

Make IT Simple

by

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Submitted to
the Faculty of the School of Information Technology
in Partial Fulfillment of the Requirements for
the Degree of Bachelor of Science
in Information Technology

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April 2021

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ABSTRACT

In the beginning of 2020, America was forced to go into lockdown due to COVID-19. With the lockdown, everyone was forced to cook and bake for themselves and their families. Many people do not know how to cook or bake, so they resorted to online solutions such as YouTube videos. However, just following tutorials does not give the person the fundamentals on how to cook or bake. Our proposed solution, Make IT Simple, is a web application that gives people the concrete foundation of cooking and baking while having a safe and secure experience. Any visitor can view the web application content. Users can choose to have a more interactive and customized experience by creating an account with minimal personal identifiable information. Make IT Simple's goal is to inspire more people to get into the kitchen and have more confidence in their ability to cook and bake.

1. INTRODUCTION

1.1. Problem

Near the end of 2019, the world experienced a pandemic to later be called COVID-19. Many countries have ordered their people to be on lockdown in their homes for months [2]. During this time, not many people want to go outside of their home and only a few restaurants were able to stay open as they were not considered an essential business. Due to restaurants closing down, Americans were forced to start cooking and baking for themselves and their families. On average, Americans would eat out at around 5.9 times per week in a study done in 2018 [1]. This led to customers not being able to get their usual meal staples and forced to cook or bake at home. In America, there are 54% more people cooking and 46% more people baking than they did before COVID-19 happened [5]. These people resorted to the Internet to learn how to cook and bake. Cooking and baking may sound easy by just following the recipe, but many techniques and terminologies are not easily understandable to people who do not cook or bake daily. There are some people who have difficulty in following the instructions in recipes as recipes do not further explain each instruction. To remediate this, the idea of wanting to get better or learn how to cook can be easily solved by taking a cooking/baking class or purchasing content. Until recently, the idea of learning how to cook, or to cook better sounds fun but would involve potentially expensive start-up costs [3][4]. Therefore, not many people follow through with the idea as it can be costly. With what is currently popular in use are these cooking and baking hacks posted all over social media. Among these outlets there are Facebook, Instagram, YouTube, and TikTok which offers high trending videos of neat tricks but not well sought out methods. Other website platforms such as Allrecipes, The Food Network, and Tasty.co only

provide recipes but not actual cooking and baking techniques with explanations. These current solutions do not offer enough content to the consumers that want to learn how to cook and bake.

1.2. Solution

Make IT Simple is a web application that provides the knowledge people truly need when they cook and bake. This web application is a free solution where users do not need to pay a fee to access the contents on the site. Make IT Simple is a platform for all variety of skill levels to be able to gather and interact with the app. The type of information is mostly oriented towards teaching how to cook and bake through quick guides. Make IT Simple's main intention is to allow people to truly learn the concept of cooking and baking while networking without having to pay for their experience. This web app is created to provide guidance and help people who want to cook and bake.

Make IT Simple has sections that categorize the type of skills they are looking for. This may have to do with knife skills in cooking and/or having to measure ingredients in baking. There are articles for each piece of content and is categorized accordingly if there is a specific difference between cooking and baking. This makes searching for certain content easier to find and define through a database integrated to the web app. Make IT Simple is also designed to allow any visitor the option to create their own account, with user authentication, and providing minimal personal information. The creation of the account allows the user to customize their experience such as favoriting content. In addition, there is an area dedicated for users to communicate with fellow cooks and bakers in the community. The creation of the web app gives users a safe and secure experience while not having to worry about whether the website they visit is legitimate.

1.3. Project Goals

The main goal of Make IT Simple is to develop a web application intended for all variety of skill levels to learn the fundamentals of cooking and baking. Make IT Simple's main intention is to allow people to truly learn the concept of cooking and baking while networking without having to pay for their experience. This includes needing to create a web application with an interactive and easy navigation, build a database to be hosted in Amazon Web Services (AWS), and ensure the user experience is safe and secure during development.

The type of methodology adopted by the team is Agile as the team is constantly implementing and developing the project over the course of a few months. Every time there is a new feature implemented, the team is constantly doing developer testing to ensure it works in the web application environment. Due to the nature of the project scope and the busy schedules of each member, it was difficult to have weekly deliverables completed. With the weekly retrospectives, the team met on a weekly basis, but the group progress would vary between members and not everyone would have something to report for that week.

1.4. Overview

The remainder of the final report outlines the details of how the project was completed. The following sections: project concept, design objectives, methodology, budget, timeline, any problems encountered, and conclusion is discussed next.

2. DISCUSSION

2.1. Project Concept

Make IT Simple is inspired by the idea of how during the COVID-19 lockdown, people were forced to cook and bake for themselves. Many of the team member's friends who live independently were having difficulty in sustaining themselves and the team realized that not many people actually know how to cook or bake properly. The team's members are avid food lovers and like to cook and bake so the team wanted to create something that will help people. The current food related content available does not teach the fundamentals of cooking and baking. Many resources in social media show quick hacks but they do not always guarantee to work or are not the best way to go about it. To remediate this issue, the team wanted to create a web application that will truly teach the fundamentals of cooking and baking while having a safe and secure experience that not many other products will ensure.

2.2. Design Objectives

The objective is to develop a web application that provides the knowledge people truly need when they cook and bake. This web application is a platform intended for beginners but is also available to all variety of skill levels. All visitors can gather and interact with the site. The type of information is mostly oriented towards teaching how to cook and bake through quick guides. Make IT Simple's main intention is to allow people to truly learn the concept of cooking and baking while networking without having to pay for their experience. Make IT Simple is a web application that is interactive and easy navigation design using Pug and Node.js. Express will represent the framework to provide an easy to navigate application. Make IT Simple stores data in MySQL.

The features of Make IT Simple includes:

- A search function to allow quicker use of the web app.
- Categorized tabbed sections for easy navigation such as a Home page, Cooking page, Baking page, Quizzes page, etc.
- Skill based assessment that tests the user's knowledge obtained through the web app in an interactive quiz.
- Ability to create an account, with user authentication, to interact with the web application. However, to maximize the usage on a higher level, such as favoriting content for easier access, and making comments, users are required to have an account.
- Agreement to privacy policy when creating an account.
- Ability to communicate on every article page.
- Feature to detect profanity usage and prevent visibility of such profanity.
- Follow best security practice features to ensure user experience is safe and secure: password encryption, secure database, security updates on software, etc.

2.3. Methodology

This section discusses each technical approach to create Make IT Simple with the components of the web application, the database with the data entry form, and the security aspects.

2.3.1. Web application

The creation of the web application is completed using the help of the programming languages Node.js, Express, and Bootstrap framework. The team's idea is to create and design a web application to promote a better user experience, which includes Make IT Simple's logo and

theme colors. Users can use the search function to have quicker access around the website. The layout includes categorized tabbed sections at the top for the navigation bar such as: Home, Articles, Quizzes, etc. In addition, a data entry web application, which is only accessible to the administrators, is necessary to feed data into the database which then is pulled in the main web application that is accessible to users. This web application is hosted in AWS which is a cloud platform.

2.3.2. Database and Data Entry App

Make IT Simple requires two databases where one contains blog article content that is displayed on the website and the other to store user data. This is to ensure the two main parts of the data we are storing separate from each other to prevent any cases of data breaches for security purposes. Each article is stored as an entry. In addition, a data entry web application, which is only accessible to the administrators, is necessary to feed data into the database which is then pulled in the main web application.

2.3.3. Security

To enhance the security of the web application, there is the creation of two databases, the user database which contain user information, and the data entry web app database to store the blog articles for the web application. Having two separate databases provides additional security. In the case of data breach, not all data will be exposed. This is to make the situation better for if one database were to be breached, the other would not be compromised. In addition, any best security practice measures are implemented during development and after development. For example: when a user registers for an account, there is minimal information gathered from the user. They are required to input their full name, an email address, a username, and a password.

The password is hashed when stored in the database and cannot be seen as the actual password inputted. In addition, the error message on the login page provides minimal information and is not specific in indicating where the exact error occurred to help safeguard us from SQL injection attacks.

2.4. User Profile

This section shows the user experience of the Application User and the Administrator who maintains Make IT Simple.

Table 1: User Profile - Application User

This user profile table chart is to display the Application User and what kind of experience they have with the Make IT Simple web application.

User Profile: Application User
Project: Make IT Simple
Potential Users: Single people, families, students, etc. Any kind of person at any age who wants to learn the fundamentals of how to cook and bake.
Software, Interface, and Related Experience: Application users will need skills of how to navigate around a basic website whether it is on a computer or mobile browser.
Experience with Similar Applications: <ul style="list-style-type: none"> ➤ Tasty ➤ Allrecipes ➤ Delish ➤ Bon Appetit ➤ Food.com ➤ Food Network
Task Experience: <ul style="list-style-type: none"> ➤ Access web application through a web browser whether it is on a computer or mobile ➤ Users can view all article content and interact with the knowledge quiz ➤ Users can create an account to customize their experience through favoriting content or leaving comments ➤ Safe and secure experience on web application

<p>Frequency of Use: Users use Make IT Simple whenever they want to learn the fundamentals of how to cook and bake. They can be on the web app to look for any new content, communicate with fellow users, and to interact with the knowledge game.</p>
<p>Key Interface Design Requirements that the Profile Suggests:</p> <ul style="list-style-type: none"> ➤ Web application is accessible and responsive through all web browsers, on computer or mobile ➤ Visually appeal web interface ➤ User interface that with easy navigation ➤ Ability to quickly and easily favorite content ➤ Allow users to view web content without needing an account created ➤ Ensure user’s data is safe and secure

Table 1: User Profile - Application User

Table 2: User Profile - Administrator

This user profile table chart is to display the Administrator as they have a different user experience compared to an Application User with the Make IT Simple web application.

<p>User Profile: Administrator</p>
<p>Project: Make IT Simple</p>
<p>Potential Users: Make IT Simple creators are administrators to maintain the web app and the create content pages.</p>
<p>Software, Interface, and Related Experience: Make IT Simple creators need to be able to navigate around the public web interface as well as the create pages.</p>
<p>Experience with Similar Applications: Make IT Simple public website, similar basic navigation with other food websites, and article content created through research on other resources.</p>
<p>Task Experience:</p> <ul style="list-style-type: none"> ➤ Create and modify article content and interactive knowledge game ➤ Manage user accounts and database ➤ Monitor web application to ensure it is active and running ➤ Run security checks to maintain everything is up to date and secure
<p>Frequency of Use: Administrators are often on the create pages whenever new content needs to be created for either the articles or interactive knowledge game.</p>
<p>Key Interface Design Requirements that the Profile Suggests:</p> <ul style="list-style-type: none"> ➤ Removal of inappropriate content ➤ Create and modify article content and interactive knowledge game ➤ Ability to manage and update the web application design

Table 2: User Profile - Administrator

2.5. Use Case Diagram

This section shows a Use Case Diagram of the Application User and the Administrator interacting with the different tasks in Make IT Simple.

Figure 1: Use Case Diagram

The Use Case Diagram displays the use case of the Make IT Simple web application with all the different tasks the Application User and Administrator can interact with.

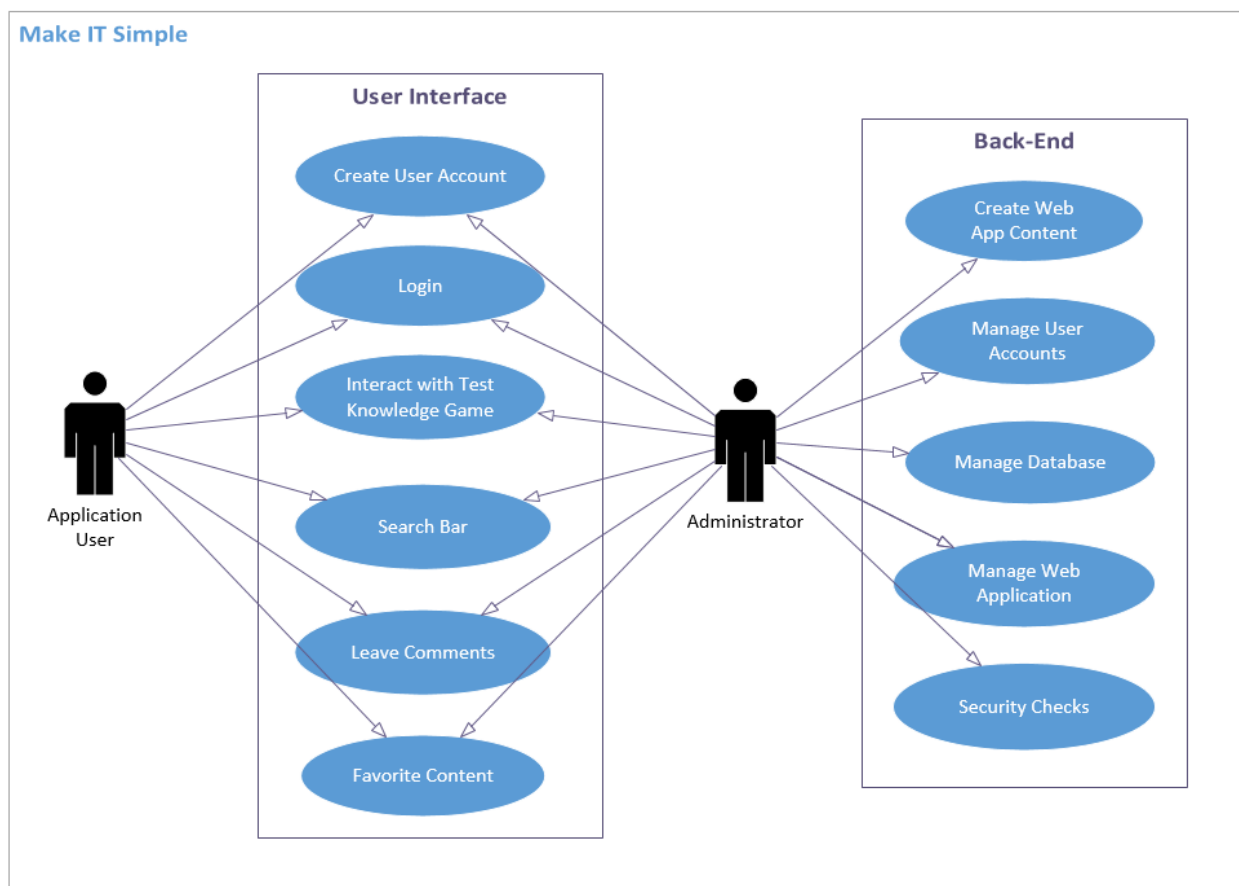


Figure 1: User Case Diagram

2.6. Technical Architecture

This section includes a technical architecture diagram of Make IT Simple, front end technical elements, back end technical elements, database technical elements, and security technical elements.

2.6.1. Technical Architecture Diagram

Figure 2: Technical Architecture Diagram

The below technical architecture shows how Make IT Simple was structured from the web application side to how it was hosted in AWS.

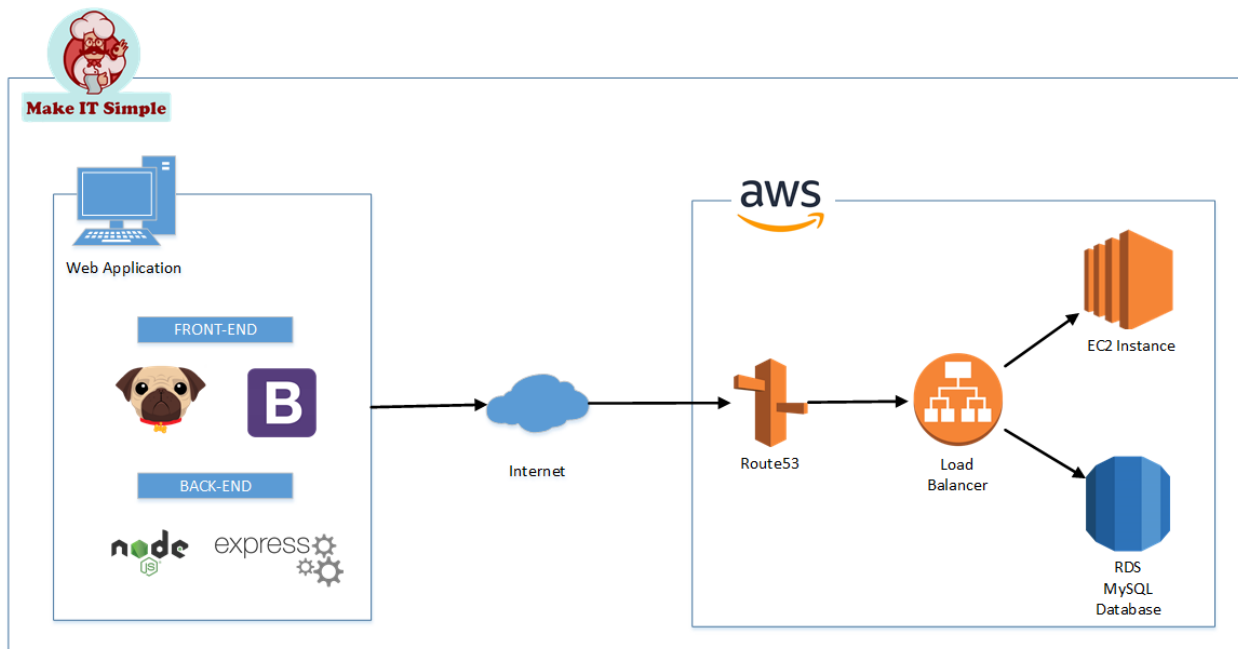


Figure 2: Technical Architecture Diagram

2.6.2. Front End

The front end of the web application was developed with Pug or previously known as Jade. This was due to the feasibility in coding the design of the web app to be seen in the browser compared to the usual HTML. The use of Pug to integrate the data from the database is

also easier compared to how it would be done with HTML. There was no template purchased and everything was done through scratch except with help in styling with Bootstrap.

2.6.3. Back End

The back end of the web application was developed with Node.js and Express middleware. There are an immense number of libraries that are easily installable with Node.js. This allows the use of prebuilt tools such as cryptography with encrypting passwords and profanity usage detectors. Express middleware in conjunction with Node.js allows a more secure development process to occur. The use of JavaScript allows different forms of scripting that Node.js does not support or is incompatible with Pug.

2.6.4. Database

AWS was used to host the web application as well as the databases. DBeaver was used to write scripts and manage both MySQL engine databases. The first database hosts the user specific information like full name, username, user email address, and password. The second database hosts web application content like article information with images. The idea to separate the two types of information into two different databases is to ensure the chances of a malicious actor were to get access to one database, they would not be able to access the other. With the amount of data stored into the two databases, there was no need of increasing the storage or speed of either database.

2.6.5. Security

The two databases in AWS were separated by the type of information to ensure the chances of a malicious actor would not have access to both databases on the off chance they got

access to one already. Any passwords stored from the web application to the database are encrypted by hashing. The administrators cannot visibly see what the password the user has inputted when registering for an account. In addition, the web application was developed with Express middleware to ensure the code is more secure. A domain was claimed through freenom and further listed into AWS. To use a secure sockets layer (SSL) certificate, a domain was required. This SSL certificate allows encrypted communication to happen between a web browser and the web server. It allows websites to go from HTTP to HTTPS to allow a more secure connection. In addition, a load balancer was created for port forwarding to happen.

2.6.6. User Interface

The following figures are representations of what the Make IT Simple web application user interface looks like.

Figure 3: Homepage of Make IT Simple

The homepage of Make IT Simple includes a preview of all the articles listed on the web application. There is access to the navigation bar, the search bar, and the login button. The footer includes copy-right, privacy policy terms, and a contact us form.

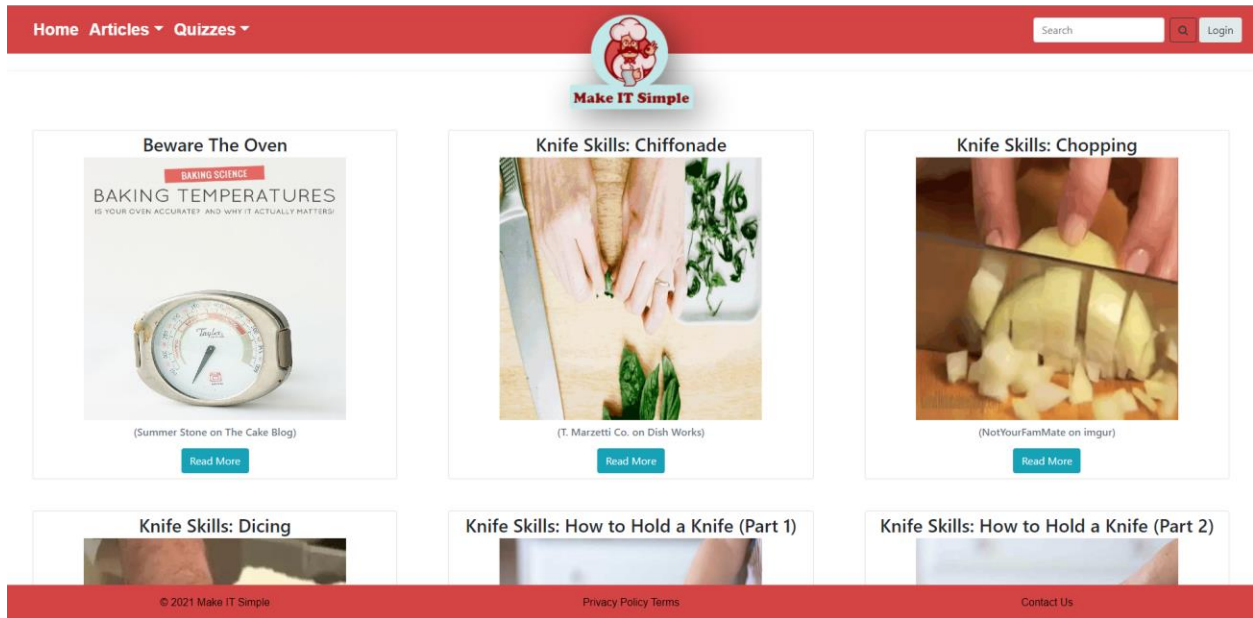


Figure 3: Homepage of Make IT Simple

Figure 4: Login and Registration Page

Login and registration page for users to either login or register for an account. An account is necessary to have a more customized experience to leave comments and favorite content.

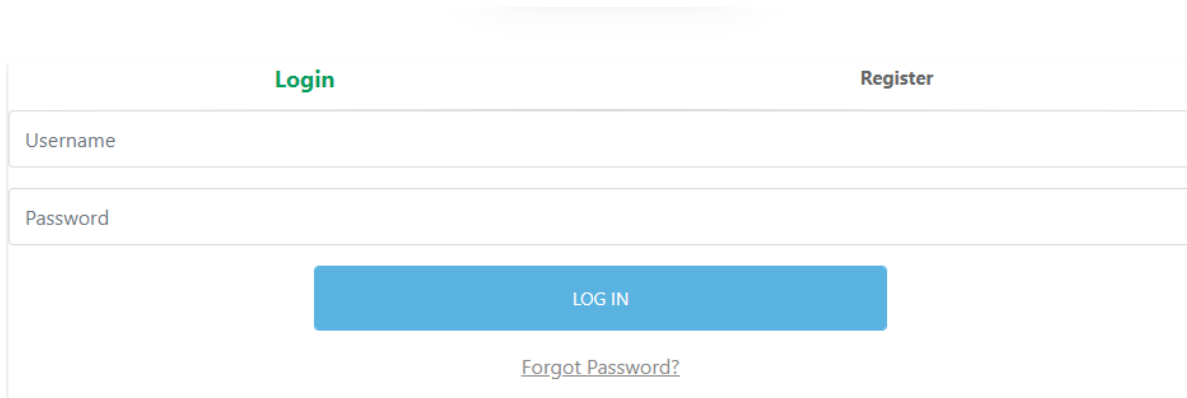


Figure 4: Login and Registration Page

Figure 5: Individual Article

An individual article layout where the image is a hover enabled gif to animate. Article title and copyright mark of the image is listed below. In addition, there is a short description of the article content. Users can leave a comment when logged in.

Home Articles ▾ Quizzes ▾

Search


Make IT Simple

Knife Skills: Chiffonade

(T. Marzetti Co. on Dish Works)

The term chiffonade comes from France and means "made of rags". This term refers to slicing the food ingredient as well, but the technique and the usage of it is different. The use of chiffonade is usually used with leaves such as herbs or greens. To chiffonade, take a leaf or a stack a bunch on top of each other, roll it up, then slice through to produce thin shreds.

Comments

Login/Sign Up to leave a comment

suehelen 2021-02-23	great job
john DOE 2021-03-25	Amazing article! ***!
johnsmith 2021-03-25	I love this article!

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Figure 5: Individual Article

Figure 6: Quizzes

There are two quizzes categorized as baking and cooking. Each contains different content pertaining to the respective category. Users will receive a score at the end. They are also able to leave comments when logged in.

Home Articles ▾ Quizzes ▾

Search


Make IT Simple

Question 1 of 4

Picture credit: (Corepics VOF on Shutterstock)

Why is over mixing bad?

A) Everything gets mixed quickly
 B) Leads to chewy textures
 C) Makes mixture smoother

Comments

Login/Sign Up to leave a comment

Figure 6: Quizzes

2.7. Testing

The overview, methodology, scope of testing, objectives, test logs and procedure, and review for user testing will be discussed in this section.

2.7.1. Testing Overview

The purpose of the report is to briefly explain the test coverage and open issues of the Make IT Simple web application project at the time of the release as well as user acceptance testing User Acceptance Testing (UAT). The team conducted this test to confirm that Make IT Simple web application performs project functions as intended per project requirements. The goal was to confirm that Make IT Simple web application is usable from an end user perspective which means operative ease-of-use. This test is to declare that Make IT Simple web application is deemed ready to be moved into the production phase.

2.7.2. Testing Methodology

For the project, the team followed Alpha & Beta Testing methodology. This testing method normally takes place in the development environment, the team chose this approach because the team believes it is suitable for the team's current project phase. This gives the team the opportunity to collect feedback from testers, then fix certain issues and improve the usability of the product.

2.7.3. Scope of Testing

The below are use cases and features of the main components that were tested to ensure that the web application is operating as it should be.

- Users must be able to view all available contents on Make IT Simple web application without having to sign up.
- Users must agree to the Privacy policy during the account signing up process.
- Users must not be able to add comments or favorite any contents without first signing up.
- Users will have to try posting or updating comments with profanity words to trigger replacement with asterisk signs.
- Web application categories tabs must be shown on end users' web browser with no error.
- Users must be able to take quizzes on the web application without any major technical issues.
- All related illustrations on Make IT Simple web application that moves must not be able to move unless users hover over it.
- Users must be able to go into each category tab without any issue or error showing on their web page.
- Privacy policy statements must be relevant to the Make IT Simple web application.

2.7.4. Objectives

The main objectives of user testing are to ensure that the web application is operating as it should be. The team is also responsible for remediating all issues that were found through user testing.

- The team is responsible for fixing any bugs that users might have found during testing.
- All major features must be included in the tests and any errors found must be identified to fix.
- All bugs that were found need to be resolved before the IT Expo.

- The team is responsible for seeking testers that vary in computer skills, occupations, age, and genders.

2.7.5. Test Logs and Procedures

User testing was conducted with five users with as much varying in age as possible and different technical abilities. This is to ensure that any skill level and age should be able to visit the web application. The main features used for testing are the following:

- Create account
- Login
- View articles (at least 5 randomly)
- Take quizzes
- Leave, modify, and delete comments
- Favorite and view article(s)
- Remove article(s) from Favorite page
- Log out

Table 3: User Testing Results

The testing results gathered from the above testing procedures were organized into the table below.

Record #	Testers	Age	Gender	Level of Technical Skill	Time Spent On the Web Application (In Minute)	Issues	Feedback	Success/Failure	Resolution
1	Tester A	24	Female	Low	30	Functionality issue with register/login. Login and register is not working properly. Unable to register or login. Found a bug in the quiz which the show answer appear on all questions. Couldn't find the Contact Us in the footer.	It doesn't look like a safe website, pictures are distracting, doesn't look professional. Not enough info on the article More variety on baking. Login on the comments is a good choice. Have options to register through different social medias for easible Password requirement message should be pop up at the right of the password field. Suggest to have a password strength bar. Login and register is not working or is not easily register. Question and answer and picture should be in the middle and comments should be in the bottom. Click on the answer, users don't have to click on the radio button. Tell which questions are wrong and right after taking the quiz. The pictures are too distracting on the main page. Show answer should only be appear on the question that the user click on. Footer: need to be noticeable.	Failed	Constantly fixed the known issues that were identified by user.
2	Tester B	24	Male	Advance	10	Login did not work. Tried to register a few time and the message "Credential is not valid" is showing when tried to login.	Suggest to have an option for user to submit answer in the quiz without selecting any answer. Baking articles, cooking articles, and search function is working fine.	Failed	Constantly fixed the known issues that were identified by user.
3	Tester C	56	Female	Low	25	A bug in search function when viewing an article.	Website visual looks fake (remediated by order placement of articles. Categories are limited and would like more variety	Success	Constantly fixed the known issues that were identified by user.
4	Tester D	23	Male	moderate	9	Found an issue/bug with favorite's page. Could not create a blank page and un-favorite all articles originally on the page.	Would like images to be less blurry. Asked if we had video content as well.	Success	Constantly fixed the known issues that were identified by user.
5	Tester E	25	Female	Advance	7	Found an issue/bug with favorite's page. Could not create a blank page and un-favorite all articles generated previously added on the page.	Image quality to be improved. Would like articles to have "a cuter border or something" to make it look less plain	Success	Constantly fixed the known issues that were identified by user.

Table 3: User Testing Results

2.7.6. Review

The overall user testing was very helpful. A lot of the users were able to identify bugs. There was an account registration issue, searching for articles issue, and removing article from favorites page issue. The account registration issue was remediated immediately after the first two users discovered this issue. If this issue were not fixed right away, the remaining users would be unable to complete the rest of the testing. The remaining two issues were remediated after user testing was completed. The overall feedback given by the users were also helpful in the usability of the web application. The team took the user feedback and changed some designs of the web application to give it a more appealing look. For future user testing, a more variety in age and skill ability in cooking/baking to see if the content provided on the web application is helpful. In addition, if resources were not limited, having more users to test will be ideal.

2.8. Budget

This section discusses the budget of the members who created Make IT Simple and any external software used during development. The budget will also include how much it would take to maintain Make IT Simple once it is in production.

Table 4: Budget

The below chart is the total estimated budget of Make IT Simple. This includes the labor of the members and the external software used. After the initial first year of free expenses, the expenses in the years afterwards will be required for maintaining and hosting. Nothing has changed from the original to the final budget as the team stayed on track with using free resources.

Project Asset Type					Funding Source (if applicable)				
Revenue Generating					Select One				
Comments: Make IT Simple will be a new web application that will be distinctive from others. There is no current revenue generating factor at the moment as it was mainly created for educational purposes. In the future, there will be opportunities for it to be implemented.					Comments:				
Risk Identification (See Risk Types tab)					Project Stakeholder(s)				
	Risk Rating* 1-5 (5 is high)	Comments	Weight	Score	Group Members and users				
Work Effort (days)	3	Individual schedules and amc	40%	1.20					
Complexity	3	Technology is being impleme	60%	1.80					
Project Risk Score:				3.00					
Estimate of Benefits									
If project will generate revenue, estimate 1 year here:									
Select other benefits the project may bring a customer or user:									
Risk Avoidance									
Improved customer satisfaction		<input checked="" type="checkbox"/>							
Increased system availability		<input type="checkbox"/>							
Productivity or process improvement		<input type="checkbox"/>							
Reduced costs		<input checked="" type="checkbox"/>							

Estimated Cost Rough Order of Magnitude:							Comments:
Rate Per/Hr	Work Effort (Hours)	1 X Costs	Ongoing Annual				
			Rate Per/Hr	Work Effort (Hours)	1 X Support Cost		
Labor - IT	20	800	\$ 16,000.00	20	60	\$ 1,200.00	
Labor - External			\$ -		0	\$ -	
Software - External			\$ -			\$ 50.00	
Hardware - External			\$ -			\$ -	
Misc.							
TOTAL			\$ 16,000.00			\$ 1,250.00	
5-Year ROI Analysis							
Description	5- Year Expected		Conservative (1.5)				
Total Costs	\$	22,250.00	\$	33,375.00			
Total Benefit	\$	-	\$	0			
Total Costs/Benefit Differential	\$	(22,250.00)					
Conservative Costs/Benefit Differential	\$	(33,375.00)					

Table 4: Budget

2.9. Project Timeline

This section has two visual diagrams being represented in a Gantt Chart and Work Breakdown Structure. Both diagrams are used to estimate the project timeline for Make IT Simple.

Figure 7: Gantt Chart

The Gantt Chart is the project timeline. This includes the project milestones of IT Expo, Final Presentation, and the Final Report.

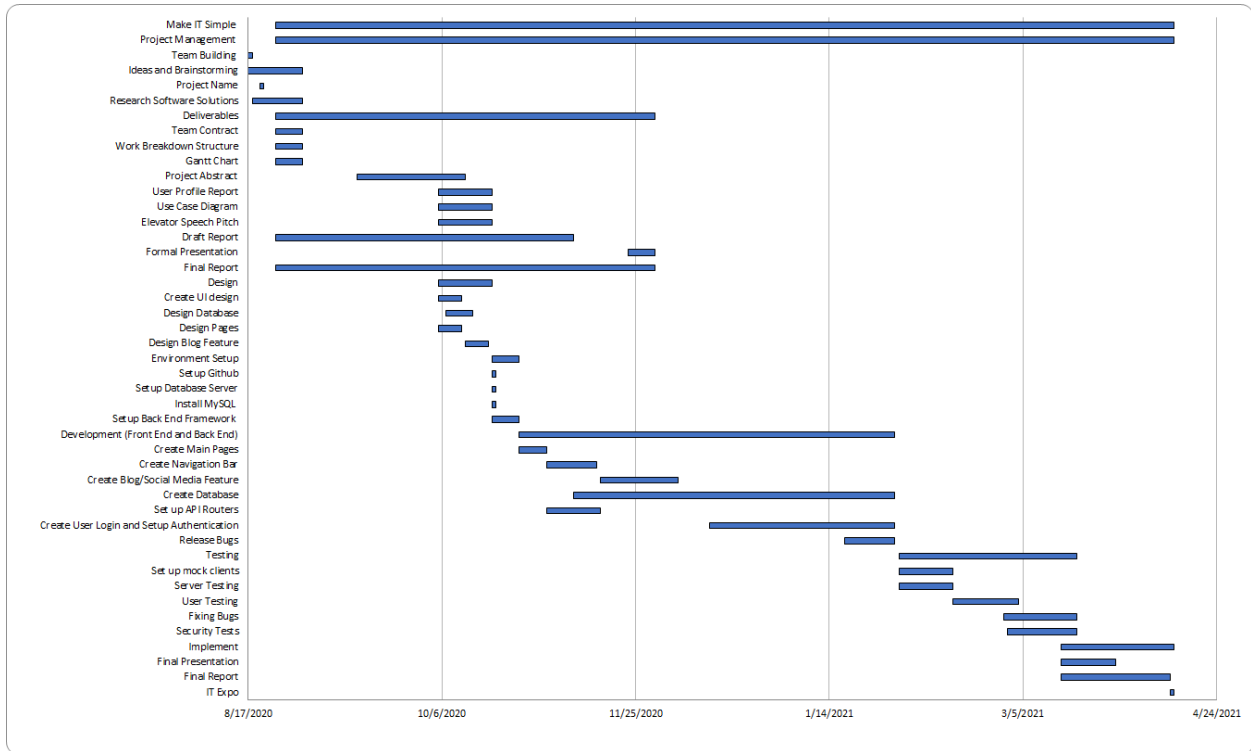


Figure 7: Gantt Chart

Table 5: Work Breakdown Structure

The below is a work breakdown structure representation of the Gantt Chart.

TASK ID	TASK DESCRIPTION	DURATION (Days)	BEGIN DATE	END DATE
1	Make IT Simple	232	8/24/2020	4/13/2021
1.1	Project Management	232	8/24/2020	4/13/2021
1.2	Team Building	1	8/17/2020	8/18/2020
1.3	Ideas and Brainstorming	14	8/17/2020	8/31/2020
1.3.1	Project Name	1	8/20/2020	8/21/2020
1.3.2	Research Software Solutions	13	8/18/2020	8/31/2020
1.4	Deliverables	98	8/24/2020	11/30/2020
1.4.1	Team Contract	7	8/24/2020	8/31/2020
1.4.1.1	Work Breakdown Structure	7	8/24/2020	8/31/2020
1.4.1.2	Gantt Chart	7	8/24/2020	8/31/2020
1.4.2	Project Abstract	28	9/14/2020	10/12/2020
1.4.3	User Profile Report	14	10/5/2020	10/19/2020
1.4.4	Use Case Diagram	14	10/5/2020	10/19/2020

1.4.5	Elevator Speech Pitch	14	10/5/2020	10/19/2020
1.4.6	Draft Report	77	8/24/2020	11/9/2020
1.4.7	Formal Presentation	7	11/23/2020	11/30/2020
1.4.8	Final Report	98	8/24/2020	11/30/2020
1.5	Design	14	10/5/2020	10/19/2020
1.5.1	Create UI design	6	10/5/2020	10/11/2020
1.5.1.1	Design Database	7	10/7/2020	10/14/2020
1.5.1.2	Design Pages	6	10/5/2020	10/11/2020
1.5.1.3	Design Blog Feature	6	10/12/2020	10/18/2020
1.6	Environment Setup	7	10/19/2020	10/26/2020
1.6.1	Setup Github	1	10/19/2020	10/20/2020
1.6.2	Setup Database Server	1	10/19/2020	10/20/2020
1.6.2.1	Install MySQL	1	10/19/2020	10/20/2020
1.6.3	Setup Back End Framework	7	10/19/2020	10/26/2020
1.7	Development (Front End and Back End)	97	10/26/2020	1/31/2021
1.7.1	Create Main Pages	7	10/26/2020	11/2/2020
1.7.2	Create Navigation Bar	13	11/2/2020	11/15/2020
1.7.3	Create Blog/Social Media Feature	20	11/16/2020	12/6/2020
1.7.4	Create Database	83	11/9/2020	1/31/2021
1.7.5	Set up API Routers	14	11/2/2020	11/16/2020
1.7.6	Create User Login and Setup Authentication	48	12/14/2020	1/31/2021
1.7.7	Release Bugs	13	1/18/2021	1/31/2021
1.8	Testing	46	2/1/2021	3/19/2021
1.8.1	Set up mock clients	14	2/1/2021	2/15/2021
1.8.2	Server Testing	14	2/1/2021	2/15/2021
1.8.3	User Testing	17	2/15/2021	3/4/2021
1.8.4	Fixing Bugs	19	2/28/2021	3/19/2021
1.8.5	Security Tests	18	3/1/2021	3/19/2021
1.9	Implement	29	3/15/2021	4/13/2021
1.9.1	Final Presentation	14	3/15/2021	3/29/2021
1.9.2	Final Report	28	3/15/2021	4/12/2021
1.9.3	IT Expo	1	4/12/2021	4/13/2021

Table 5: Work Breakdown Structure

2.10. Problems Encountered and Analysis of Problems Solved

The below two sections are the problems the team encountered during the fall and spring semester. Each section also entails what was done to remediate the issue.

2.10.1. Fall 2020

In the initial stages of development, the team had the most trouble with setting up the team's AWS organization account and the databases in AWS. The team was unable to connect to the AWS database through the database editor, DBeaver. It took a lot of research and troubleshooting to figure out what was wrong. Eventually the team found out the team had to make some changes in the security settings to allow inbound and outbound IPs to access the database and then the team was able to finally connect to the database.

The team had to abandon some initial goals the team wanted to do due to time constraints and project scope. The team wanted to create a forum section on the website to allow threads to be created for conversation. This would have required a lot of research and it essentially was a mini project within a larger project. Due to time constraints and the team's ability as a team to develop a forum on top of all the other elements the team wanted to include, the team had to eliminate the idea to make the deadline. The team also had to abandon the plan of creating a mobile app in addition to the web application. Since the team only has one software developer, the team had to abandon this goal as it would have been too much for them to do in such a short amount of time.

2.10.2. Spring 2021

In the second half of development, there were small hurdles when implementing new features. The initial stages of development took the longest as everything had to be set up for the first time. Implementing the SSL certification through AWS to our web application took some troubleshooting. The process required a load balancer which then allowed the SSL certification to be applied properly and produce a secure connection. The commenting and favoriting content feature the team left to be completed in the second half of development were completed on time. In addition, this semester also included user testing. Through user testing, there were small bugs discovered like account registration, search function and favoriting content for some users failed. These bugs were identified and remediated immediately after user testing was completed. From the collected feedback from user testing, there were a lot of adjustments made to the user interface to meet user standards.

2.11. Recommendations for Improvement

For future improvement, having a larger budget that is not solely based on college student incomes would have been nice. Using a paid template would have saved a lot of time and effort when developing the front look for the web application. Even without a paid template, planning out the layout for the user interface early on would have saved a lot of time from adjusting the aesthetics of the web application. With a larger budget, increasing the database storage would be convenient. The quality and quantity of article content could have been increased. Having more time to develop would allow more features to be added. If there was another team member who specialized in software development would help immensely in creating a forum feature as this is essentially a project within a project. During the fall semester class presentation, there were

many helpful comments on making the gif images activated through hover which was immediately implemented.

3. CONCLUSION

There were many abilities and skills the whole team developed when completing this project. Many of the skills were not normally taught in class and were helpful to learn for professional use within a company or organization. The most important skill that the team learned throughout this project is teamwork. This is a big project and without each other, it is almost impossible to complete this project on the deadline. This project forced the team to learn new technologies as well as develop technical and soft skills. Most employees are part of a team/department/division, and even those who are not on an official team need to collaborate with other employees. One may prefer to work alone, but it is important to demonstrate that there is understanding and appreciation of value when joining forces and working in partnership with others to accomplish the company's goals. This shows that one possesses the soft skills necessary to engage in productive collaboration. For the team's technical skills, the team learned more about programming in Node.js, Express, and incorporate them with the Pug framework. The team got to explore, learn, and experience in cloud computing platforms such as Amazon Web Service. Overall, the team got a better understanding of the requirements that full stack web developers have. The team was able to use the team's knowledge learnt in each course such as: database, web development, and programming to put together into a fully functional and running web application that provides helpful information to people of all ages for free.

4. REFERENCES

- [1] Chang, C. (2019, May 17). Eating Out vs Cooking at Home- The 12 Statistics You Must See. Slice of Kitchen. <https://sliceofkitchen.com/eating-out-vs-cooking-at-home-statistics/>
- [2] Dunford, D., Dale, B., Stylianou, N., Lowther, E., Ahmed, M., & Arenas, I. D. (2020, April 06). Coronavirus: The world in lockdown in maps and charts. Retrieved November 24, 2020, from <https://www.bbc.com/news/world-52103747>
- [3] Galarza, D. (2020, March 27). Before the coronavirus epidemic, they didn't know how to cook. Now they are scrambling to learn. The Washington Post. <https://www.washingtonpost.com/news/voraciously/wp/2020/03/27/before-the-coronavirus-epidemic-they-didnt-know-how-to-cook-now-they-are-scrambling-to-learn/>
- [4] K., J. (n.d.). 2020 Cooking Classes Cost (with Local Prices) // Lessons.com. Retrieved November 24, 2020, from <https://lessons.com/costs/cooking-classes-cost>
- [5] Shoup, M. E. (2020, April 15). Survey: Cooking more at home could become the new normal post-pandemic. William Reed Business Media. <https://www.foodnavigator-usa.com/Article/2020/04/15/Survey-Cooking-at-home-will-become-the-new-normal-post-pandemic>