Plush Meadows

Online Management System Design

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Lab Day: Thursday
Lab Room: Online
Lab Time: 13:00
Lab Academic: Khanh / Kieran

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Introduction

This design report outlines the preliminary analysis and design processes conducted by team RISKY to assist in modelling an online management system for the company Plush Meadows.

The report provides the Business Rules as defined by Plush Meadows, the current legislation and privacy considerations. An overview of how actors (users) will interact with the system is modelled through Use Cases, one detailed Use Case Description and Activity Diagram for each team member, and a domain class diagram to understand the classes required when conceptualising the system.

The team's progress in developing this report was tracked using Microsoft Teams, typed meeting notes, and a Gantt Chart. The Team Management section provides a complete overview of this process.

Business Rules

1. The horses of Plush Meadows are available for hire to individuals and groups of riders. Hire is available for short-term (½ day), medium-term (1 day) or long-term (approx. 2 – 3 days) periods. Any horse's total time out on hire cannot equal to or exceed four or more days within a seven-day period.
2. Riders are divided into three experience levels (beginner, intermediate, experts), and horses are correspondingly divided into three types (placid, energetic, strong). Horses tied to carts or for young children need to be matched to an employee.
3. A veterinary service is present for 3.5 hours a day, 7 days a week. The veterinarian inspects the horses five times a year, unless the horse has a problem or needs continuous treatment. Employees leave a record in the veterinarian's diary of any issues.
4. There are three package types for boarding horses. Basic services (accommodation and food), Special services (accommodation and food plus regular exercise and grooming), or Deluxe services (special services plus comprehensive inspections and reports by the veterinarian every quarter).
5. Customers who hire horses for a short-term are limited to specific time blocks, i.e., morning or afternoon. The number of riders, the rider's ages, the rider's experience level, and any relevant medical information (e.g., allergies, epilepsy, dizziness), is considered when confirming a hire for a customer. The system will determine a list of available horses for an individual or group based on the information provided and display the list to the manager.
6. For long-term hires, customers must hold a 69797 Certificate III in Horsemanship.
7. Customers can cancel or change a hire request at any time.
8. People wishing to stable their mounts on the premises must contact the manager to arrange a level of service, length of contract (set time or ongoing) and other accommodation details. The manager arranges for a stall, grooms, strappers, and vet visits (as required by the contract).
9. Cost is based on duration and level of care. Groups of 4 or more receive a 20% group discount. Payment can be made by credit/debit card, or cash. Additionally, a customer can redeem a gift card of any amount sold (as printed on the card) in any transaction.
10. Strappers are responsible for exercising horses and seeing to minor medical treatment as prescribed by the vet. Grooms also exercise the horses and are responsible for everyday care and maintenance. Both strappers and grooms maintain a log in the system of how often a horse has received attention.
11. Ostlers take care of the riding equipment, saddles, bridles, bits, straps, and equipment for riders such as hard hats and crops. Management of maintenance or replacement of this equipment is recorded in a separate system by the farrier. This system is beyond the current scope.
12. A record of the frequency in which stable workers service the stalls and the service provided, i.e. change water, replace straw, fix woodwork, is recorded in the system. The stable workers update these records.
13. For safety, Plush Meadows maintains restricted access to the breeding area, supervision and training of the horses, clear escape routes, and gates that open in both directions
14. Plush Meadows must comply with the Work Health and Safety Act 2011 [1], and Work Health and Safety Regulation 2017 [2].
15. To comply with the relevant Work Health and Safety Acts and Regulations, Horse Safety Australia provides more specific Guides and Regulations [3] that will be adhered to by Plush Meadows.
16. Plush Meadows must make all reasonable efforts to protect the privacy of employee and customer data collected during the conduct of business per the Privacy and Personal Information Protection Act 1998 [4].

Use Cases

Use Case Diagram

The Use Case Diagram seen in Figure 1 models the interactions external actors will have with the Plush Meadows Online Management System, and how each of these interactions relate to each other.

Figure 1: Use Case Diagram

List of Use Cases

- Book in Horse – The manager attempting to book a horse in to stay at Plush Meadows.
- Select Care Package – The manager is required to select the level of care that a horse will receive while booked in at Plush Meadows.
- Take Payment – The manager takes payment for hire or booking in of a horse from the customer.
- Select Card or Cash – The manager selects payment method during the Take Payment use case.
- Hire Out Horse – A manager logs into their user account and determines a list of suitable horses for hire according to the customer's requested date and time, the number of rider's, ages, experience levels and relevant medical details.
- Check License – If hiring the horse out for more than one day, the manager must ensure a valid 69797 Certificate III in Horsemanship is provided.
- Check Rider Skill – The manager checks the skill of the rider to match them up with the appropriately natured horse.
- Maltreatment Check – On hire, the manager checks the information on file about the customer to ensure they do not have any animal maltreatment instances. On return, the manager checks the horse to ensure the customer has not mistreated them.
- Receive Returned Horse – The manager facilitates the return of a horse after hire.
- Organise Ride of Dray/Sulky – The manager facilitates the hiring out of older horses to provide Dray/Sulky rides to children on the Plush Meadows premises.
- Update Vet Diary – The manager and vet have access to update any required checks or horses' treatment.
- Conduct Scheduled Check-up – The vet conducts a scheduled check-up of a horse's health based on the information stored in the Vet Log, logging any findings of the check-up and prescribing any ongoing treatments.
- Conduct Emergency Check-up – If an issue is identified, an emergency check-up of the horse' health can be conducted by the vet.
- Conduct Ongoing Treatment – The vet can carry out ongoing treatment on a horse.
- Attend to Minor Medical Issues – Both the vet and strapper can attend to a horse's minor medical issues.
- Conduct Everyday Care and Maintenance – The strapper looks after the care and wellbeing of horse' stabled at Plush Meadows.
- Exercise Horse – The strapper and groomer exercise the horses regularly.
- Maintain Log of Attention – The strapper and groomer maintain a log of attention to ensure all horses are attended to evenly and regularly.
- Maintain Equipment – The ostler maintains horse equipment such as saddles and horseshoes.
- Service Stalls – The stable worker maintains the serviceability of the stalls that horses are stabled.
- Maintain Log of Stall Service – The stable worker maintains a log of the stalls they have services to ensure all stalls are serviced as required.

Full Use Case Descriptions

Table 1: Kurtis Simpson

Use Case Name	Conduct Scheduled Check-up	
Scenario	The Vet conducts a Scheduled Check-up of a Horse's Health.	
Triggering Event	The Vet receives a reminder from the system that a Horse is due for a check-up, or manually checks the Vet Log for overdue check-ups.	
Brief Description	Vet conducts a scheduled check-up of a Horse's health based on the information stored in the Vet Log, logging any findings of the check-up, and prescribing any ongoing treatments.	
Actors	Vet	
Related Use Cases	Update Vet Diary Conduct Emergency Check-up Conduct Ongoing Treatment	
Stakeholders	Veterinary, Managers, Horse Owner.	
Pre-conditions	The horses' profile must exist in the system. The level of service in the Horse's contract must require vet care. The Vet must be present at Plush Meadows. The Vet's user account must exist in the system. The Vet should have received a notification from the system that the Horse is due for a check-up.	
Post-conditions	The Vet Log will be updated with any findings of the check-up. The Vet Log will be updated with any specialised treatment provided to the Horse. The Strapper's will be able to access details of any ongoing treatment the Horse requires in the Vet Log.	
Flow of Events	Actor	System
	1. Vet attempts to log into the system. 2. Vet attempts to access Vet Log. 3. Vet checks for any existing Health issues in the Vet Log. 4. If Issues exist the Vet conducts specialised treatment to rectify them, then the Vet checks the Horse for any issues. 5. Vet updates the Vet Log with any issues found/treatment provided. 6. Vet determines if ongoing minor treatments are required, if yes, the treatment is prescribed in the Vet log.	1.1 System verifies the Vet's credentials. 2.1 System displays the Vet Log. 4.1 System updates the Vet Log database with details of check-up and/or specialised treatment. 5.1 System updates the Vet Log database with ongoing treatment information. 6.1 If ongoing treatment is required, the System updates the Vet Log with details of the ongoing treatment. 6.2 If ongoing treatment is required, the System provides read only access of the Vet Log to Strappers.
Exception Conditions	1.1 The Vet's login credentials are incorrectly entered 3 times. An error is displayed informing the Vet that the Manager must be contacted to reset their login credentials. Once reset, the flow begins again from activity 1. 1.2 A Vet Log is not yet created for a specific Horse. The system initialises a new Vet Log for the specified Horse. Once created, the flow continues from activity 2.1	

Table 2: Stephen Watson

Use Case Name	Booking In Horse	
Scenario	The manager facilitates the booking in of a horse for a set stay and care package.	
Triggering Event	A customer requests to book their horse in.	
Brief Description	The manager logs into their user account and determines availability for the customer's request regarding set stay period and care package.	
Actors	Manager	
Related Use Cases	Select care package and Take payment.	
Stakeholders	Manager, horse owner and business owner.	
Pre-conditions	The manager's user account exists in the system.	
Post-conditions	Confirmation of booking is received.	
Flow of Events	Actor	System
	1. Manager opens a new booking request. 2. Enters customers details 3. Manager completes the booking request. 4. Manager receives the booking confirmation.	1.1 System verifies the Manager's credentials. 1.2 System confirms availability, If no, the system prompts manager to terminate the request. If yes, the system allows manager to search customer profile. 2.1 System checks if the customer is in the system. If yes, the system confirms and creates the booking. Or If no, the manager is asked to input details to create customer profile and action the booking. 3.1 The system creates the booking. Allocates the horse and sends a booking confirmation.
Exception Condition	1.1 The manager's login credentials are incorrect. a. A login error message "Incorrect Username and/or Password. Please try again." b. The system continues to receive login attempts. c. User account is locked after three (3) failed attempts. 2.3 If the manager inputs details to make a booking, then decides to not go ahead with it, Initialise the account and set details to default values.	

Table 3: Isabella Andrews

<table>
<tr><td>Use Case Name</td><td colspan="2">Hire Out Horse</td></tr>
<tr><td>Scenario</td><td colspan="2">A manager facilitates the hiring of a horse out to a customer.</td></tr>
<tr><td>Triggering Event</td><td colspan="2">A customer requests to hire a horse or group of horses.</td></tr>
<tr><td>Brief Description</td><td colspan="2">A manager logs into their user account and determines a list of suitable horses for hire according to the customer's requested date and time, the number of riders, ages, experience levels, relevant medical details and the horses available.</td></tr>
<tr><td>Actors</td><td colspan="2">Manager</td></tr>
<tr><td>Related Use Cases</td><td colspan="2">Licence Check, Check Rider Skills, Maltreatment Check</td></tr>
<tr><td>Stakeholders</td><td colspan="2">Manager, Customer, Stable Owner</td></tr>
<tr><td>Pre-conditions</td><td colspan="2">The manager’s user account exists in the system.
The horses’ profiles exist in the system.
The vet log is up to date.</td></tr>
<tr><td>Post-conditions</td><td colspan="2">Displays an accurate list of available horses to the manager</td></tr>
<tr><td rowspan="2">Flow of Events</td><td>Actor</td><td>System</td></tr>
<tr><td>1. Manager logs into the system

2. Manager opens a new hire request form.

3. Manager enters the details of the requested hire.</td><td>1.1 System verifies the manager’s credentials.

2.1 System displays new hire request form.

3.1 System compiles a list of suitable horses.
3.2 System removes any horses from the list currently hired out.
3.3 System removes any overworked horses from the list, i.e., hired out 4 of the past seven days.
3.4 System crosschecks the list of suitable horses with the vet log and removes any horses undergoing treatment.
3.5 System displays a final list of available horses for the requested hire.</td></tr>
<tr><td>Exception Condition</td><td colspan="2">1.1 The manager’s login credentials are incorrect.
a. A login error message “Incorrect Username or Password. Please try again.”
b. The system continues to receive login attempts.
c. A user account is locked after three (3) failed attempts.

3.5 No suitable horses are available.
a. The system displays an empty list and the message, “There are no horses available at the requested date and time.”</td></tr>
</table>

Table 4: Yaokeng Chen

Use Case Name	Take Payment	
Scenario	Manager receives cash payments from customers when they pay to hire horses.	
Triggering Event	The customer is renting or booking a horse or a group of horses.	
Brief Description	When a customer applies to hire or reserve a horse, he or she must pay the manager in cash or by credit or debit card.	
Actors	Manager	
Related Use Cases	Book In Horses, Hire Out Horses and Select Card or Cash.	
Stakeholders	Manager, customer, horse owner	
Pre-conditions	Payment is based on the standard rate of duration. Groups of 4 or more can enjoy a 20% group discount.	
Post-conditions	A gift card of any amount sold (it is printed on the card) can be redeemed in any transaction.	
Flow of Events	Actor	System
	1.The manager opens the take payment request. 2. The manager opens the take payment method request with the customer's preferred payment method. 3. The manager provided receipts and gift cards to the customers.	1.1 System verifies the Manager's credentials. 1.2 The system lists the horses and services successfully requested by the customer and has the corresponding price and total price situation. 2.1 The system displays the payment method. 2.2 The system connects the corresponding database or also online bank (if choosing card) according to the selected payment method. 3.1 The system confirms that the customer completes the payment and outputs the receipt and record receipts and gift cards to the database.
Exception Condition	1.1 The manager's login credentials are incorrect. a. A login error message "Incorrect Username and/or Password. Please try again." b. The system continues to receive login attempts. c. User account is locked after three (3) failed attempts. 2.2 When the credit or debit card is rejected. a. The system stops the transaction. b. A payment error message "This card was rejected by the bank, please use another payment method." c. The system returns to the payment method selection interface.	

Activity Diagrams

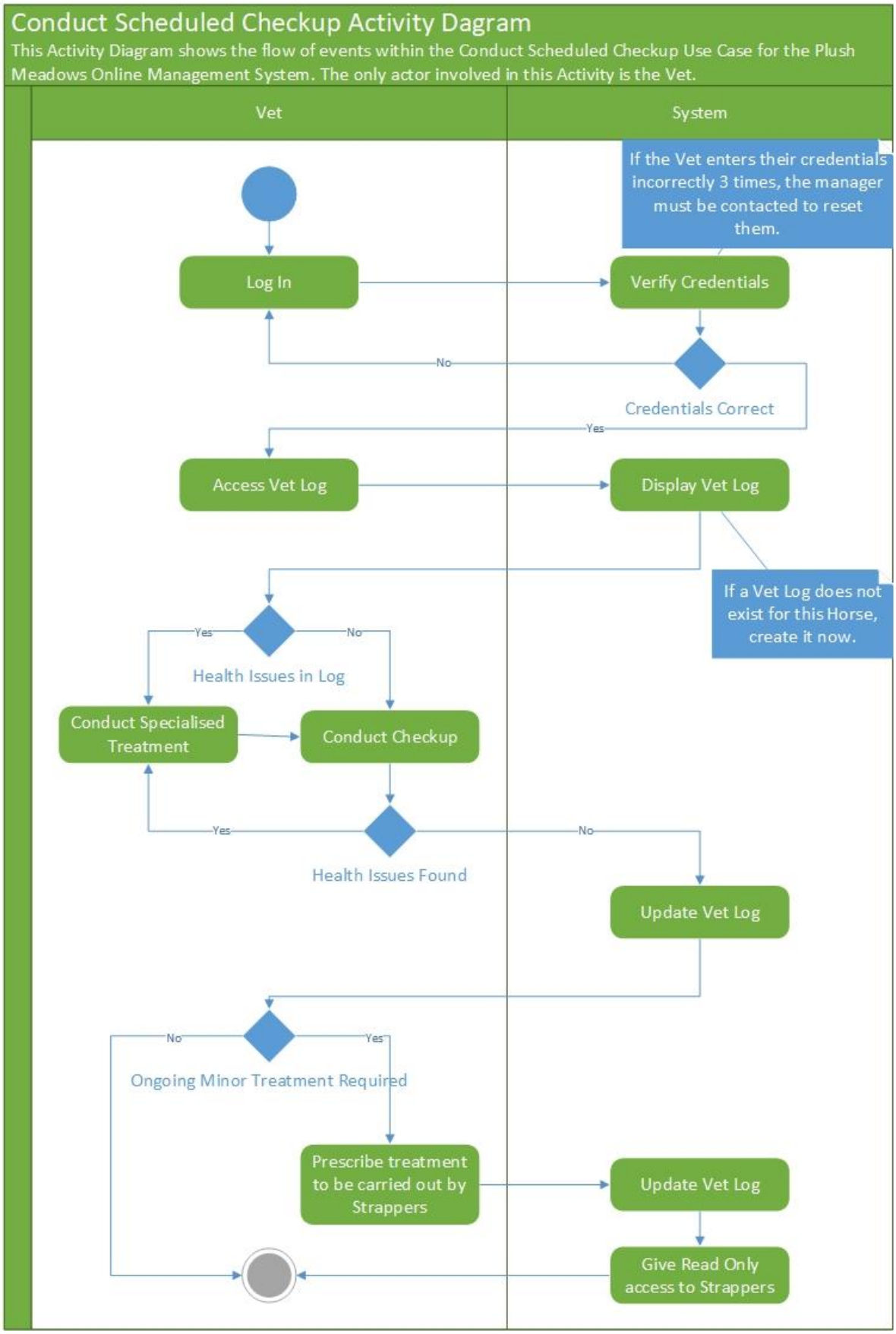

Figure 2: Kurtis Simpson

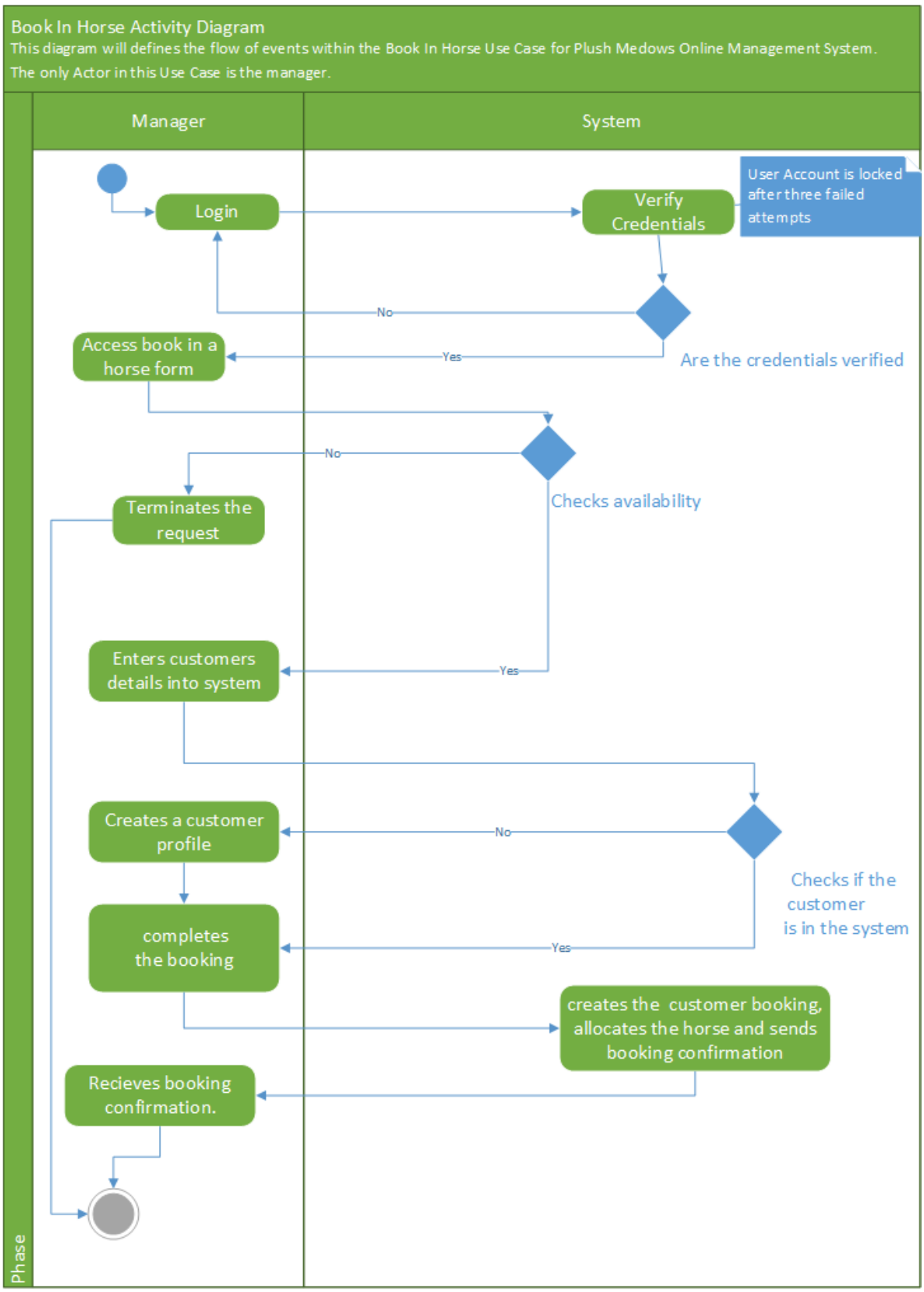

Figure 3: Stephen Watson

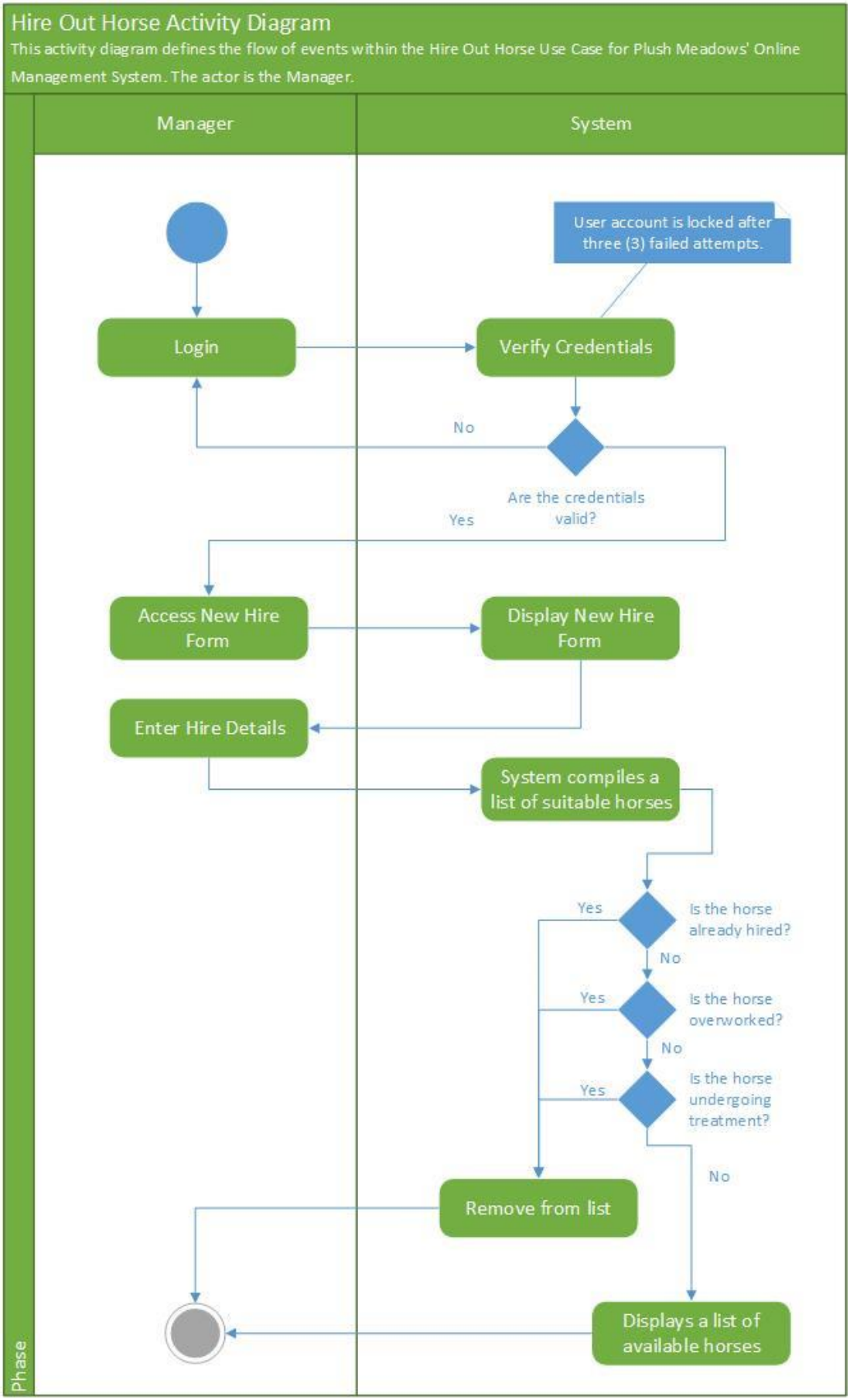

Figure 4: Isabella Andrews

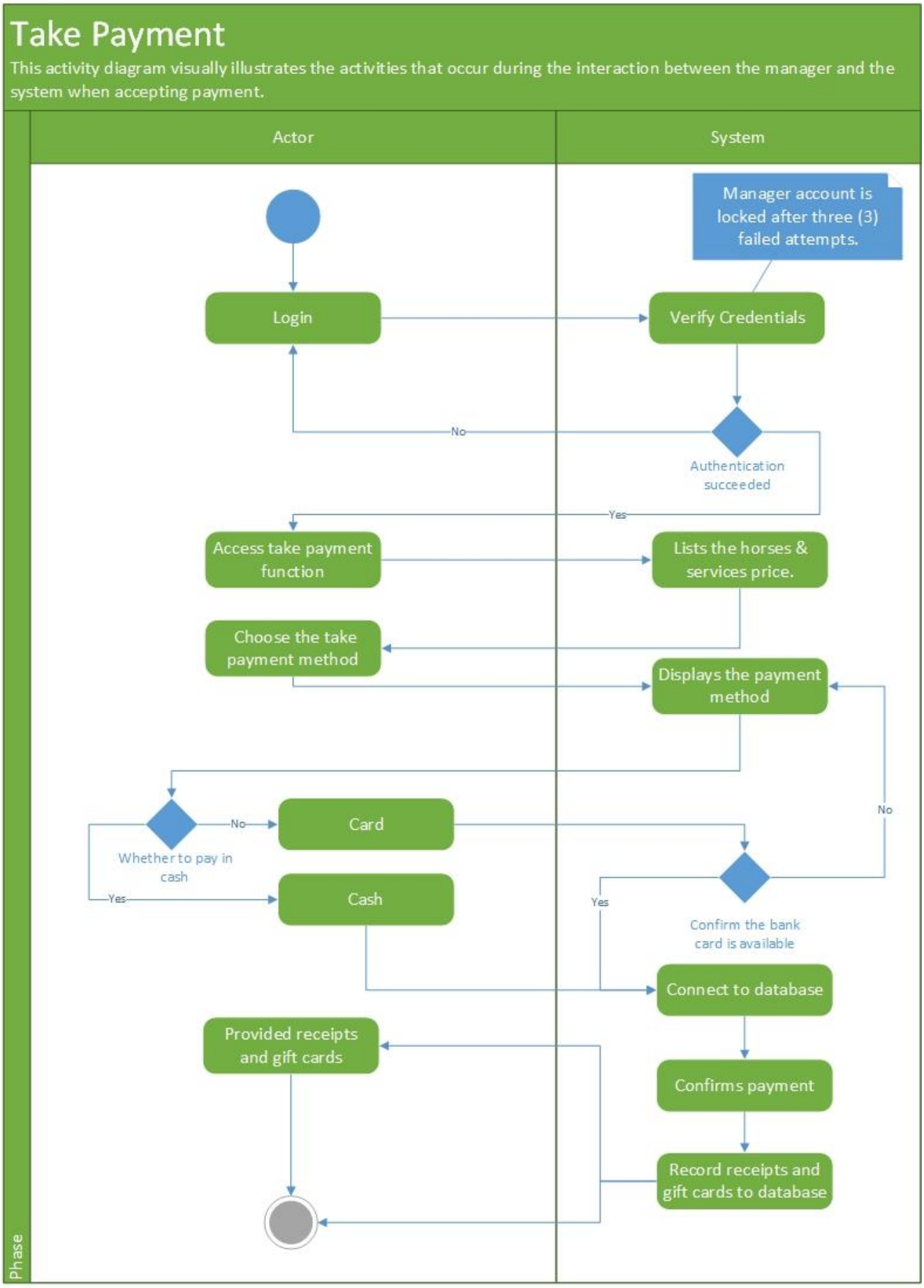

Figure 5: Yaokeng Chen

Domain Classes

Domain Class Diagram

The Domain Class Diagram seen in Figure 6 is used to model the real-world conceptual classes to understand the system's requirements. It provides a starting point for modelling software components to support the broader domain.

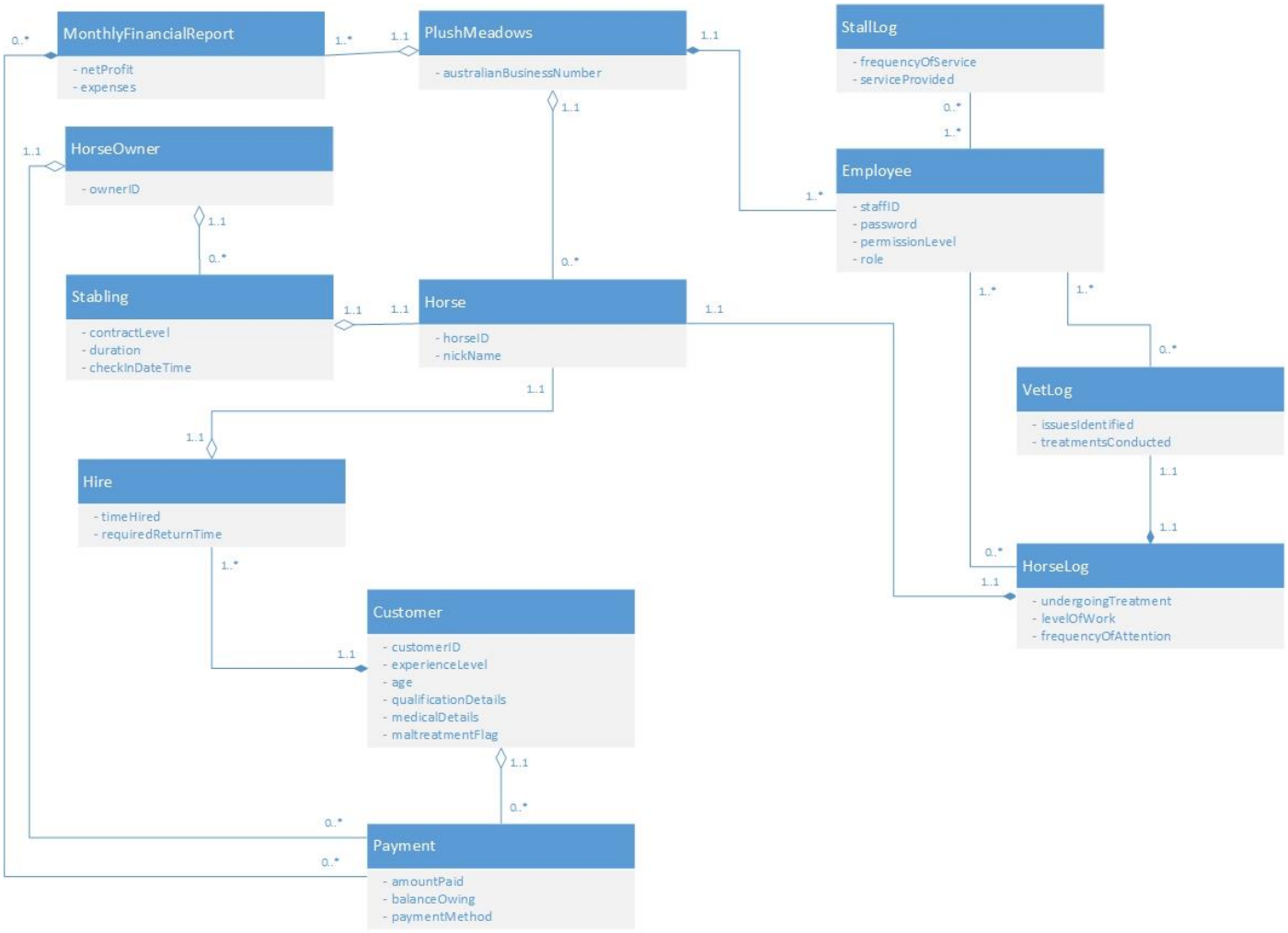

Figure 6: Domain Class Diagram

List of Domain Classes

- PlushMeadows – Represents the business as a whole.
- Horse – Represents a physical horse stabled at PlushMeadows.
- Stabling – Contains the details of a specific horse's stabling.
- HorseOwner – Represents a horse owner with their horse stabled at PlushMeadows and providing Payment to Plush Meadows.
- Hire – Contains the details of a specific horse's hiring to a Customer.
- Customer – Represents a physical customer that Hires horses and provides Payment to PlushMeadows.
- Payment – Represents the details of a payment made to PlushMeadows by either a Customer or a HorseOwner.

- MonthlyFinancialReport – Represents the datastore containing information on all payments within a single month.
- Employee – Represents the physical Employees of Plush Meadows.
- StallLog – Contains the details of all Stall Servicing's at Plush Meadows conducted by Employees.
- HorseLog – Contains the details of an individual Horse's wellbeing.
- VetLog – Contains the details of a particular horse's health.

Team Management

Projects Management Approach

According to this project scope, the project manager, Kurtis Simpson, was the overall authority and responsible for managing and directing the project. The current project team consists of:

- Kurtis Simpson - the project manager.
- Stephen Watson - overseeing team management and communications.
- Isabella Andrews - report writing and proofreading.
- Yaokeng Chen - research and establishment of business rules.

Project Scope

The scope of this assignment was to conduct analysis and design of an online management system that allows the following:

- Provide manager access to all information required to make booking decisions.
- Maintain and highlight safety as a priority for all parties involved.
- Generation of monthly financial reports for the stable owner.
- Allows all staff to communicate effectively.

Communications Management Plan

This Communications Management Plan sets the communications framework for this project. It serves as a guide for communications throughout the life of the project and will be updated as communication requirements change. This plan identifies and defines the roles of RISKY project team members.

The Communications Manager will take the lead role in ensuring effective communications on this project. The Communications Matrix documents the communication requirements and guides:

- What information is to be communicated.
- Who communicates the information.
- When the information is shared.
- Whom to share the information with.

Table 5: Team Responsibilities

Communication Type	Description	Frequency	Format	Participants	Deliverable	Responsibility
Weekly Status Report	Message Summary on project status	Weekly	Via Discord	The Project Manager sends it to all team members.	Status Report	Kurtis Simpson
Weekly Project Team Meeting	Meeting to review action register and status.	Weekly	Online via MS Teams	Project Team	Updated Actions required	Stephen Watson
Content reviews or proofreading	The closeout of project phases and kickoff of subsequent phase.	As Needed	Online	Team members in need of approval for finalised work.	Completion of that members work phase, e.g., introduction or conclusion.	Isabella Andrews
Technical Design Review	Review any technical designs or work associated with the project and lead the team to approach tasks.	As Needed	Online	Team members in need of advice or assistance.	At the beginning or during any phase of the work.	Kurtis Simpson
Project research	Gathering required resources for team members	As Needed	Online	Team members in need of advice or assistance.	During any phase of the project	Yaokeng Chen

Communications Conduct

Meetings

The Communication Manager will distribute a meeting agenda at least two days before any scheduled meeting, and all participants are expected to review the agenda prior to the meeting

Informal Communications

While informal communication is a part of every project and is necessary for successful project completion, team members must communicate any issues, concerns, or updates from an informal discussion to the Project Manager so they may take the appropriate action.

Milestone List

Table 6: Milestones

Milestone	Description	Date Due
Establish Team	Establish team roles, communication and assignment layout confirmed.	04/03/2021
Create Gantt chart	Create a Gantt chart to record all project progress.	04/03/2021
Create a project management plan.	Establish a team project plan that the team will use from creation to completion of the project.	08/03/2021
Create our introduction content.	Generate our introduction to the project and explain its purpose.	14/03/2021
Establish our business rules.	Establish the business rules to determine how the business will function, which will allow the system to start taking shape.	09/03/2021
Generate a use case diagram and list of use cases.	Create the use case diagram to establish and confirm who the actors are and how they will interact.	19/03/2021
Select our individual use cases and create a use case description.	Create a written account of the steps and sequence required to accomplish a complete transaction between actors.	29/03/2021
Create individual activity diagrams based on our use case selection.	Create activity diagrams that will allow us to see constraints and conditions that affect any event.	29/03/2021
Create our domain class diagram.	Create a class diagram that will explain the relationships between actors and the multiplicity of the system.	29/03/2021
Create our conclusion and references.	Draw our conclusion of the project and cite the sources of our research.	05/04/2021
Have every member review the final product before we agree the project is finalised.	Have every member agree on the project's final product and the system designed to show unity within the team before submission.	05/04/2021

Team meeting Minutes

Meeting 1

SENG2130 Systems Analysis and Design

Minutes of meeting

Team: RISKY Place: Online Date/Time: 10/03/2021 1800

In attendance

- Kurtis Simpson
- Stephen Watson
- Isabella Andrews
- Yaokeng Chen
- Rebecca Spillane

Apologies

N/A

Agenda

- Matters arising from previous meeting

No issues to discuss.

- Agenda items (as needed)

Establish Introduction of the report and organise Use case diagrams and list our use cases.

- Date, time and place for next meeting

Wednesday 17th March. 6pm via online

- Matters for consideration at next meeting

Make sure all Tasks are completed or contact is made if a member is not on track.

Action sheet

Task	Responsible	Due	Notes
Organise team members.	Kurtis	Ongoing.	Keep everyone on track with the design structure of the project.
Communication between all members	Stephen	Ongoing.	Keep all team members actively communicating and make sure milestones are being met.

Make use case diagram and include all use cases.	Stephen, Kurtis	End of today	Make a use case diagram for all members to pick their specific use case.
Brainstorm ideas and research how to do individual use cases.	Isabella, Rebecca, Yaokeng	End of today	Produce the structure and examples for the team to use regarding our next step in the project.

Meeting 2

SENG2130 Systems Analysis and Design

Minutes of meeting

Team: RISKY Place: Online Date/Time: 17/03/2021 1800

In attendance

- Kurtis Simpson
- Stephen Watson
- Isabella Andrews
- Yaokeng Chen
- Rebecca Spillane

Apologies

N/A

Agenda

- Matters arising from previous meeting

Approval of the use case diagram and all the use cases involved.

- Agenda items (as needed)

Approve Use Case Diagram, select our individual Use Case Description. Start looking at creating the Domain Class Diagram.

- Date, time and place for next meeting

Wednesday 24th March 6pm via online.

- Matters for consideration at next meeting

Make sure all Tasks are completed or contact is made if a member is not on track.
Update Gantt Chart and have Kurtis check status of the teams work and establish are we on track.

Action sheet

Task	Responsible	Due	Notes
Begin Domain Class diagram.	Kurtis, Stephen	29/3	Finish class diagram and approve as a team.
Finish all individual use cases and descriptions.	All members	29/3	Finish individual diagram and upload to the report.

Meeting 3

SENG2130 Systems Analysis and Design

Minutes of meeting

Team: RISKY Place: Online Date/Time: 24/03/2021 1800

In attendance

- Kurtis Simpson
- Stephen Watson
- Isabella Andrews
- Yaokeng Chen
- Rebecca Spillane

Apologies

N/A

Agenda

- Matters arising from previous meeting

Gantt Chart has been updated with tasks to be assigned this week.

- Agenda items (as needed)

Make lecturer aware Rebecca is leaving.

- Date, time and place for next meeting

Wednesday 31st March 6pm via online.

- Matters for consideration at next meeting

Isabella to start editing and quality checking team members' work. Yaokeng Chen is going to establish basis of the conclusion for Isabella, and Stephen Watson will start uploading team management part of the report once edited.

Action sheet

Task	Responsible	Due	Notes
Continue Class diagram and finish.	All members	29/3	Finish class diagram and approve as a team.
Finish all individual use cases and descriptions.	All members	29/3	Finish individual diagram and upload to the report.

Meeting 4

SENG2130 Systems Analysis and Design

Minutes of meeting

Team: RISKY Place: Online Date/Time: 31/03/2021 1800

In attendance

- Kurtis Simpson
- Stephen Watson
- Isabella Andrews
- Yaokeng Chen

Apologies

N/A

Agenda

- Matters arising from previous meeting

No matters to be discussed.

- Agenda items (as needed)

Everything needs to be finalised and placed into the report on MS Teams.

- Date, time and place for next meeting

No future official meeting has been scheduled.

- Matters for consideration at next meeting

No future official meeting has been scheduled.

Action sheet

Task	Responsible	Due	Notes
Finalise the report	All members	6/4	
Update Gantt chart	Stephen, Kurtis	6/4	
Final Editing	Isabella	6/4	
Add in resource list	Yaokeng	6/4	

Microsoft Teams Analytics

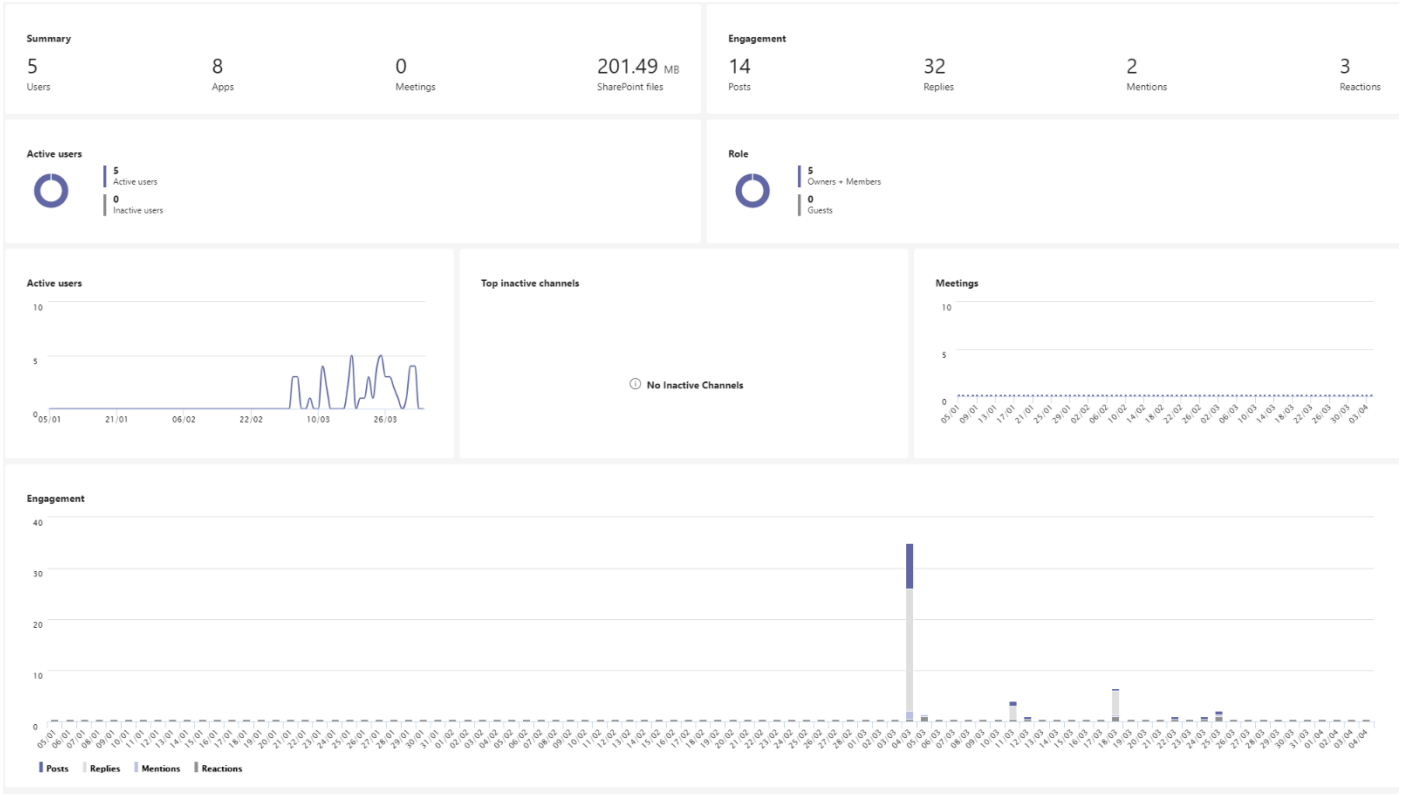

Figure 7: Microsoft Teams Analytics

Team summary

Most of the communication has been informal messages through Facebook Messenger or in online Microsoft Teams meetings. The current team has gelled well and is meeting current expectations. All RISKY team members feel the work is up to the required level and that each member fulfils their responsibilities to the expected standards. Team RISKY is on track and look forward to finalising the project by Monday, 5th of April.

Conclusion

In summary, this report serves to outline team RISKY's initial analysis and design for the Plush Meadows online management system.

Existing processes at Plush Meadows, current legislation, and privacy considerations provide the Business Rules framework. The development of a Use Case Diagram and several detailed Use Case Descriptions and Activity Diagrams depicted the proposed system's workflow and how actors interact with the system. The Domain Class diagram clarifies the system concept and describes the proposed system's static properties.

An overview of the team's progress and development was documented in Microsoft Teams, weekly meeting minutes and via the team Gantt Chart. Unfortunately, a team member, Rebecca Spillane, withdrew partway through the development of the report. Therefore, the team chose to omit the Use Case Description for Maltreatment Check and the associated Activity Diagram from the final submission.

Overall, the team is satisfied the task specifications have been met and have been provided valuable insight into the system requirements through this initial analysis and design of the Plush Meadows' online management system.

References

[1] NSW Government, “Work Health and Safety Act 2011 No 10,” 27 10 2020. [Online]. Available: https://www.legislation.nsw.gov.au/view/whole/html/inforce/current/act-2011-010.

[2] NSW Government, “Work Health and Safety Regulation 2017,” 18 12 2020. [Online]. Available: https://www.legislation.nsw.gov.au/view/html/inforce/current/sl-2017-0404.

[3] Horse Safety Australia, “Regulations,” 2021. [Online]. Available: http://www.horsesafetyaustralia.com.au/regulations/.

[4] NSW Government, “Privacy and Personal Information Protection Act 1998 No 133,” 01 03 2020. [Online]. Available: https://www.legislation.nsw.gov.au/view/html/inforce/current/act-1998-133.