

# Project Plan

## Mötley Zoo Service Gateway



Industry Partner	Angelica Bailey
Primary Instructor	Anjana Shah
Team Member	Maksym Sen
Team Member	Ming Yang
Team Member	Gustavo Beltran
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Team Member	Raiyan Rofiquzzaman
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### Document Revision History

Revision #	Date
1	Aug. 10, 2021
2	Feb. 6, 2022

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# 1. Executive Summary

The following describes the project to be executed.

Objective	<p>As a software developing team, new challenges are exciting and always offer an opportunity to improve and boost our skills. Working together in designing a gateway system for Motley Zoo online services will let the team bring all their different skill sets together to produce an incredible product that will successfully replace the current system.</p> <p>Our aim is to impress the client with a better design than the current system, seamless integration of our software to their site and services is our top priority, as well as designing code that can be easily upgraded to add any functionality the client requires in the future based on its business needs.</p>
Corporate Goals Addressed	<p>Owning their own online services gateway without having to link to a third-party site and pay for their services is a great business opportunity for Motley Zoo that will reduce cost of business while providing them freedom to expand their services as desired.</p> <p>This also offers a <b>change</b> chance for Team 9 to develop other software solutions for different clients as this project will serve as a working example, or an instance, of a system that can easily be adapted towards many kinds of businesses that rely on scheduling and payments of time slots or services within timeslots. <b>after this project serves as a calling card to businesses seek quality and efficiency.</b></p>
Planned Start Date	Monday, September 20, 2021
Planned End Date	Friday, April 1, 2022

## 2. Project Approvers, Reviews and Distribution List

Project Role	Name	E-mail	Date
<ul style="list-style-type: none"> <li>Stakeholder: reviews</li> <li>Owner</li> </ul>	Angela B.	angsmotleyzoo@gmail.com	09/21/2021
<ul style="list-style-type: none"> <li>Stakeholder: Approver</li> <li>Reviews</li> </ul>	Anjana Shah	ashah@georgebrown.ca	09/21/2021
<ul style="list-style-type: none"> <li>Primary internal approver</li> <li>Reviews</li> <li>Distribution</li> <li>(documentation distribution generally open due to nature of free Jira plan, task distribution also flexible based on team members volunteering for tasks)</li> </ul>	Vanja Vego	vanja.vego@georgebrown.ca	09/21/2021
<ul style="list-style-type: none"> <li>Steering Committee: Reviews</li> <li>Steering Committee: Approvals</li> <li>Distribution</li> </ul>	Gustavo Beltran	gustavo.beltran@georgebrown.ca	09/21/2021
<ul style="list-style-type: none"> <li>Steering Committee: Reviews</li> <li>Steering Committee: Approvals</li> <li>Distribution</li> </ul>	Jillian Trafford	jillian.trafford@georgebrown.ca	02/06/2022
<ul style="list-style-type: none"> <li>Steering Committee: Reviews</li> <li>Steering Committee: Approvals</li> <li>Distribution</li> </ul>	Raiyan Rofiquzzaman	raiyan.rofiquzzaman@georgebrown.ca	09/21/2021
<ul style="list-style-type: none"> <li>Steering Committee: Reviews</li> <li>Steering Committee/ Approvals</li> <li>Distribution</li> </ul>	Maksym Sen	maksym.sen@georgebrown.ca	09/21/2021
<ul style="list-style-type: none"> <li>Steering Committee: Reviews</li> <li>Steering Committee: Approvals</li> <li>Distribution</li> </ul>	Ming Yang	ming.yang@georgebrown.ca	09/21/2021

### 3. Scope

Define the sum total of all of its products and their requirements or features.

In Scope	Out of Scope
<b>Registration Page</b>  Form with input fields for registration on frontend. Dynamic output field for response if email exists or password is reset.  On backend, upon registration POST, checks user database if email already exists. If not, triggers emailing of timed registration confirmation link with generated hash code to match and confirm registration	<b>Mobile App</b>  Mobile app will be possible in another project, and will be able to use existing RESTful API's, however it is out of the scope for the current project
<b>Login page</b>  The only page accessible to visitors, will include password recovery link, registration link	<b>Google Maps API</b>  Google maps API will be possible to be used in a mobile app. However, due to the nature of the API, being only free to use for Android platform, and not a web based SPA, it is not possible to implement into the project SPA due to budget constraints.

<b>Password recovery</b>  Form with input field for email on frontend, with dynamic input of generic message upon POST  On backend triggers db check for email, if email exists, system sends link to timed password recovery page with a generated hash code to confirm identity/source.	<b>AWS S3/Cloud File Storage</b>  Due to budget constraints on current project, project will use local storage for demo purposes. S3 or similar storage method can be easily added if Stakeholder chooses to use system in production level.
<b>Password Recovery Page</b>  Form with new password and password confirmation field. POST confirms new password, redirects to login page with message for output stating password was successfully changed. On backend side the system encrypts and updated password in the user database	<b>API for Main Site Reviews and Promos</b>  This API may be put back into scope, but by stakeholder request remains low priority
<b>Authentication</b>  Backend core system of confirmation of registered identity	
<b>Authorization</b>  Backend core system of user type, redirection to their appropriate sub-system and abilities, blocking of unauthorized entry to sub-systems that are not appropriate for their user type.	
<b>Sessions</b>  Tracking of authentication and authorization as users enter different	

sections of site and/or attempt to execute functionalities.	
<b>Encryption/Decryption</b>  Obfuscation of certain elements such as passwords, session states, etc. for security purposes. Based on encryption/decryption Node package	
<b>Reporting forms</b>  Report input forms, differs based on type of report and user type. Ability to add photos with reports. In admin case ability to create end-of-month reports and customized business related reports. Some reports in users/clients panels may require enabling by admin.	
<b>File Upload (Photos)</b>  Ability to upload photos to be added to reports. File system tied in to AWS S3 bucket or similar cloud service.	
<b>File Generation (PDF)</b>  Ability to generate PDF files from various databases and/or tables such as Users, Invoices, Schedules, etc.	
<b>Databases (CRUD)</b>  Data Storage of various information, ability to perform CRUD operations on said data storage	

<p>Messaging</p> <p>Messaging system for quick-format communications between clients and staff, and possibly clients and owner.</p>	
<p>Sub-system: User Type</p> <p>System with abilities given to users/clients, including scheduling services, reading reports from staff, messaging, payment gate for resolving outstanding invoices. Additional functionality such as reviews may be set by Admin.</p>	
<p>Sub-system: Staff type</p> <p>System with abilities given to staff, including seeing their schedules, requesting specific schedules, if enabled setting schedules, checking hours worked, messaging to clients or admin. Additional abilities may be set by admin, such as setting their own work schedules instead of requesting schedules.</p>	
<p>Sub-system: Admin type</p> <p>System with all abilities, setting of all abilities appropriate to other system types by user type and user, generating custom reports, control of all other profiles and their abilities including deletion and creation of profiles. The one account type that has total control over the entire system.</p>	
<p>RESTful API structure</p> <p>Most features will be based on RESTful API structure, ensuring loose-coupling between the frontend and the backend.</p>	



This will enable team to later use the same APIs for both the SPA as well as a mobile app.	
<b>Payment Gateway</b>  This feature enables payment of invoices in a secure manner using Stripe API or similar service.	

## 4. Deliverables

This project will deliver the following.

Deliverable	Description
Secure systems with registration	This deliverable covers the skeleton of the system/sub-systems. It includes registrations, authorization, authentication and privileges based on user type and user setting set by admin user(s). Also includes password recovery and email(profile) existence checks.
Scheduling	This deliverable covers the scheduler frontend, including all its variations based on user type and user settings set by admin, as well as all related backend CRUD operations in terms of scheduling and setting as well as confirming resolution of invoice costs.
User, Staff, Admin systems	This deliverable covers the three sub-systems with their separate GUIs, abilities, and features. May be split into three separate deliverables at later sprint

Database(s)	This deliverable covers either a single or multiple databases for storage and CRUD operations of data
Payment Gateway	This deliverable covers connection to Payment Gateway as well as database communications upon payment or failure of payment.
Reporting, Reviews and communications	This deliverable covers reporting, file system for report photos, reviews and setting users ability to do reviews, quick-format communications between various user types.

## 5. Assumptions

This project makes the following assumptions:

- Our site will integrate seamlessly with existing code from 3rd party company
- The system will be linked by the main site ([www.motleyzoo.ca](http://www.motleyzoo.ca)), but will otherwise stay independent of it as a separate codebase.
- The new gateway will perfectly replace the current system used by the client
- It will be designed with expandability in mind
- The software source code will be easy to understand and easy to change
- Bugs will be tested and corrected
- The importance of the beta stage of testing will not be ignored
- Every step of the development process will be communicated to the stakeholder for approval to move to the next step.
- Constrains will be handled in a timely and organized manner and well documented.
- The gateway system will have documentation that will further provide details about its capabilities.
- The system will have hoverable "info" icons where any kind of operational explanation/example would be needed.

## 6. Dependencies

The Databases will be either based on a noSQL solution such as MongoDB, or an SQL database such as MySQL or MariaDB. Upon further sprints and systems analysis and design stages, in particular database design stages, one or the other, or perhaps a combination of both will be chosen.

Development dependencies include various Node packages, however this list cannot be finalized at this time, and will be narrowed down as sprints progress further. Some packages/libraries under consideration are:

Package/Library Name	Description
<b>Axios</b>	HTTP Client
<b>Express</b>	Server
<b>bcrypt.js</b>	Encryption and decryption package
<b>JWT</b>	JSON Web Tokens
<b>nodemailer</b>	Mailing package
<b>flatpickr</b>	Date and time picker package
<b>sequelize</b>	SQL ORM
ToastUI Calendar	Calendar/Date and time picker.
ToastUI Grid	
Nodemailer	Node emailing library
<b>Mongoose</b>	MongoDB ODM
Socket.io	Chat backend
<b>PDFkit</b>	PDF generation package
<b>Nodemon</b>	Development dependency package
<b>Stripe API</b>	Stripe services API

## 7. Risk Management

Index	Potential Risk	Effects	Severity (H/M/L)	Likelihood (H/M/L)	Management Strategy
<b>Technical</b>					
001	Quality of the payment service dependant on third-party service.	Slow confirmation of payment.  Potential down times	M	M	Provide backup payment options (secondary API)
002	Payment options limited those offered by a third-party service.	Clients prefer unsupported options	M	M	Secondary payment options may offer the client's proffered payment options. This problem is more common in global payments.
003	Column & Field-level encryption may impact the performance of the application.	Possible slower performance	L	L	Explore ways to minimize unnecessary complexity in regards to encryption
004	Response time expectations with the messaging system between users and staff members.	Clients may become unhappy if staff members take too long to respond	M	L	Clients looking for a response need to know if a staff member is available to respond.
005	XSS & SQL injections.	Attackers may attempt to steal	H	L	Regex validation on front-end and back-

		information or drop the database entirely			end.
006	Users attempting to reach privileged pages by means of similar links.	Users getting access to admin panels without authorization	H	L	Authorization & Session tracking to keep users away from elevated access.
007	Attempts at decryption.	Attackers attempt to decrypt outgoing payloads	H	L	Complex encryption algorithms with low expiration times ("JWT")  "pcrypt.js" for passwords.
008	Scheduler calculation error.	Over/undercharge	H	M	Pricing tables in the database for comparisons.
009	Cloud services used by filing system may unexpectedly go down.	No ability to upload photos to reports	M	L	AWS S3 buckets/similar cloud services are known for their stability, secondary storage options may need to be explored in cases of downtime.
010	Accidental leaking of important information via the messaging system.	Staff member may accidentally leak sensitive information in messaging with their clients.	M	L	Admin will have oversight of all communications between the staff and their clients.
011	Accidental deletions of user profiles.	Admin has the ability to delete profiles, and may do so accidentally.	L	L	System should provide necessary amounts of validation from the admin before profile deletion is executed.

012	Admin accounts have access to sensitive material and can be subject to being hacked.	Potentially devastating as the admin has total control over the system.	H	M	Admin accounts should be subjected to multi-factored authentication for optimum security.
013	Flooding of database with fake registration information.	Database can be flooded with false registration accounts via a bot.	H	M	Captchas will be used to confirm whether the registering user is human or not.
014	Potential denial of service by constantly requesting to reset password.	an attacker could create an automatic script to abuse the functionality by resetting user passwords every set amount to block a user from logging in.	H	L	Explore ways to limit how many password recovery attempts could be made in a given amount of time.
015	Username enumeration.	Attacker may attempt to identify registered emails by checking whether the recovery system confirms the existence of them.	M	L	The system shouldn't confirm if a given email is registered or not, instead it should say "If an account exists with this email, a recovery link has been sent".
016	Weak password requirements may lead to easy brute-force attempts.	Users with very short passwords that don't use numbers or special characters are prime targets for brute-force hacking attempts.	M	L	Either force all accounts to follow a specific guideline when creating passwords, or limit the amount of login attempts that can be made.

Project Definition					
017	Project Scope Creep	Delays and cancellations	L	L	Scope is well defined, subject to change
018	Project scope is unrealistic or not defined	Project schedule delays, unrealistic planning, high risk, and unclear deliverables	H	L	Proper communication with the team and with the industry partner, understand the project vision and requirements
019	Unrealistic deliverables	Project delays, feature cancelling	M	L	Focus on the main requirements and limit the amount of unnecessary features
020	Unrealistic timelines	Inefficient time management, project delays	M	L	Apply better measuring techniques based on previous completed tasks
021	Project conflicts not resolved in a timely manner	Lingering issues could increase time it takes to complete tasks, delays deliverables	M	L	Conduct additional team meetings to iron out potential conflicts
Project Members					
022	Illness or sudden absence of project members	Their tasks may need to be taken over by available project members	M/H	L	Members that are suddenly unavailable must make it known to the rest of the team so that they can adapt accordingly

023	Lack of communication, lack of clarity	No team cohesion, project delays	M	L	Organize more team meetings
024	Absence of leadership within the team	Project delays, difficulties in assigning and completing tasks	H	L	Identify which qualities are detracting from the teams ability to coordinate together and make others realize their ability to lead.
025	Missing deadlines and scheduling errors	Weakens team morale, compounding deadlines add to team stress	M	L	Proper use of time management.
<b>Industry Partner</b>					
026	Lack of communication from the industry partner	Misunderstanding regarding specific requirements	H	L	More members of the team could have emergency contact with the industry partner in case of emergency
027	Unclear requirements	lost development time, missed project deadlines, poor quality of documentation	H	L	Reach out to industry partner to clarify specific requirement points



## 8. Communication

### Reporting

The following reports will be produced;

Report	Audience	Frequency
Anjana Shah	Whole team	Weekly
Angelica B.	Vanja Vego	As Needed

### Meetings

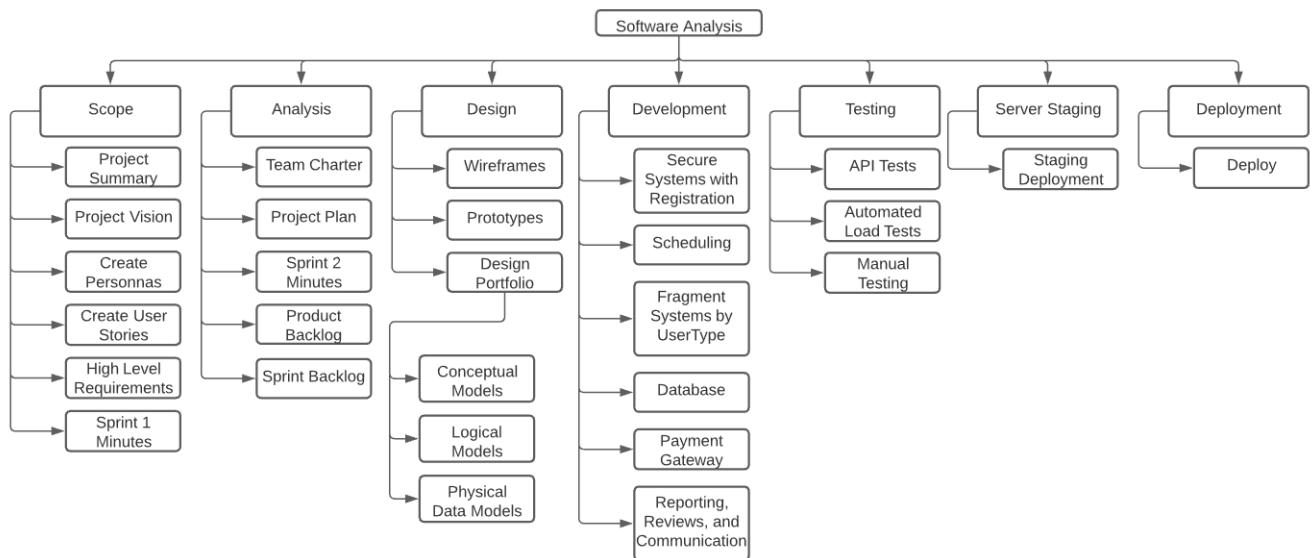
The following meetings/communication will be established;

Meeting	Purpose	Attendees	Frequency
Daily Stand up	To update the team on new assignments and find possible errors	Whole Team	Daily
Help Session	To help the team understand anything that needs clarification	Anyone	As Needed
Jira Chat	Ongoing communications through comments and tags	Anyone	As Needed
Discord Chat	An open line for communications including group and private chat, voice, and video calls	Anyone	As Needed
Stakeholder Consultations	To update the stakeholder/owner and ask any new questions/clarifications as they are uncovered	Vanja Vego, Angelica B.	Weekly, as needed

## 9. Task Listing (WBS- Work Breakdown Structure)

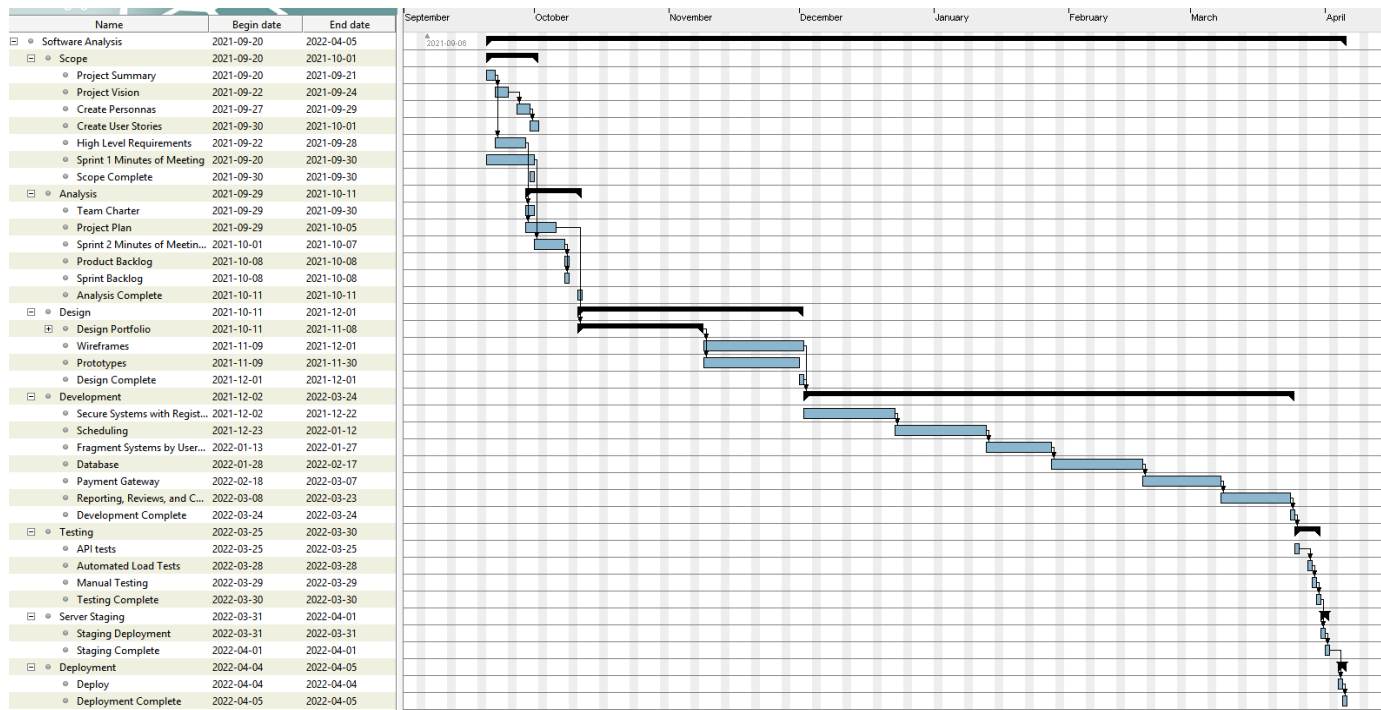
The following resource proposal template summarizes the resource hours committed to this project, upon final approval of this document.

Reference	Tasks	Duration	Dependency
1	Scope	<b>10 days</b>	-
1.1	Project Summary	2 days	-
1.2	Project Vision	3 days	1.1
1.3	Create Personas	3 days	1.2
1.4	Create User Stories	2 days	1.3
1.5	High Level Requirements	5 days	1.1
1.6	Sprint 1 Minutes of Meeting	9 days	-
2	Analysis	<b>6 days</b>	1.5
2.1	Team Charter	2 days	1.5
2.2	Project Plan	5 days	1.5
2.3	Sprint 2 Minutes of Meeting	5 days	-
2.4	Product Backlog	1 day	2.2
2.5	Sprint Backlog	1 day	2.2
3	Design	<b>38 days</b>	2.2
3.1	Design Portfolio	<b>21 days</b>	2.2
3.1.1	Conceptual Models	7 days	3.1
3.1.2	Logical Models	7 days	3.1
3.1.3	Physical Data Models	7 days	3.1
3.2	Wireframes	17 days	3.1
3.3	Prototypes	16 days	3.1
4	Development	<b>81 days</b>	3.2
4.1	Secure Systems with Registration	15 days	2.2
4.2	Scheduling	15 days	4.1
4.3	Fragment Systems by User Type	11 days	4.2
4.4	Database	15 days	4.3
4.5	Payment Gateway	12 days	4.4
4.6	Reporting, Reviews, and Communication	13 days	4.5
5	Testing	<b>4 days</b>	4.6
5.1	API Tests	1 day	5
5.2	Automated Load Tests	1 day	5.1
5.3	Manual Testing	2 days	5.2
6	Server Staging	<b>1 day</b>	5.3
6.1	Staging Deployment	1 day	5.3
7	Deployment	<b>1 day</b>	6.1
7.1	Deploy	1 day	6.1



File: F21\_T09\_Project\_Plan\_WBS\_Diagram.png

## 10. Gantt Chart



File: F21\_T09\_Project\_Plan\_Gantt\_Chart

## 11. Milestones

Major Activity or Milestone	Estimated Milestone Target Date	Owner/Reviewer Team Members
Project established/ Initial meeting	2021-09-20	<b>Reviewer:</b> Anjana Shah <b>Owner:</b> Angelica B. <b>Team Members:</b> Maksym Sen Gustavo Beltran Vanja Vego Raiyan Rofiquzzaman Ming Yang
Scope	2021-10-01	<b>Reviewer:</b> Anjana Shah <b>Team Members:</b> Maksym Sen Gustavo Beltran Vanja Vego Raiyan Rofiquzzaman Ming Yang
Analysis	2021-10-11	<b>Reviewer:</b> Anjana Shah <b>Team Members:</b> Maksym Sen Gustavo Beltran Vanja Vego Raiyan Rofiquzzaman Ming Yang
Design	2021-12-01	<b>Reviewer:</b> Anjana Shah <b>Team Members:</b> Maksym Sen Gustavo Beltran Vanja Vego Raiyan Rofiquzzaman Ming Yang

Development	2022-03-24	<b>Reviewer:</b> Anjana Shah <b>Team Members:</b> Maksym Sen Gustavo Beltran Vanja Vego Raiyan Rofiquzzaman Ming Yang
Testing	2022-03-30	<b>Reviewer:</b> Anjana Shah <b>Team Members:</b> Maksym Sen Gustavo Beltran Vanja Vego Raiyan Rofiquzzaman Ming Yang
Server Staging	2022-04-01	<b>Reviewer:</b> Anjana Shah <b>Team Members:</b> Maksym Sen Gustavo Beltran Vanja Vego Raiyan Rofiquzzaman Ming Yang
Deployment	2022-04-05	<b>Reviewer:</b> Anjana Shah <b>Team Members:</b> Maksym Sen Gustavo Beltran Vanja Vego Raiyan Rofiquzzaman Ming Yang

## 12. RAM – Responsibility Assignment Matrix

**Correction On next page**

### RAM for Team 9: Gateway for Motley Zoo Website

**Consulted (C)** Those whose opinions are sought; and with whom there is two-way communication.  
**Responsible (R)** Main person who does the work to achieve the task, although others can be delegated to assist in the work required.  
**Accountable (A)** The one ultimately accountable for the correct and thorough completion of the deliverable or task and the one to whom Responsible is accountable.

	Vanja Vego	Raiyan Rofiquzzaman	Ming Yang	Max Sen	Gustavo Beltran
Tasks Assignments	R/A	C	C	C	C
Documentation Approval	A			R	
Progress Tracking	A	R	C	C	C
Maintaining Project Plan	R	I	I	C	C
Stakeholder liason	A				
Chart generation	R/A	C	C	C	R
Software Developing	A	C	C	R	C
API Testing	R/A	C	C	C	C
Automated Load Testing	R	C	C	R	C
Beta/Manual Testing	R	C	C	C	R
Staging	R	C	C	C	C
Deployment	A	C	C	R	C
Monitoring live code	R	C	C	C	C

whom Responsible is accountable.

Jillian Trafford

	Vanja Vego	Raiyan Rofiquzzaman	Ming Yang	Max Sen	<del>Gustavo Beltran</del>
Tasks Assignments	R/A	C	C	C	C
Documentation Approval	A			R	
Progress Tracking	A	R	C	C	C
Maintaining Project Plan	R	I	I	C	C
Stakeholder liason	A				
Chart generation	R/A	C	C	C	R
Software Developing	A	C	C	R	C
API Testing	R/A	C	C	C	C
Automated Load Testing	R	C	C	R	C
Beta/Manual Testing	R	C	C	C	R
Staging	R	C	C	C	C
Deployment	A	C	C	R	C
Monitoring live code	R	C	C	C	C

### 13. Approval

The signatures below indicate their approval of the contents of this document.

Project Role	Name	Signature	Date
Primary Stakeholder/ Owner	Angelica Bailey	Angelica Bailey	10/10/2021
Primary Instructor	Anjana Shah		
Team Member	Vanja Vego	Vanja Vego	10/10/2021
Team Member	Maksym Sen	Maksym Sen	10/10/2021
Team Member	Ming Yang	Ming Yang	10/10/2021
Team Member	Gustavo Beltran	Gustavo Beltran	10/10/2021
Team Member	Raiyan Rofiquzzaman	Raiyan Rofiquzzaman	10/10/2021

Updated approval on next page.

Project Role	Name	Signature	Date
Primary Stakeholder/ Owner	Angelica Bailey	Angelica Bailey	02/06/2022
Primary Instructor	Anjana Shah		
Team Member	Vanja Vego	Vanja Vego	02/06/2022
Team Member	Maksym Sen	Maksym Sen	02/06/2022
Team Member	Ming Yang	Ming Yang	02/06/2022
Team Member	Jillian Trafford	Jillian Trafford	02/06/2022
Team Member	Raiyan Rofiquzzaman	Raiyan Rofiquzzaman	02/06/2022