appendix

Traceability Matrix.....	27
With Another Month.....	28
User Stories.....	29-31

# MEET THE TEAM



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# BACKGROUND



Over 55 million U.S. school children under the age of 18 resigned to at-home learning.



Reading SOL scores have decreased between the 2018-2019 and the 2020-2021 school year an average of 9% for all students.



Students have limited access to the books they need for school.

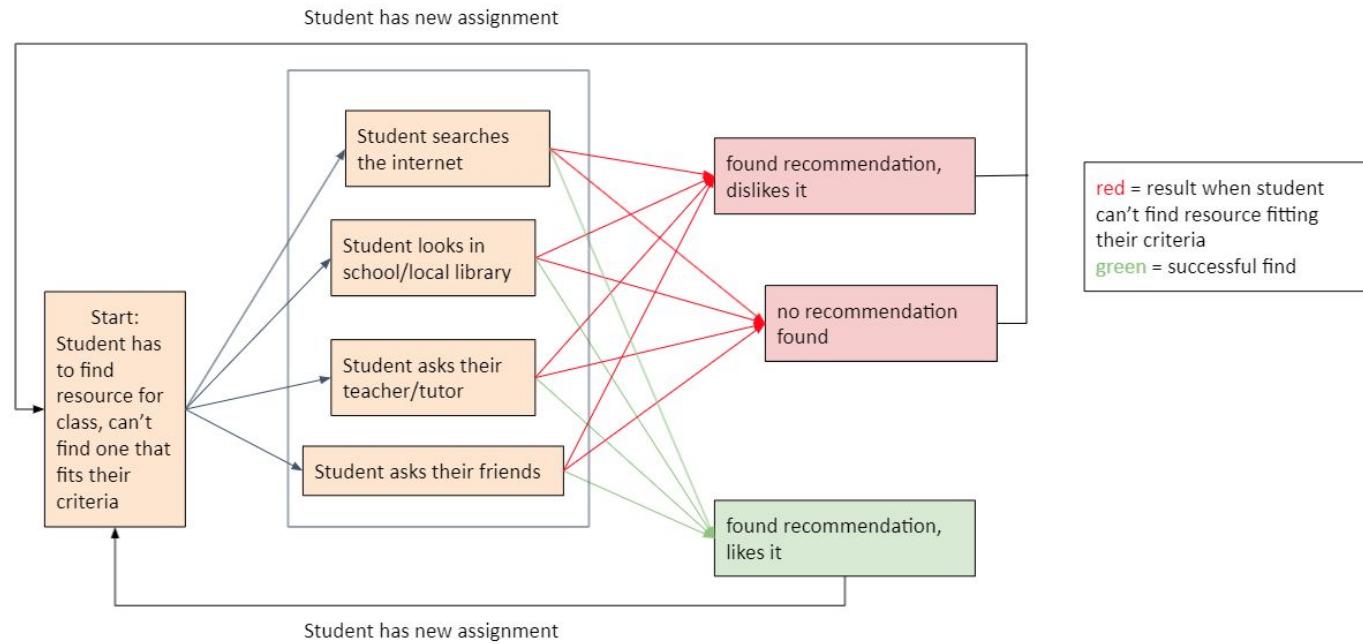


# THE PROBLEM



Students' performance are non-optimized because of a lack of books tailored to their learning preferences

# PROBLEM FLOWCHART





# THE SOLUTION



The AskMissy software application will help users find the books necessary for them to bridge the gap between conventional and digital learning for a more personalized experience.



# SOLUTION CHARACTERISTICS

## MACHINE LEARNING

AskMissy learns the book preferences from each user search query to recommend books to them.

The Apriori Algorithm finds 'relationships' between books

## LIBRARY INTERACTION

If the book is not available on AskMissy, users are able to make a request to have it added to the AskMissy database.



# SOLUTION CHARACTERISTICS

## SUBCATEGORY SEARCH TOOL

The subcategory search tool allows users to search different topics and sub-topics within the AskMissy and school library database.

## BOOK STATISTICS

Query results display the author, book title, and reviews for each book.



# SOLUTION CHARACTERISTICS

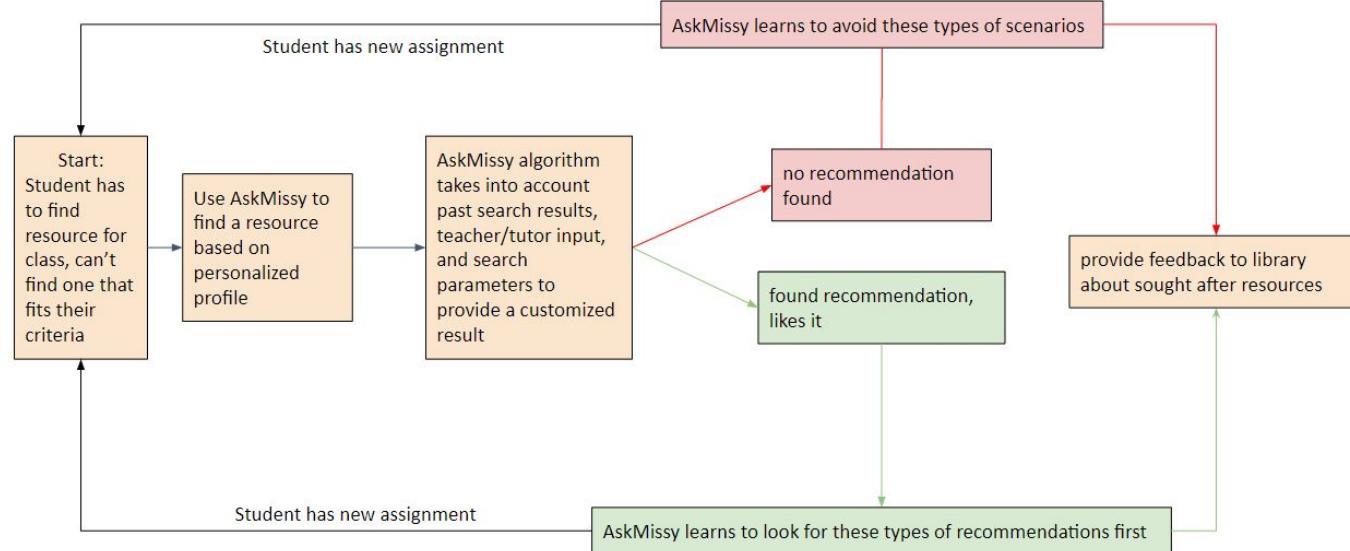
## CLASS INTERACTION

Teachers are able to create class groups and have students join different groups.

## PROFILE CREATION

Users are able to create different profiles depending on the type of user (student, teacher, librarian).

# SOLUTION FLOW



red = result when student can't find resource fitting their criteria  
green = successful find

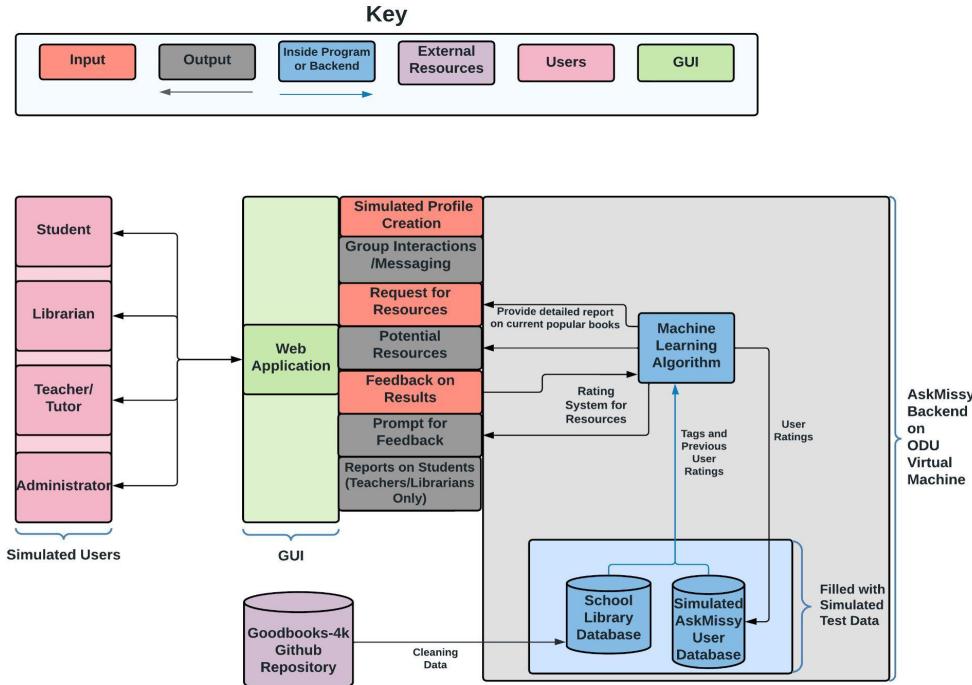
# RWP v. PROTOTYPE

Category	Feature	RWP	Prototype	Reasoning
Data Retrieval	Metadata Report	Full	Partial	Limited test data as a proof of concept
	Basic Search	Full	Full	
	AskMissy Search	Full	Full	
Data Management - Live Product	Machine Learning	Full	Partial	Limited test data as a proof of concept
	Source Tag Creation	Full	Full	
	Source Tag Management	Full	Full	
	Lesson Plans	Full	Partial	Limited test data as a proof of concept
	Internal Database Manipulation	Full	Full	
	External Database Manipulation	Full	Full	
Data Management - Development	Source Tag Development	None	Full	Use to develop default tags
	Machine Learning Training	None	Full	Use to develop algorithm defaults
	Simulated Data	None	Full	Use to fill database with simulated data for testing
	User testing reports	None	Full	Use to develop user interface

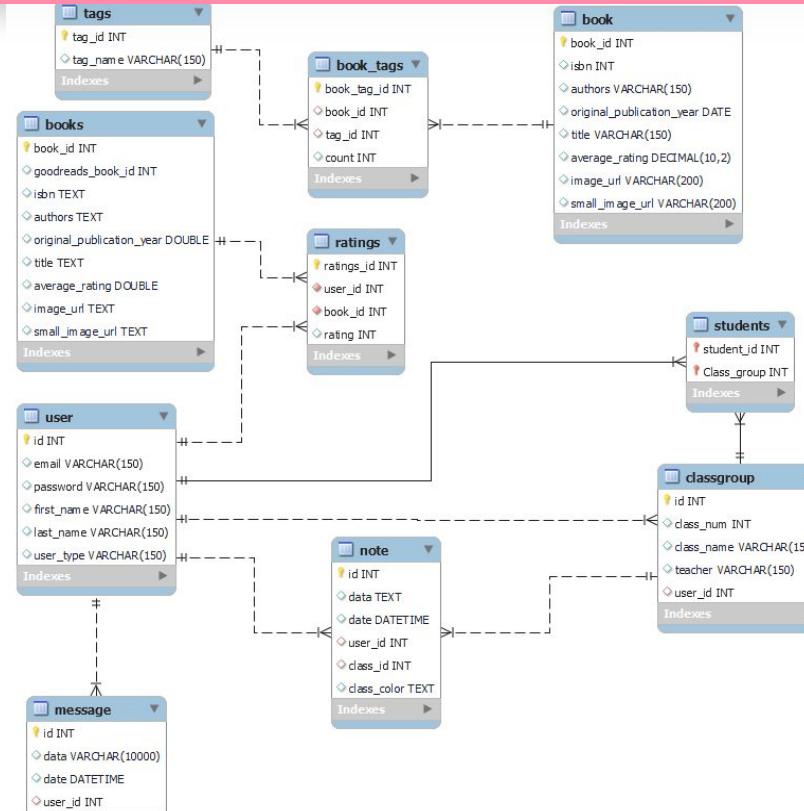
# RWP v. PROTOTYPE

Category	Feature	RWP	Prototype	Reasoning
Security	Login/Authentication	Full	Partial	Limited test data as a proof of concept
	Data Encryption, moving	Full	None	Best practices will be put in place
	Data Encryption, resting	Full	None	Best practices will be put in place
Account Management	User Profile	Full	Partial	Limited test data as a proof of concept
	Feedback	Full	Full	
	Group Management	Full	Partial	Limited test data as a proof of concept
	Login/registration	Full	Full	
UI	Group Interaction	Full	Partial	Limited test data as a proof of concept
	Bug Report	Full	Partial	Limited test data as a proof of concept
	Basic Search	Full	Full	
	AskMissy Search	Full	Full	
	Communication	Full	Partial	Limited test data as a proof of concept
	Personal Data Report	Full	Partial	Limited test data as a proof of concept

# MAJOR FUNCTIONAL COMPONENT DIAGRAM (MFCD)



# DATABASE



# DEVELOPMENT TOOLS - Software Requirements

COMPONENT	ASKMISSY PROTOTYPE
Language	Python, HTML, CSS
Operating System	Windows, macOS
IDE	PyCharm
UI/UX	Flask

COMPONENT	ALGORITHMS
Language	Python
Operating System	Windows, macOS
IDE	PyCharm

COMPONENT	DATABASE
Language	SQL
Operating System	Windows, macOS
IDE	DB Browser for SQLite, XAMPP, phpMyAdmin

COLLABORATION	TOOLS
Version Control	GitHub
Project Management	GitHub
Team Chat	Discord, Zoom

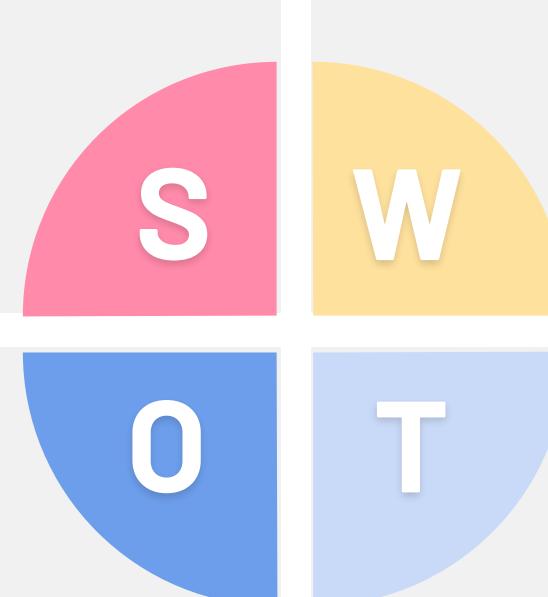
# DEVELOPMENT TOOLS - Hardware Requirements

COMPONENT	ASKMISSY PROTOTYPE , DATABASE, ALGORITHMS
Computer Device	Any device that can connect to the internet

# SWOT ANALYSIS

## STRENGTHS

- Strong Management
- Communication
- Research



## WEAKNESSES

- Lack of knowledge
  - Machine Learning
  - UI/UX formatting
  - Database
  - Version Control

## OPPORTUNITIES

- Increased online learning

## THREATS

- Competitors



# SPRINT

Sprint 0

Sprint 1

Sprint 2

Sprint 3

**Website:** Setup GitHub and IDEs

**UI/UX:** Create UI mockups

**Databases:** Create test database

**Algorithms:** Collect book titles and authors from API to feed into database

**Testing:** Ensure the data can be processed and the book info is collected correctly

**UI/UX - Website:** Establish basic frontend functions

**Database:** Establish backend data models, finish data creation from Sprint 0, begin data scraping model

**Algorithms:** Connect database entries with info from API, Tag creation, Tag association, Machine learning algorithm development

**Testing:** Ensure frontend & backend communication, ensure algorithm & database connection

**UI/UX - Website:** Finish establishing crucial frontend functions

**Database:** Continue data scraping model, finish database searching model

**Algorithms:** Searching backend development, Continue teaching algorithm and advancing machine learning, tag connections between developed tags and user profile tags

**Testing:** Ensure UI/UX functionality, database searching functionality, and consistency of search algorithms based on data used

**UI/UX - Website:** Finish non-crucial frontend functions

**Database:** Continue and finish data scraping model and insertions into databases, expansion of established database

**Algorithms:** Continue and finish training machine learning algorithm

**Testing:** Ensure UI/UX functionality, data scraping functionality, and machine learning algorithm functionality



# CUSTOMER RISK

Risk	Mitigation
C1: User is dissatisfied with the application	C1: Users are <u>asked for their feedback on improving the application in future</u>
C2: Users don't get recommendations they expected from a book they searched up	C2: A ruleset will be used to pair a book with a recommendation that is based on real and trusted goodbooks data
C3: Texts do not fit the user's personalized preferences or are too hard to read	C3: Users are able to search for specific subcategories and filter results by difficulty level to their liking
C4: Users do not know how to use the AskMissy application	C4: Users are met with a working UI that is straightforward and easy to follow

# CUSTOMER RISK

	Consequence					
Likelihood	Insignificant	Minor	Moderate	Major	Critical	
Almost certain						
Likely						
Possible	C3 C2	C2 C3				
Unlikely	C4	C1 C4	C1			
Rare						



Post-Mitigated



Pre-Mitigated



# TECHNICAL/SECURITY RISK

Risk	Mitigation
T1: Searches leading to incorrect or inconsistent results of books	T1: Thorough testing of the search and filtering algorithms with datasets
T2: The servers can't keep up with the growing database as the app grows popular with users	T2: Implement an architecture for the app that can be scaled up from the user growth
T3: Compatibility with external books becoming unaligned	T3: <del>Steady connection with external books</del> to stay up-to-date
S1: User data security breach	S1: Hashed passwords in database
S2: Unauthorized user entering the application	S2: Strong password required and login authentication methods

# TECHNICAL/SECURITY RISK

		Consequence				
Likelihood	Insignificant	Minor	Moderate	Major	Critical	
Almost certain						
Likely						
Possible		T3 T3 T3				T1
Unlikely		T3 T3	T1	S2	S1	
Rare		T2	S2	T2	S1	

 Post-Mitigated       Pre-Mitigated

# APPENDIX: TRACEABILITY MATRIX

Traceability Matrix		Test Cases																					
		1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.1.6	1.2.1	1.2.2	1.2.3	1.2.4	1.3.1	1.3.2	1.3.3	1.4.1	1.4.2	1.4.3	1.4.4	1.4.5	1.5.1	1.5.2	1.5.3	1.6.1
	Group Interaction	3.1.1.1																					
	Bug Report	3.1.1.2																					
	Basic Search	3.1.1.3																					
	AskMissy Search	3.1.1.4																					
R	Communication	3.1.1.5																					
e	Personal Data Report	3.1.1.6																					
q	User Profile	3.1.2.1																					
u	Feedback	3.1.2.2																					
i	Group Management	3.1.2.3																					
r	Login/Authentication	3.1.2.4																					
e	Machine Learning	3.1.3.1																					
m	Simulated Data Values	3.1.3.2																					
e	User Testing Reports	3.1.3.3																					
n	Machine Learning	3.1.4.1																					
t	Source Tag Management	3.1.4.2																					
s	Lesson Plans	3.1.4.3																					
	School Library	3.1.4.4																					
	AskMissy Database	3.1.4.5																					
	Metadata Report	3.1.5.1																					
	Basic Search	3.1.5.2																					
	AskMissy Search	3.1.5.3																					
	Login/Authentication	3.1.6.1																					



# APPENDIX: USER STORIES

## As a Guest I need to:

1. Search for books using the system without personalized results
2. Attempt to create a non-guest profile using validation
3. Sign into an existing non-guest profile using validation

## As a Student I want to:

1. View my own search history
2. View my previous ratings of books

## As a Student I need to:

1. Request to join a class group within AskMissy
2. Be able to be in more than one class group
3. Input search criteria to find sources
4. Prioritize searches based on specific criteria
5. Have machine learning learn my personal preferences based on a number of Personal Search Factors (see list below)
6. Receive recommendations of sources to use from my teachers and other users
7. Give my own feedback about a specific source and whether or not it fulfilled my expectations
8. View ratings and reviews about a recommended source
9. Request for a book to a Teacher/Librarian



# APPENDIX: USER STORIES

## **As a Teacher, I need to**

1. Give my own feedback about a specific source and whether or not it fulfilled my expectations
2. Observe the feedback and reviews from other users and their experience with a specific source
3. Create a class group
4. Be in more than one class group
5. Manage members and applicants of a class group
6. Send a book requests to librarians
7. Take book requests from students

## **As a Librarian, I need to**

1. Make changes to my library's inventory
2. Receive list of most requested books from students and teachers
3. Create a book order list
4. Create a school group
5. Manage members and applicants of a school group



# APPENDIX: USER STORIES

## As an Administrator, I need to

1. Back up the data within AskMissy so that the data is safeguarded
2. Encrypt, edit and retrieve the data within AskMissy
3. Connect AskMissy to external databases through legacy tools like API
4. Manage AskMissy's connection to external databases
5. Manage the profiles of the users
6. Encrypt the data of the users
7. Verify requests from Librarians to create School groups

## As a Tester, I need to

1. Evaluate the quality of the product
2. Ensure Beta readiness (Alpha)
3. Focus on finding bugs within the AskMissy program
4. Evaluate customer satisfaction (Beta)
5. Ensure release readiness for production launch (Beta)
6. Focus on collecting suggestions/feedback (Beta)
7. Evaluate feedback effectively (Beta)
8. Create test product documentation
9. Design testing scenarios for usability

## As a Tester, I want to

1. Carry out testing as per the defined procedures
2. Participate in walkthroughs of testing procedures
3. Prepare all reports related to the software testing carried out
4. Ensure all test requirements are carried out as per the defined standards and procedures



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