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American International University-Bangladesh (AIUB)  
**Department of Computer Science  
Faculty of Science &Technology (FST)  
Spring 22\_23  
 CSC 2210 Object Oriented Analysis and Design (OOAD)**

**RENTAL MARKETPLACE**

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| **Semester: Spring\_22\_22** | | **Section:** | **Group Number:** | |
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# CHAPTER 1: PROBLEM DOMAIN

## Project Background Analysis

The Rental Marketplace project is designed to provide a platform where people can lend and borrow various items, ranging from household appliances to sporting equipment and even vehicles. The idea behind the project is to create a more sustainable and cost-effective way for people to access items they may only need for a short period of time, rather than having to purchase them outright.

One of the main problems this project aims to solve is the issue of overconsumption and waste. Many items are used only infrequently, and then end up collecting dust in a corner or being thrown away. By providing a platform for people to share these items, we can reduce the amount of waste generated and promote a more sustainable lifestyle.

This problem is important because it has both economic and environmental implications. Underutilized assets represent a waste of resources and contribute to the production of unnecessary waste. By enabling people to rent out their underutilized assets, we can reduce waste and make more efficient use of resources. Additionally, the Rental Marketplace project can help people save money by providing a cost-effective alternative to purchasing items outright, particularly for items that are only needed for a short period of time.

Overall, the Rental Marketplace project is aimed at creating a win-win situation for both lenders and borrowers, while also promoting more sustainable and responsible consumption habits.

## Project Solution and Feasibility Analysis

1. Identity verification: One solution is to implement a robust identity verification system to ensure that all users are who they say they are. This can help prevent fraud and reduce the risk of defaults, which are major concerns in the peer-to-peer lending space. This solution is particularly appropriate because it helps build trust and confidence among users, making them more likely to use the platform and engage in lending and borrowing activities.
2. Automated payment processing: Another solution is to implement an automated payment processing system that simplifies the lending and borrowing process. This can include automatic payment reminders and tracking, as well as options for recurring payments. This solution is particularly appropriate because it streamlines the transaction process and reduces the risk of late payments, which can be a major concern for both lenders and borrowers.
3. Rating and review system: A rating and review system can also be implemented to help users evaluate the reliability and credibility of potential borrowers and lenders. This solution is particularly appropriate because it promotes transparency and accountability, making it easier for users to make informed decisions about who to lend or borrow from.
4. Enhanced security: Advanced security features such as encryption, multi-factor authentication, and fraud detection tools can be implemented to ensure that user data and transactions are protected from unauthorized access. This solution is particularly appropriate because it increases the level of security and trust on the platform, which is a key concern for both lenders and borrowers.

All these proposed solutions are feasible and can help meet the business objectives of the online-based rental marketplace project. By implementing these features, the platform can offer a more streamlined, secure, and personalized experience for users, which can help attract and retain users, and ultimately drive the success of the platform.

The software's benefits include a streamlined rental process, easy-to-use features, and robust security measures to protect user data and transactions. The software also provides users with access to a broad range of rental options, allowing them to select from a variety of items available for rent. The relevant benefits of this software include:

1. Convenience: Renters and borrowers both can easily borrow or rent anything.
2. Variety: The platform offers a wide range of rental items.
3. Trustworthiness: The platform provides a secure and trustworthy platform for renters and borrowers. Enhanced security measures are taken to ensure that.

The objectives and goals of this software include:

1. To simplify the rental process by providing a user-friendly interface
2. To increase efficiency by automating many aspects of the rental process.
3. To improve trust by implementing a user rating and review system and a dispute resolution process.

There are several existing software solutions available in the online rental marketplace space. Here are a few examples:

1. Airbnb: Airbnb is a popular online rental marketplace that allows property owners to list their homes or apartments for short-term rentals.
2. VRBO: VRBO (Vacation Rentals by Owner) is another popular online rental marketplace that specializes in vacation homes and rental properties.
3. Zoom Car: Zoom Car is a car ranting marketplace.
4. Furlenco: Furlenco is a popular furniture based rental service.

These software solutions provide a range of features and benefits for both renters and landlords, including a user-friendly interface, a wide range of rental options, user reviews and ratings, and a dispute resolution process. However, each platform has its own unique strengths and weaknesses, and the choice of platform may depend on the specific needs of the user.

The online-based rental marketplace project that allows people to both lend and borrow is a unique and innovative solution in the sharing economy space. While there are some existing peer-to-peer lending marketplaces available, this project aims to offer a distinct set of features and functionalities that differentiate it from other similar projects.

Here are some of the innovative features that this project may include:

1. Dual-purpose platform: This platform would offer both lending and borrowing services in one place, allowing users to switch between the two modes easily.
2. Personalized recommendations: The platform may use machine learning algorithms to provide personalized recommendations for both lenders and borrowers based on their preferences and previous transaction history.
3. Seamless payment processing: The platform may offer a seamless payment processing system that simplifies the lending and borrowing process, including automatic payment reminders, and tracking.
4. Enhanced security: The platform may integrate advanced security features, such as identity verification, background checks, and insurance options, to reduce fraud and improve trust between lenders and borrowers.

By offering these unique features, the online-based rental marketplace project aims to provide a comprehensive and innovative solution for peer-to-peer lending and borrowing. While there may be some overlap in functionality with existing lending marketplaces, the combination of these features in a single platform makes the project distinct and innovative. Additionally, the project may offer more advanced and personalized features that are not currently available in the market, making it an interesting and exciting addition to the sharing economy space.

**USE CASE DIAGRAM:**

This is a digital rental marketplace. Where people can borrow and borrow items. To lend or borrow users have to login. For login user must verify by username and password. Borrowers can search for their desired items to borrow from the marketplace. After finding their item borrower will apply for loan through the platform. The lending marketplace will verify the borrower’s information. If all information is correct, then the system will approve the borrower’s application otherwise deny the application. Lenders can create and publish loan offers to borrowers to view. Lenders review the application and check whether the system approved the loan or denied it. If the application approved, then the delivery man will take the product from the lender and deliver to the borrower. This is a subscription-based platform. Lender and borrower subscribe by paying subscription fee. They can pay by mobile banking, credit cards. By lending items, lenders can earn credit points. Credits points are basically a currency system for the lending marketplace platform. Users can withdraw money from the lending marketplace using their credit points. Administrator manages all the user accounts and verifies their information also monitors the platform and provides support.

Diagram

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**CLASS DIAGRAM:**

Diagram

Description automatically generatedIn rental marketplace there are two types of user’s lender and borrower. If a borrower wants to rent an item, he creates an account. He then browses through the available items, which are listed on the application. The borrower can select one or multiple items of his choice that he wants to rent it for. The application then verifies the borrower and the item and generates a rental contract, which both borrower and lender must agree to. Lenders can lend multiple items. The delivery man collects item from the lender and delivers it to the borrower.

**SQUENCE DIAGRAM:**

Borrower search for desire item. If the desired item found, then a borrower select the lender and places a request for rent by mentioning days, specifying the loan amount and other relevant information to the marketplace. The lending marketplaceverifies the borrower information .If the borrower is capable of taking rent, the system will send a renting request to the lender with the information of borrower and the item. The lender receives the lending request from the lending platform. The lender receive the loan request and decided to accent it or reject it. If the loan request is approved, the lender generates a loan offer and sends it to the borrower through the lending platform. The borrower receives the loan offer and reviews the terms and conditions, including interest rate, repayment period, and fees. If the borrower accepts the loan offer, they indicate their acceptance on the lending platform. The lender receives the borrower's acceptance notification from the lending platform. The lending platform generates a loan agreement based on the accepted offer and sends it to the borrower and the lender for review and signature. The borrower receives the loan amount in their bank account and confirms the successful disbursement on the lending platform. The borrower makes regular repayments according to the agreed-upon schedule. The lending platform updates the loan status and sends notifications to the borrower and the lender regarding upcoming payments, overdue payments, and other loan-related updates. Once the loan is fully repaid, the lending platform updates the loan status to "Paid" and sends a confirmation to the borrower and the lender.

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**ACTIVITY DIAGRAM:**

User (Borrower) logs into the lending marketplace platform. The system checks all the login information of the user. If the information is correct, they can log into the account otherwise If there are errors or missing information the system requests the use to fill the login form again. After login User (Borrower) selects the "Request Loan" option from the main menu. System displays a form for the User (Borrower) to fill in loan details, such as loan amount, interest rate, and repayment term. System validates the loan details provided by the User (Borrower), checking for any errors or missing information. If there are errors or missing information, the system displays an error message and prompts the User (Borrower) to correct the form. If a Lender is interested in funding the loan, they select the loan request and indicate their interest. User (Borrower) reviews the interested Lender's profile and decides whether to accept or reject the offer. System validates the signatures and confirms the loan agreement. System disburses the loan amount to the User (Borrower) through the designated payment method. User (Borrower) repays the loan according to the agreed-upon repayment terms. If the information is wrong, then the system displays payment failed try again. If the payment is successful, the system displays transaction successful and ends the process.

**Diagram

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