

COS 107 – Information Systems Analysis and Design Assignment

Name : Chaw Thiri Win

Table of Contents

Task 1	3
Introduction	3
History of RAD and Its Process	3
Requirement Planning Phase	3
User Design Phase.....	3
Construction Phase.....	4
Cutover Phase.....	4
Advantages of Rapid Application Development (RAD)	4
1. Iterative Development and Feedback:	4
2. Task-Oriented Approach:	4
3. Project Direction and Leadership	4
4. Agile and Incremental:	4
Rapid Application Development's (RAD) drawbacks.....	4
1. Technical Risk and Complexity:	4
2. Risk Assessment and Stakeholder Dynamics.....	4
3. Frequent Changes and Iterations:	5
4. Complex Code Bases and Skilled Developers:	5
Conclusion	5
References.....	6
Task-2	7
Task-3	8
Task-4	9

Task 1

Introduction

According to Kissflow (2024), "Rapid Application Development, or RAD, is an adaptive software development model based on feedback and prototyping." The goal of the Rapid Application Development (RAD) technique is to create apps more quickly by iterating often and gathering feedback. According to Sooni (2023), Rapid App Development (RAD) is highly adaptable. Having a method that prioritizes creating a functional prototype as soon as possible. As an opposed to a waterfall model, which prioritizes meticulous planning and achieving predetermined goals. For projects that must be finished as soon as possible, RAD is ideal (Kissflow, 2024). Small firms that need software completed rapidly and want to have a lot of input during the development process would find this strategy useful. The key benefit of RAD methodology is RAD allows project managers and stakeholders to accurately measure progress and communicate in real time on evolving issues or changes. And also, by reducing planning time and emphasizing prototype iteration.

History of RAD and Its Process

Defined as the spiral model, Barry Boehm was the one who initially developed the RAD alternative. Another software development methodology that incorporates aspects of both iterative development and the waterfall model is the spiral model. The Spiral Model places a strong emphasis on cycle-by-cycle risk management. Planning, risk analysis, engineering, and assessment are all involved in each. This paradigm works especially well for complicated, large-scale projects with a lot of unknowns. As it allows continuous assessment of risk and incorporation of customer feedback. However, its complexity and cost can be higher due to the iterative nature and extensive risk management involved (Wikimedia, 2024)

During the 1980s, rapid application development was developed by James Martin. However, it was formalized finally by publishing a book in 1991, *Rapid Application Development*. The James Martin approaches to RAD divides the process into four distinct phases:

1. Requirement Planning Phase
 2. User Design Phase
 3. Construction Phase
 4. Cutover Phase
- (Wikimedia, 2024)

Requirement Planning Phrase

With stakeholders, the Rapid Application Development cycle is begin discussing the high-level requirements of applications. The scope would be defined along with customer input, and the outline of the project by the product team. Despite being quick and placing more emphasis on prototype iterations, the planning phase is essential to the project's eventual success. Developers, clients, software users, and teams are all project stakeholders. They all communicate to ascertain project objectives and expectations, as well as any difficulties that may arise that need to be resolved during the construction.

User Design Phase

Once the product design and development team “creates prototypes and continuously refine them based on user feedback” (Soon, 2023). The development team may quickly assess the viability of complicated components by using prototyping. With this method, the program is

more flexible, less likely to make errors, and better organized for more design improvements in the future (Chien, 2020).

Construction Phase

Prototypes and beta systems developed during the design phase are converted into fully working models through the rapid application development (RAD) method. Unlike traditional project management approaches, where changes are typically addressed later in the development cycle, RAD emphasizes an phase of iterative design. This speeds up the process by which developers may create the final functional model. Importantly, during this phase, clients remain engaged and can provide input, suggesting alterations, changes, or novel ideas to address emerging problems (Lucidchart, 2018).

Cutover Phase

The last stage of rapid application development (RAD) is devoted to fixing any technical debt that arose from early prototyping. In order to improve stability and maintainability, they optimize the implementation. This stage also entails rigorous testing and the integration of several software components. Ensuring the continuous delivery of a superior product is the aim.

Advantages of Rapid Application Development (RAD)

1. Iterative Development and Feedback:

Through its emphasis on rapid iterations and continuous feedback, Rapid Application Development (RAD) aims to expedite the software development process while maintaining high quality. By integrating the principles of RAD into the its development lifecycle, several advantages can be realized.

2. Task-Oriented Approach:

Notably, RAD allows project teams to divide their work into smaller, more manageable tasks. With the task-oriented architecture, project managers may assign work based on members' specializations and expertise, which boosts team output.

Component Reusability:
Iterative development enables designers and developers to produce autonomous and functional components. Because each component is divided, it is easier to modify it to meet the demands of software evolution and promotes the reusability of components.

3. Project Direction and Leadership

RAD assists the team in concentrating on resolving technical challenges, validating assumptions, and solving customer problems by implementing agile approaches.

4. Agile and Incremental:

Since RAD is based on speed and user feedback, direction plays a crucial role in the model. It is agile, and its incremental approach minimizes failures like large-scale waterfall projects (Soon, 2023) (Lucidchart, 2018).

Rapid Application Development's (RAD) drawbacks

1. Technical Risk and Complexity:

Although RAD offers many enticing advantages, the technique is not appropriate for all situations. For instance, smarter projects with more technical risk are not well suited for RAD.

2. Risk Assessment and Stakeholder Dynamics:

Rapid application development may present various problems during the project development life cycle. At almost every stages of the development lifecycle, resources must be available because RAD is customer-driven.

3. Frequent Changes and Iterations:

RAD's strength lies in its flexibility, but this can also be a challenge. Frequent changes and iterations mean that the project must adapt rapidly. This can strain the team and require efficient communication.

4. Complex Code Bases and Skilled Developers:

This development necessitated a heavy reliance on a highly trained technical team because it involved regular adjustments and iterations. Strict timetables and deadlines must be followed by all parties involved for the project to be successful.

(Chien, 2020) (Soon, 2023).

Conclusion

Although RAD can result in the creation of complex code bases that necessitate the expertise of skilled developers to manage, it is especially advantageous in dynamic business environments where requirements are subject to frequent change. The user-centric approach of RAD ensures that the evolving needs of users are met, and the utilization of modern software tools has enhanced the efficiency of this methodology. Nevertheless, it is important to note that RAD may not be the optimal choice for all projects, particularly those with stable and well-defined requirements. Systems analysts should weigh its flexibility and rapid delivery against potential drawbacks, like scope creep and constant user feedback, on a case-by-case basis. This assessment should be conducted for each project individually, taking into account the specific context, team dynamics, and stakeholder requirements.

References

Chien, C., 2020. *Codebots*. [Online]

Available at: <https://codebots.com/app-development/what-is-rapid-application-development-rad>

[Accessed 21 July 2024].

Kissflow, T., 2024. *Rad Platform (Rapid Application Development)*. [Online]

Available at: <https://kissflow.com/application-development/rad/rapid-application-development/>

[Accessed 21 July 2024].

Lucidchart, T., 2018. *Lucidchart*. [Online]

Available at: <https://www.lucidchart.com/blog/rapid-application-development-methodology>

[Accessed 20 July 2024].

Soon, S., 2023. *LogRocket Blog*. [Online]

Available at: <https://blog.logrocket.com/product-management/what-is-rapid-application-development-rad/#what-is-rapid-application-development-rad>

[Accessed 20 July 2024].

Wikimedia, F., 2024. *Wikipedia*. [Online]

Available at: https://en.wikipedia.org/wiki/Rapid_application_development

[Accessed 20 July 2024].

Task-2

The given class diagram which is a Static Model shows the system of The Feel-Better Animal Clinic which is a newly established veterinary clinic. The diagram contains various classes. Mainly household, animal patient, office visit, staff and insurance company. The attributes are included in each class as well. According to this diagram, it also contains relationships between each class. Such as associations, aggregation, and multiplicity (one to one, one to many, and many to many).

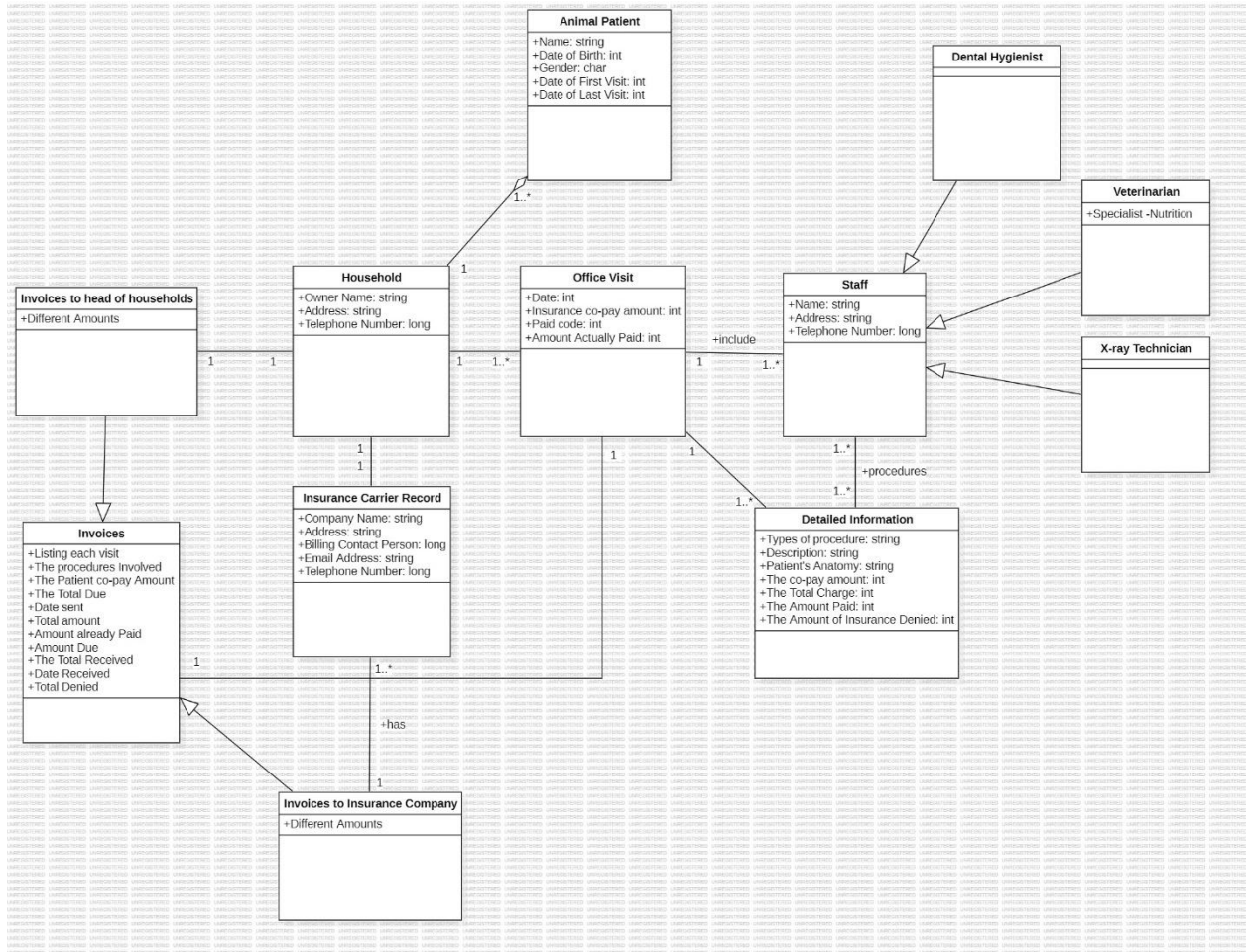


Figure: The Feel-Better Animal Clinic

Task-3

The given diagram below showed is a Use Case Diagram which is a System Functional Model. Mr. Tom Reed, a retired individual, developed eReads, an online book exchange. Sellers can list books for sale through a secure gateway after registering with their contact information. Customers look for books, register, and make credit card payments. The seller is notified by eReads upon purchase, and the seller has 24 hours to ship the book after notification. Following a 30-day waiting period, the system guarantees payment to suppliers and keeps track of orders. Customers have the option to rank merchants, giving helpful input for next deals.

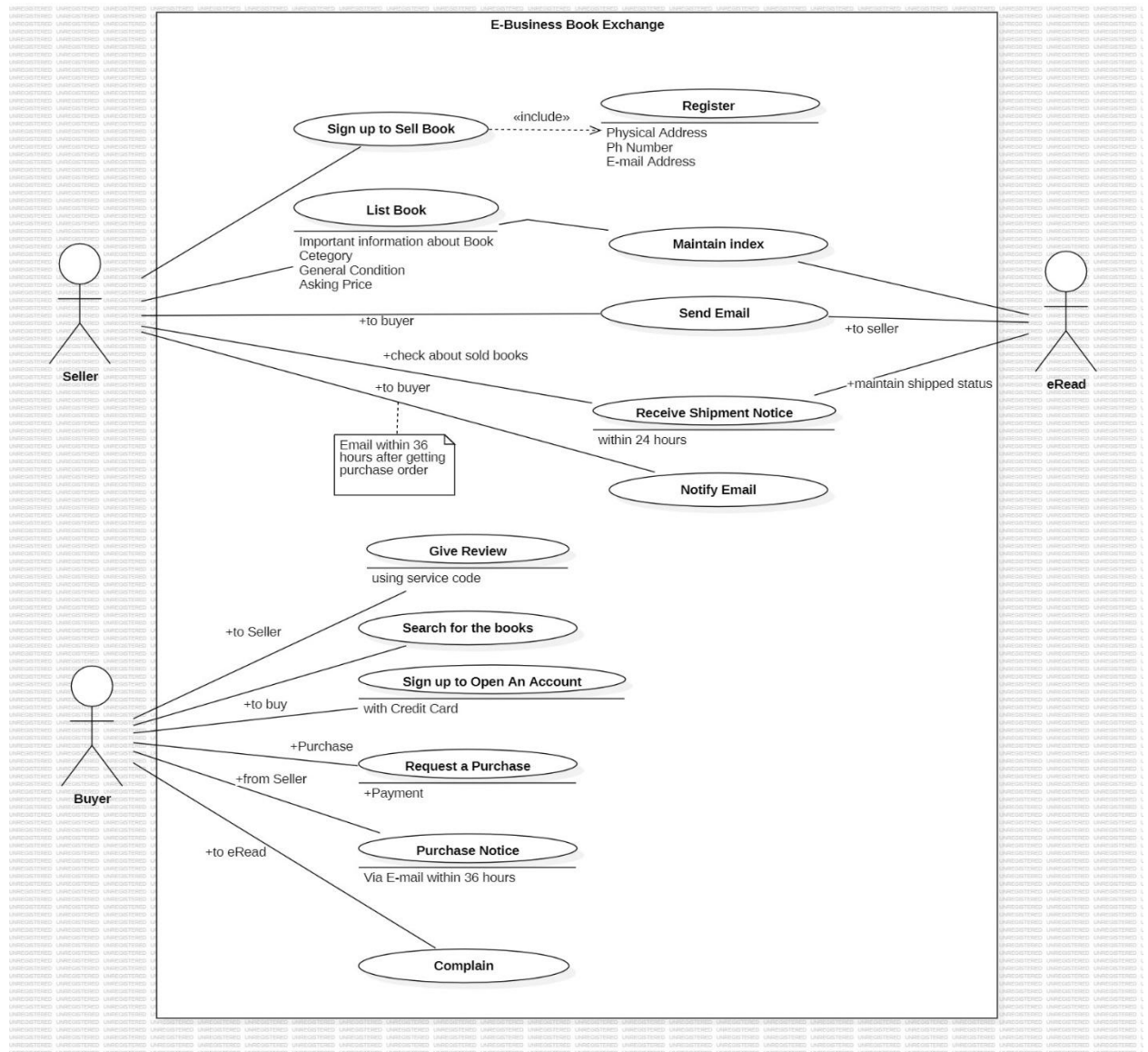


Figure: Use Case Diagram

Task-4

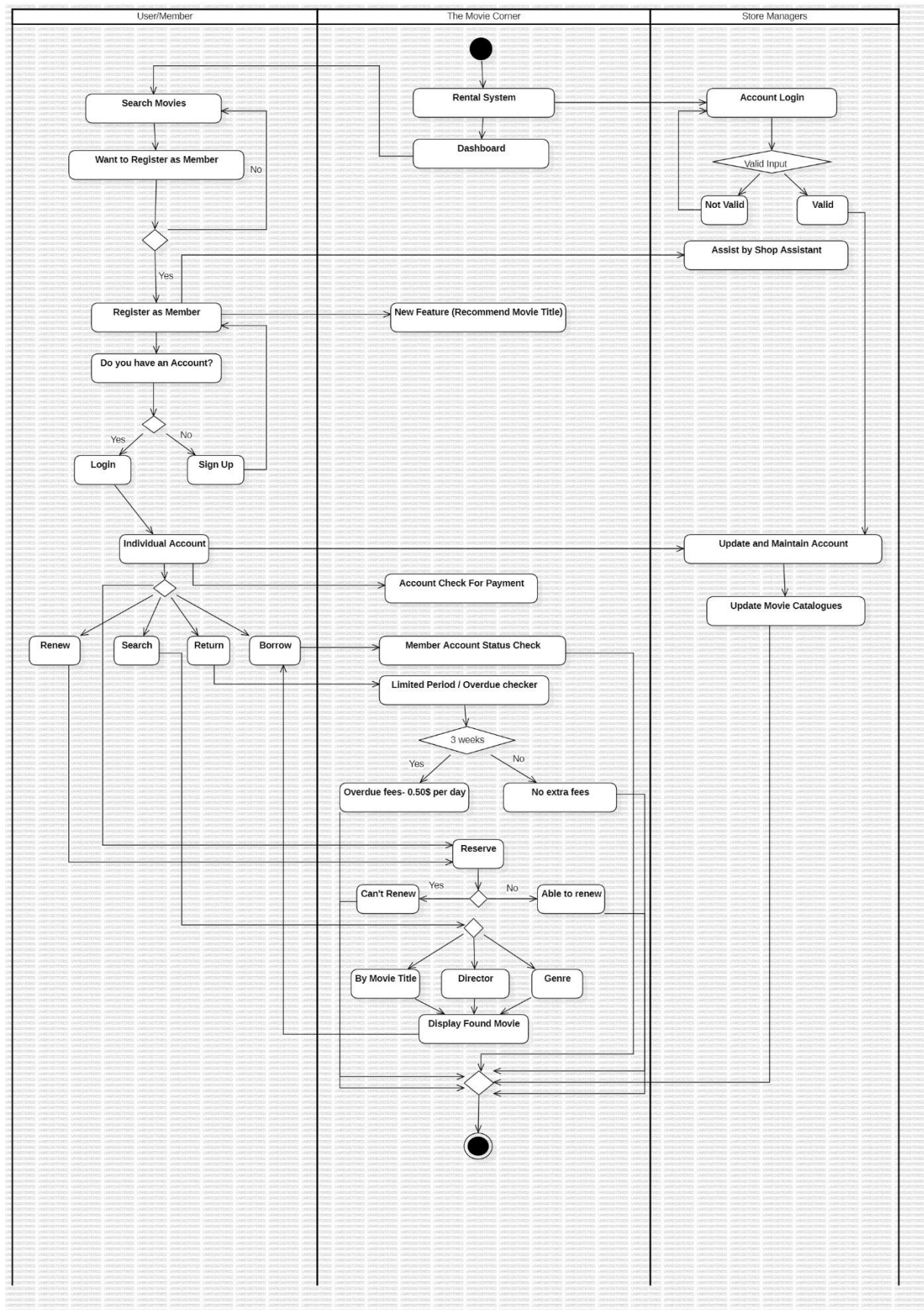


Figure: Activity Diagram

A brand-new DVD rental business called The MovieCorner lets customers reserve, borrow, return, and renew discs. Only if the DVD isn't reserved by another member are renewals permitted. The loan duration is three weeks, and there is a late fee of S\$0.50 per day. Before borrowing, members' accounts are examined for any unpaid fines. The public can look up movies by genre, title, or director, but in order to check out DVDs, they must first register. Also, users can look up titles in other branch stores. Included are tools for store managers to update member accounts and movie catalogues, as well as a function for public movie suggestions.