THE UNIVERSITY OF SYDNEY

School of Computer Science
Faculty of Engineering & IT

ASSIGNMENT/PROJECT COVERSHEET - GROUP ASSESSMENT

Unit of Study: ISYS2110 Analysis and Design of Web Information System

Assignment name: Assignment 1

Tutorial Time: Monday 12pm **Tutor name:** Mayank Shekhar

DECLARATION

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We realise that we may be asked to identify those portions of the work contributed by each of us and required to demonstrate our individual knowledge of the relevant material by answering oral questions or by undertaking supplementary work, either written or in the laboratory, in order to arrive at the final assessment mark.

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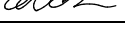
480435134	Four Eight Zero Four Three Five One Three Four	(Yes)/No	(Yes)/No	
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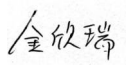
470336557	Four Seven Zero Three Three Six Five Five Seven	(Yes)/No	(Yes)/No	
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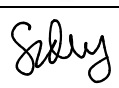
480344700	Four Eight Zero Three Four Four Seven Zero Zero	(Yes)/No	(Yes)/No	
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ISYS2110 Assignment 1

Video Game Web Rental System

Contents

1. Introduction, Background, and Motivation

Gamifi is an innovative video game provider that offers video games to consumers via a rental service. Gamifi's business model is based around providing video games for cheaper than purchase price by renting them out for periods of time to members. Suppliers are mostly video game publishers which supply the copies of the game. Competitors in this market include digital video game marketplaces, physical stores that sell video games and other video game rental services. Customers targeted are video game enthusiasts who play a large amount of games but do not have the finances to purchase new releases.

The company currently operates via physical stores where members can loan and return video games. Each store is run by a manager with clerks handling the day to day tasks. Regular customers may be eligible for rewards based on their membership tier.

Gamifi is looking to expand their business to online by implementing a web-system that allows for online rentals, reservation and data management by staff. This is an innovative step forward for Gamifi and it expands their market reach to consumers that prefer the convenience and simplicity of online systems. Furthermore it will save time for both staff and consumers as data such as stock level and existing loans can be checked rapidly. The web-system is the foundations of this expansion and hence Gamifi has hired the team to design this system for them.

2. Project Details

2.1. Project Objectives

The primary objective of this project is to analyse and design a new web-based system for Gamifi that will expand their video game rental services online which ultimately provides convenience to its customers and staff increasing productivity, efficiency and market reach. The scope of this project is limited to the below objectives and is to be delivered in 5 months on a budget of $250,000.

The objectives of the web-based system are:

- To maintain information about each individual video game copy including title, game publisher, game rating, copy number, edition, publication year, serial number, rental status and due date.
- To maintain information about Gamifi's members such as name, address, telephone numbers, membership tier and if necessary additional information for specific membership tiers.
- To provide a search directory for members to search for video games, and if all copies are checked out, to allow for members to place reservations.
- To provide a function to generate reports based on video game categories.
- To allow staff to manage the database of video games including deleting and adding game copies, renting and checking in video games, and to access reservations by members.

Additional objectives may include tactical plans to train staff in the usage and maintenance of the web system, to include IT support for the web system, customer support for members using the web system and an advertising campaign to introduce members to the services the web system offers.

Critical success factors that must be achieved in order to fulfill the primary objective are creating a ergonomic and intuitive design that provides all necessary functions for the management and operation of the online video game rental.

2.2. Requirements Gathering

- Functional Requirements
    - Users can search database for games by title, publisher and rating. The database returns an ordered list which can be sorted in ascending, descending and alphabetical order.
    - Users can rent out available games in the database, which changes the rental status and due date of that copy of the game. This also creates a game loan object with the appropriate details and associates it with the member profile.
    - Users can reserve video games which creates a reservation object with title, member, date reserved, priority and date fulfilled. When reservations are fulfilled a game loan is created and associated with the member.
    - Staff can manually create or remove loan objects and associate it with members if members visit the physical store to take out a loan or return games and keep track of stock levels.
    - Managers can update the database if new games are added or if games are damaged and have to be removed.
    - Managers can use the database to display a variety of reports such as video game titles by genre, all video games that are currently loaned out, all video games that are overdue, or all video games that are reserved.

- Functional Requirements (Assumptions)
    - Users can access their own profiles and change information including name, address, payment details and telephone number. This should also display game loans associated with the user.
    - Users can access a history of past rentals as well as past rental fees and view information on rental costs of new games.

- Non-Functional Requirements
    - Usability Requirements
        - UI should be intuitive and ergonomic for users.
        - User functions should be organised logically and behave as expected.
        - All business functions should be supported by the system.
        - Common browsers, operating systems and devices should be supported.

- Reliability Requirements
  - System must be available at all times unless taken down for maintenance.
  - Maintenance periods should not exceed 6 consecutive hours.
  - Database capacity should be large enough to support potential new data at any point. If this is not true, database capacity must be increased as soon as possible.
  - Errors within the system should be flagged and resolved as soon as feasible.
  - Customer and technical support teams should be online during business hours.
  - System updates should not significantly alter the client side perspective.
- Performance Requirements
  - System must be able to support average user counts per day at any given time for every function including processing payments.
  - Response times from the system should not exceed 4 seconds for queries.
  - Response times for basic functions such as changing details should be less than 1 second.
- Security Requirements
  - A physical backup of the database should be stored off location in the case that the main database is compromised.
  - Backups of the database should occur at regular intervals such as every thirty minutes in order to minimise loss of data if database is compromised.
  - Users must be authenticated in order to use the system and can only access functions that are within the scope of its authority.
  - Appropriate countermeasures such as firewalls and antivirus must be active to prevent malicious attacks within the system.
  - Accounts should require a password reset via email after several incorrect login attempts.
  - System should provide an operations log which creates an audit trail of historical information in case of a security issue.
  - Information should be encrypted including user profiles, payment details and other sensitive data.

- Error logs must be created detailing time and event in the case where an error occurs within the system.

2.3. Expected Benefit and Outcome

In terms of intangible benefits, working as a sustainable brand that can successfully integrate environmental, through reduced physical resource usage, and economic benefits into the project, assists Gamifi in building a more positive image than traditional video game stores. Offering various types of memberships will benefit in creating customer loyalty and achieve greater sales in the long run. By offering the concession membership, Gamifi is expected to attract a larger group of customers as most students may not have the money to afford buying a lot of video games.

Providing customer service by having staff members in store is expected to reduce customer complaints, as issues are more likely to be handled right away compared to over the phone customer service. The reservation system shall assist staff members to promote video games to customers according to customers' personal preference. These are expected to deliver a higher quality service while improving customer experience, and therefore enhance brand goodwill and potential sales. Furthermore, the check-in-check-out feature provides better security for ensuring stock levels, improves time-efficiency and productivity gain while significantly reducing human errors.

On the other hand, tangible benefits introduced by the system will include probable increase in revenue and resource costs can be considerably reduced. The database in general will be a more efficient system than manual inputs, saving both staff labour costs and time costs. All in all, user experiences will be greatly enhanced by the versatility and adaptability of this system, thus delivering both tangible and intangible benefits.

3. Market Research

Gamifi's plans to build a web system to facilitate video game rental from physical stores does cover a gap in the current market—however, it is based on a business model that has failed in recent years due to a decline in demand.

Currently, the only main competitor to Gamifi in Australia is GetGaming, which allows customers to rent video games online, then receive a physical disc copy of the game via mail. The customer also returns the disc via mail. They allow customers to rent games one-by-one or an unlimited number through a monthly subscription ("Rental Plans & Pricing", 2018). The main difference between GetGaming and Gamifi's future plans is that Gamifi would require customers to visit their physical stores to receive or return a copy of the game they rented.

Neither traditional brick-and-mortar video game stores in Australia like JB Hi-Fi and EB Games nor online marketplaces like Steam offer any rental services for video games. In fact, in 2017, EB Games trialled its "Swap 'n' Play" service in South Australia that allowed customers to rent pre-owned video games for a monthly subscription price (Orland, 2017). However, it did not have an attached web service, was limited to in-store transactions, and relied on pre-owned copies of games. The trial has since ended and did not expand beyond South Australia. While customers could return unwanted games as if they were renting, they would have to pay the full price of the game upfront.

Physical video game rental stores, which operated under a similar business model as Gamifi, did exist in Australia but have since collapsed ("Final credits roll on Morley Blockbuster", 2019). The largest of which were Blockbuster and VideoEzy, which allowed customers to rent video games by collecting and returning physical copies in-store, without an online storefront (Hastie, 2019). However, they mainly focused on renting movies and TV shows and likely had a small catalogue of video games, with the current VideoEzy website having zero mention of video games.

Rental software systems definitely exist on the market, however, they charge the businesses with a monthly price depending on the size of the project. For example, Booqable charges between 30 and 250 USD ("Pricing - Booqable Rental Software", 2019). EZRentOut, another rental software system, provides many features that would cover most of the business functions—tracking information about each game and its individual copies, storing

information about members, and tracking individual loans. It also offers an online storefront with support for multiple payment methods, reservations, and search. For the internal side, it allows for the creation of custom reports for managers and can handle support for multiple stores ("Features - EZRentOut", 2019).

What this software system may lack, however, is more granular customisation to support the business needs of Gamifi, which a bespoke system would provide, since it would be built with direct input from Gamifi itself. Additionally, a custom-made system would likely have less monthly costs compared to these commercial systems. EZRentOut, for example, only offers its online store feature on its most expensive plan, at 225 USD per month ("Pricing Plans for Rental Businesses - EZRentOut", 2019). Further, Gamifi would not have to rely on another company for its core business operations, which may be problematic for three reasons:

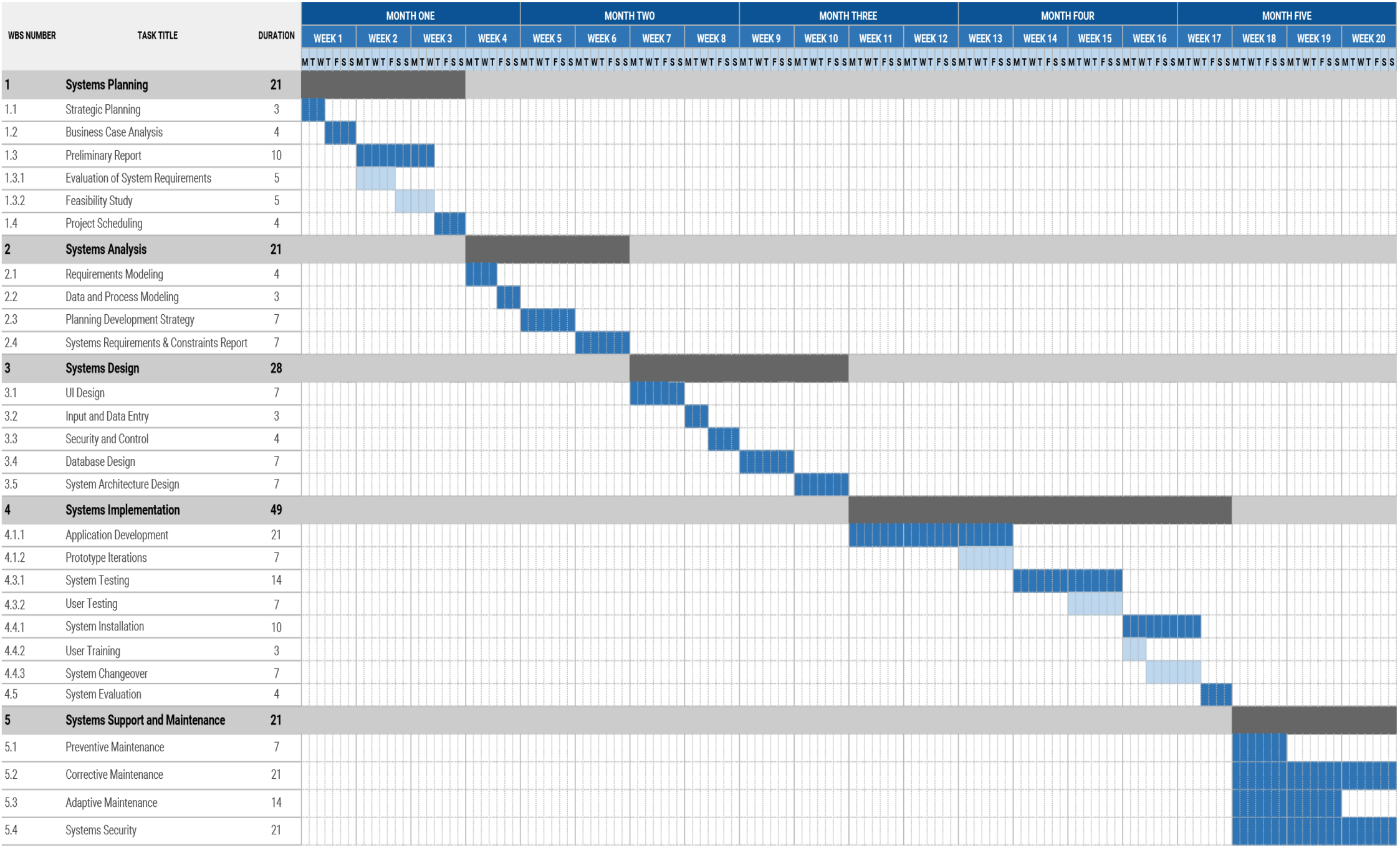
- The software company would have access to Gamifi's valuable user data, posing privacy and security risks.
- These software solutions are cloud-based ("About Us - EZRentOut", 2019) and an outage would prevent Gamifi from conducting critical business operations, causing significant loss.
- The software provider could shut down due to bankruptcy or change their product substantially, forcing Gamifi to find a new software solution.

4. Project Plan

Key Milestones

- Completion of preliminary report
- Completion of requirements, process and data modelling.
- Completion of UI, database and system architecture design
- Completion of final prototype system
- Completion of user testing
- Completion of systems changeover
- Completion of final systems evaluation

Gantt Chart



WBS NUMBER	TASK TITLE	DURATION
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