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DESIGN AND DEVELOPMENT OF USEFUL ITEM DONATION APPLICATIONS WITH SCRUM METHOD

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ABSTRACT

Along with the rapid development of technology, it has changed people's mindsets and lifestyles, starting from how to interact, learn, shop, to make donations to people who are in need. Donations do not always have to be in form of money, but can also be given in other forms such as clothing, equipment, and food. With the presence of internet technology, donations can be made online, which can be accessed via the web to mobile applications. This study will discuss the design and development of mobile-based applications of useful item donations. This research will use the scrum framework method which has 6 stages such as product backlog, sprint planning, sprint backlog, daily scrum, sprint review, and sprint retrospective. The result of this study is a mobile-based application where anyone can receive and give donations to each other.

INTRODUCTION

Along with the rapid development of technology, it has changed people's mindsets and lifestyles, starting from how to interact, learn, shop, to make donations to people who are in need more. Donations do not always have to be in form of money, but can also be given in other forms such as clothing, equipment, and food. With the presence of internet technology, donations can be made online, which can be accessed via the web to mobile applications. Donations do not always have to be in the form of money, but can also be given in other forms such as clothing, equipment, and food. But a new problem arises about how to give the item we want to donate to the recipient of the donation. Based on these problems, the creation and design of user experience applications by utilizing digital internet facilities in making donations in the form of goods is carried out. In this design, the user experience will be improved so that users can more easily and comfortably make donations (Aulia et al., 2021).

Scrum was developed by Jeff Sutherland in 1993 with the aim of being a development and management methodology that follows the principles of Agile Methodology. Scrum is a framework used to develop software projects and manage products. Scrum focuses on the flexibility to develop software products, where teams of developers work to achieve a common goal. Scrum has a complex process, where many factors affect the final result. Scrum has a framework consisting of product guarantees, sprint planning, sprint backlog, sprint retrospective, sprint review, and daily meetings held by team members to complete projects. Scrum has team members who act as, product owner, development team, scrum master (Sasmito & Nishom, 2019). Scrum can make a significant difference because the resulting product will adapt to the environment as the system develops (Wahyudi, 2018).Current cross-platform development techniques have attracted a lot of attention in recent years, especially in the field of mobile applications. This is because developers can develop their applications for different platforms with the same programming language. One of the well-known cross-platform frameworks for developers is React Native which provides several features to support accessibility for the

visually impaired. React Native maps its components into native graphical objects and allows developers to define basic accessibility features such as alternative text for images (Cantù et al., 2018).

Based on the background above, the authors attempt to implement the application to provide a place to be able to distribute or receive goods that are no longer useful. The author will summarize the design in this research entitled "Design And Development Of Useful Item Donation Applications With Scrum Method".

PROPOSED INNOVATION

Based on the background above, the authors attempt to implement the application to provide a place to be able to distribute or receive items that are no longer useful. The author will summarize the design in research entitled " Design And Development Of Useful Item Donation Applications With Scrum Method ". This research will have a more attractive design so that it can be easily used by users. There are several screen designs for interfaces such as greeting screen, profile screen, donation post screen, and other screens.

METHODS

1. Unified Modeling Language

Unified Modeling Language (UML) is a language that provides a comprehensive notation for communicating the requirements, architecture, implementation, deployment, and status of the system. UML is a standard language used to provide visualization of the design of a system. The purpose of using a UML is to provide a general vocabulary of object-oriented terms and diagramming techniques that rich enough to model any system development project from analysis to implementation (Nazeer, 2018).

Entity Relationship Diagram (ERD)

Entity-relationship is a method of using a database model as a visual starting point in database design to help organizations determine the requirements of an information system. While the diagram is used to view or draw the entity-relationship, which is called the entity-relationship diagram (Sama & Darvin, 2021).

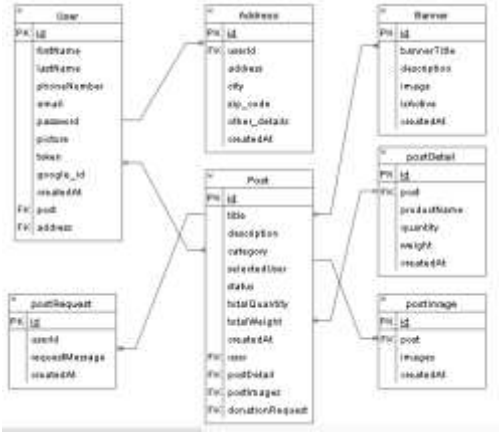

Image 1. Entity Relationship Diagram

Use Case Diagram (UCD)

Use Case Diagrams provide a high-level view of how the system is used from an outsider's perspective during the design phase. Use Case Diagram is used to determine the behavior of the system when it is implemented. Users who interact with the system both internally and externally are called actors (Ganesh & Prabu, 2020).

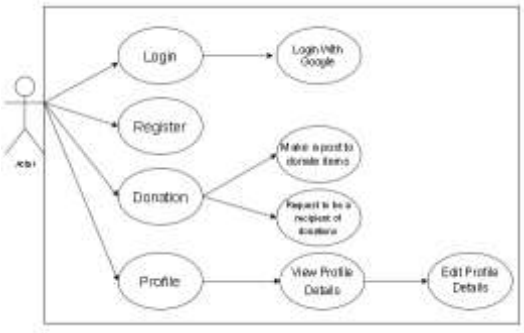

Image 2. Use Case Diagram

2. Scrum

For this research, the author will use the scrum method. Scrum is a software engineering method that uses the principles of the agile approach to develop complex products more quickly. In the implementation of the scrum, there are 3 important roles, such as Product Owner, Scrum Master, and Team. In this study, the Scrum master will be played by the author's supervisor. While the author will act as Product

Owner and Team. Scrum implementation has 6stages, such as Product Backlog, Sprint Planning, Sprint Backlog, Daily Scrum, Sprint Review, and Sprint Retrospective.

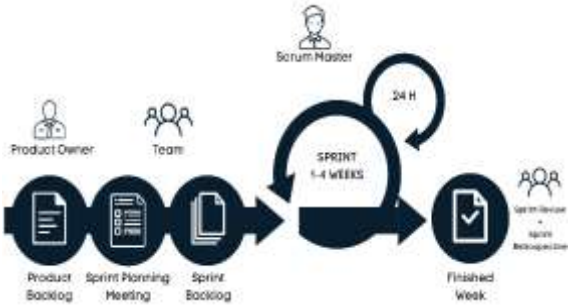

Image 3. Scrum Methodology

Product Backlog

The first stage in scrum is the Product Backlog. In this stage, the author and supervisor are involved in the Product Backlog process. The author will create a list containing product requirements and user stories.

Sprint Planning

In this stage, the author as the product owner will sort the product requirements based on priority. At this stage, the author also determines how long a sprint is to run. The duration of the sprint in this study was two weeks.

Sprint Backlog

After the product planning is completed, the author will sort out several product requirements with the highest priority into sprints. This product requirement is also broken down into several parts.

Daily Scrum

In this stage, the author as a project team has begun to design and create an application system. By referring to the sprint that has been planned, the author will review the progress that has been made. The author can consult with the supervisor if he finds difficulty in designing the application system.

Sprint Review

The next stage is the sprint review, at this stage, the author will review one sprint with the supervisor who acts as the scrum master.

Sprint Retrospective

The final stage of scrum is the sprint retrospective. In this stage, the author as a team will review all the planning and implementation that has been done at the sprint stage. The author also asks for criticism and suggestions from the supervisor who acts as a scrum master regarding the implementation of sprints and products. The suggestions obtained from the supervisor will be used to improve the quality of work in the next sprint.All stages in the implementation of the scrum will continue to be carried out until all the product requirements that have been determined have been completed and run well.

3. Interface

The implementation of the user interface of the application will be designed in the form of a wireframe, which will then be further refined in terms of visual details to become a mockup. The results of implementing this application interface are as follows:

Greeting Screen Interface

This interface is the next screen that appears after the splash screen is displayed. This interface is used to give a greeting after the splash screen has been viewed. At the bottom of the screen there are two buttons, namely, the login button and the register button. The login button is used to navigate from the greeting screen to the login screen, while the register button is used to navigate from the greeting screen to the register screen.

Image 4. Greeting Screen Interface

Login Screen Interface

This interface is the next view after the greeting screen which is used to log into the system. At the top there is the logo of the application, then below it there is input for email and password, then at the bottom there is a button to log in normally using a registered account or use a google account.

Image 5. Login Screen Interface

Register Screen Interface

This interface is the next view after the login screen which is used to register into the system. In this part of the screen there are several inputs for user data to register into the system, while at the bottom there are buttons for registering and Google buttons for registering.

Image 6. Register Screen Interface

Home Screen Interface

This interface is the next view after login and register screen which is used as the main display of the application. At the top there is one banner and 4 buttons for categories, at the bottom there is 1 more banner to explore post donations, while at the bottom there is a navigation screen to go to the create donation screen, profile screen and home screen.

Image 7. Home Screen Interface

Create Donation Screen Interface

This interface is the next view after the home screen which is used to make a donation post. In this interface, there are only a few inputs for post data, buttons for uploading images and a submit form button.

Image 8. Create Donation Interface

Profile Screen Interface

This interface is the next view after create donation screen which is used to view data from the user. At the top there is a profile image, name and email of the user, then below it there are several buttons to view history, address list, passwords and other user data. At the very bottom there is a logout button to exit the system.

Image 9. Profile Screen Interface

History Screen Interface

This interface is the next view after the profile screen. In this part of the interface there are only a few cards and text to display some details of the donation post.

Image 10. History Screen Interface

Address List Screen Interface

This interface is the next view after the history screen. In this part of the interface there are only cards and text to view the address details of the user.

Image 11. Address List Screen Interface

Donation Post Screen Interface

This interface is the next view after the address list screen. In this part of the interface there are only cards and text to view some details of the donation post

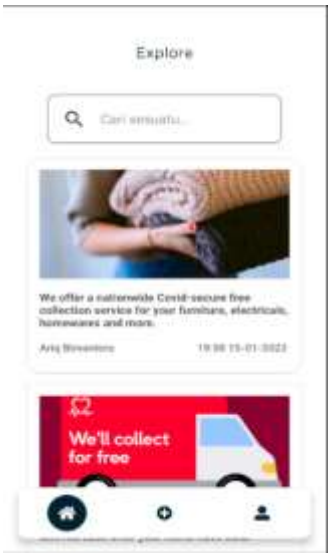

Image 12. Donation Post Screen Interface

Detail Post Screen Interface

This interface is the next screen after the post donation screen. In this interface there is a card, some text to view the details of the donation and also a button to request a donation.

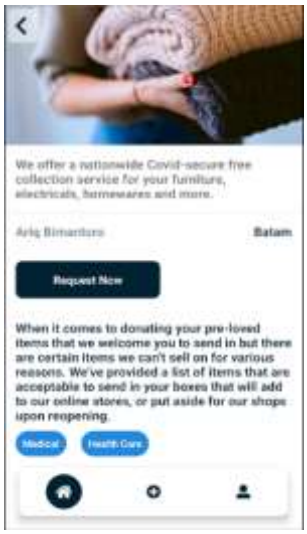

Image 13. Detail Post Screen Interface

4. Software and Tools

For the development and design of this project several software and tools were used, such as :

Visual Studio Code

Visual studio code is the most popular text editor according to the stack overflow developer survey in 2019 (Poesia & Goodman, 2021). Visual studio code is often confused with visual studio. Visual studio code is a free and open source text editor with IDE capabilities developed by Microsoft(Valstar et al., 2020).

React Native

React native is an open source JavaScript framework developed by Facebook that supports rendering of mobile apps for iOS and Android. It supports them to write two different applications using only one language, which saves time, eases in fragmentation, shortens the development process, and also helps in migrating web development to mobile (Sama & Darvin, 2021).

ExpressJS

Express JS is a very light and fast NodeJS framework for developing web applications and APIs (Rosman et al., 2021). Express JS was first released as a server-side language in 2009 with the aim of providing a non-blocking I./O model and an efficient and lightweight framework (Mao, 2018).

MongoDB

MongoDB is an open source document-oriented NoSQL database that can store large amounts of data. MongoDB has a feature called collection which is used to handle documents. MongoDB is a schema-less database that can store data in JSON format and has key-values to access data so that it becomes easier and more efficient (Saundariya et al., 2021).

LIMITATIONS

The implementation limitations of this project are as follows:

- The system only focuses on the donation process between the donor and the recipient of the donation.

FUTURE WORK

For future work, the author will develop the application to make it even better by adding the donation track feature, live chat and other features, the author will also improve the application from the feedback received.

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