

Online Child Adoption Application System for OrphanCare Foundation

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Abstract— The Child Adoption Application System developed for the OrphanCare Foundation serves the purpose of facilitating the management of adoption applications. This web-based technology platform enables individuals to submit their adoption applications and streamlines the online application process. Users are required to register to access the system, and its objectives encompass researching and analyzing the system's requirements, incorporating stakeholder feedback, and designing an application system that caters to both users and administrators. The system leverages software tools such as Visual Studio Code, XAMPP, phpMyAdmin, Bootstrap, MySQL, and others. It also provides functionality for users to apply for the adoption process through the OrphanCare Foundation. Rigorous testing, including system and user acceptance testing, ensures the system's effectiveness. It can verify user eligibility based on specific criteria and maintains comprehensive records of children's information. Additionally, qualified users can access and submit adoption applications conveniently via the website.

Keywords—adoption; web-based application; waterfall model

I. INTRODUCTION

Childcare benefits communities and families economically while supporting children's growth, development, and education [1]. Providing nurturing care in a stable and loving home environment is important for children's well-being. If raising children within their own families is not possible, adoption or similar procedures can offer them a stable home in another family. Short-term alternative care should aim to resemble a family environment as closely as possible. Adoption allows families to expand and provide children with security, love, and opportunities. The adoption process involves multiple steps.

The problem statements for this study are:

- The system has faced difficulty with an unorganized file of applications.
- The manual systems of adoption require a lot of time and cost.
- The organization still uses the manual process of adoption, which requires paperwork.

The four objectives for this study are:

- To analyze the requirement of the Child Adoption Application System through research questions posed to stakeholders.
- To design an application system that can be used by both the user and the administrator.
- To develop the Child Adoption Application System with functionality that enables users to apply for the adoption process through OrphanCare Foundation.
- To test the acceptance of the Child Adoption Application System by conducting system and user acceptance testing.

II. LITERATURE REVIEW

A. Existing website for adoption



Fig. 1 CARA website

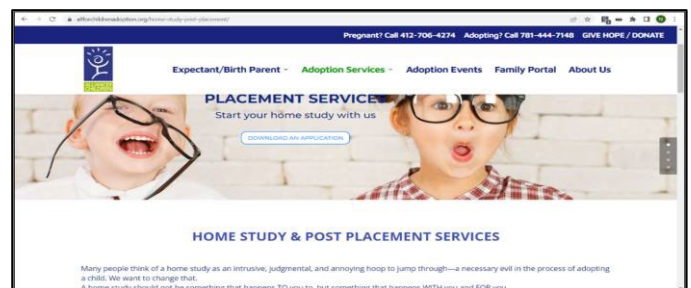


Fig. 2 Alliance Children

The existing websites of the Child Adoption System were showcased in Fig. 1 and 2. Fig. 1 highlighted the Central Adoption Resources Authority (CARA), a well-known adoption organization that offers a user-friendly online application system. CARA's website guides applicants through the necessary steps and provides resources on adoption processes and eligibility criteria [2]. In Fig. 2, Alliance Children demonstrated their adoption website, which facilitates the initiation of the adoption process through an online application form. The website includes features for document submission, fee payment, and application tracking, along with informative content and contact details for assistance [3].

B. Comparison between 2 existing websites with OrphanCare

Table I Comparison between websites

Features	CARA	Alliance Children	Orphan Care
Platform	Website	Website	Website
Home page	√	√	√
Sign up	X	X	√
Login	X	X	√
Info	√	√	√
Application	X	X	√
Documents	X	X	√
Assessment	X	X	√
Payment	X	X	√
Status	X	X	√
Interview	X	X	√
Report	X	X	√
About us	√	√	√
Logout	X	X	√

III. RESEARCH METHODOLOGY

This chapter provides a detailed explanation of the Waterfall Model methodology used to build the Child Adoption Application system. It covers the phases of requirements gathering, design, implementation, testing, and deployment. Fig. 3 visually represents the methodology employed in the project. The chapter emphasizes the structured approach taken to ensure a systematic and successful development process.

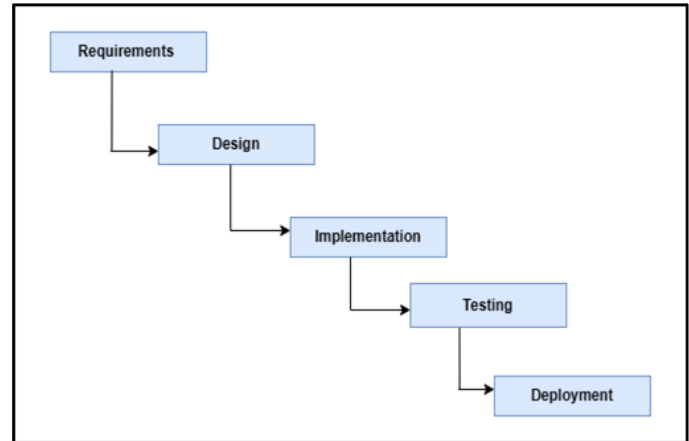


Fig. 3 Waterfall model

A. Requirements

This phase marks the beginning of the project development process. During this phase, researchers are required to collect information from various sources such as the internet, articles, and individuals. They need to examine existing child adoption application website. Subsequently, researchers will create a use case diagram to illustrate how actors interact with the system in a simplified manner. Referring to the use case diagram, researchers will then generate use case descriptions that outline how users perform specific tasks and how the application responds to their actions. Additionally, functional requirements and quality requirements are also formulated in this phase [4].

B. Design

The researcher proceeds with the design of the application's architecture, illustrating the main components and their interactions. One commonly used architecture design is the Model-View-Controller (MVC) approach, which divides the application into three interconnected parts. Additionally, a behavioral design is conducted to represent the dynamic processes of the application. This can be visualized using a sequence diagram, which arranges and illustrates the interactions between objects in a chronological order. Furthermore, a set of storyboards is created to outline the application's layout using lines, boxes, and shades of grey. These storyboards provide a preliminary visualization of how the website would appear in terms of navigation, media, content placement, typography, scale, and color [5]. This enhances user readability and provides an initial representation of the application's aesthetics.

C. Implementation

During this stage, the researcher utilized Hypertext Markup Language (HTML), JavaScript, and Hypertext Preprocessor (PHP) to develop the online adoption application application. Structured Query Language (SQL) was employed as the database language for storing the site's database. Cascading Style Sheets (CSS) were utilized to style the HTML, JavaScript, and PHP content.

D. Testing

Once the prototype is completed, the validation activity takes place at this stage. The information gathered throughout this process greatly influences the effectiveness and consistency of the service provided to users, as well as determining what aspects work and what do not. In the initial step of system testing, the researcher identifies the test coverage, test basis, and test data. Subsequently, a set of test cases is derived and refined from the test coverage [6]. These test cases are then executed using black box testing by running the application. The results of the test executions are recorded and compared against the expected results to determine if the functionality behaves as intended or contradicts it. In case of any bugs or defects leading to the functionality not working as expected, the code is corrected until the expected and actual results align with each other.

E. Deployment

Once the testing phase is complete, the developer can proceed with the electronic online roll-out of the product. The only prerequisites on the client-side are an internet connection and a supported browser, such as Microsoft Edge or Google Chrome. This ensures that the product is accessible to the users.

IV. PROTOTYPE/PRODUCT DEVELOPMENT

This section covers the entire process of developing the Child Adoption web application, which includes requirements gathering, design, implementation, testing, and deployment.

Fig. 4 displays the flowchart of the adopter's journey. The adopter has access to the home page and can view information about the adoption application process and the company. To initiate an adoption application, the adopter needs to log in to the website and fill out the application form. If the adopter is not yet registered, they can sign up by providing their email, confirming it, and creating a password. Once registered, they can proceed to the login page and enter their registered email and password. The application process involves filling out the application form and uploading the necessary documents. Subsequently, the adopter is prompted to take an assessment to evaluate their eligibility. This includes completing an eligibility questionnaire and responding to preparation poll questions. Upon submission, the data is securely stored. The adopter is then redirected to the payment page to complete the payment process. After a successful application, the adopter can check their application status by entering their IC number. If the status indicates completion, they are notified to select an interview session. They are required to fill out the interview date and time selection form and submit it. Once the administrator updates the preferred interview session, the adopter can view the assigned interview details. This marks the end of the process.

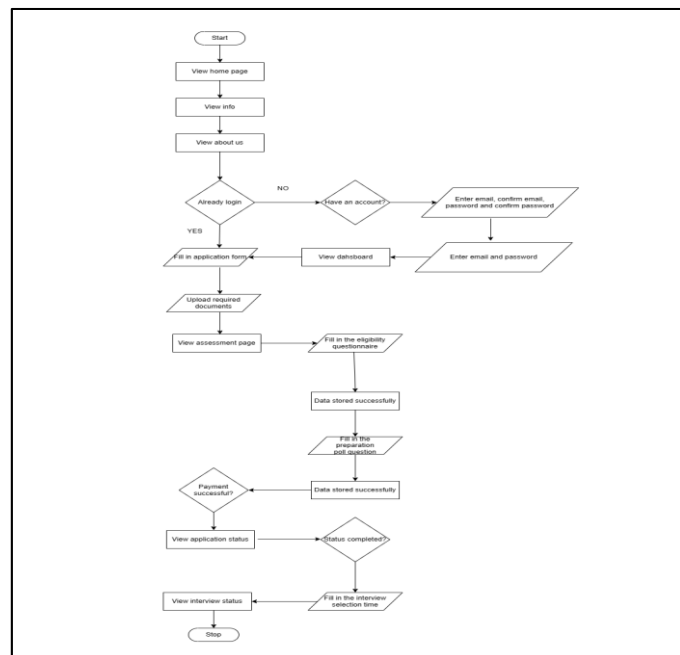


Fig. 4 Flowchart of the adopter

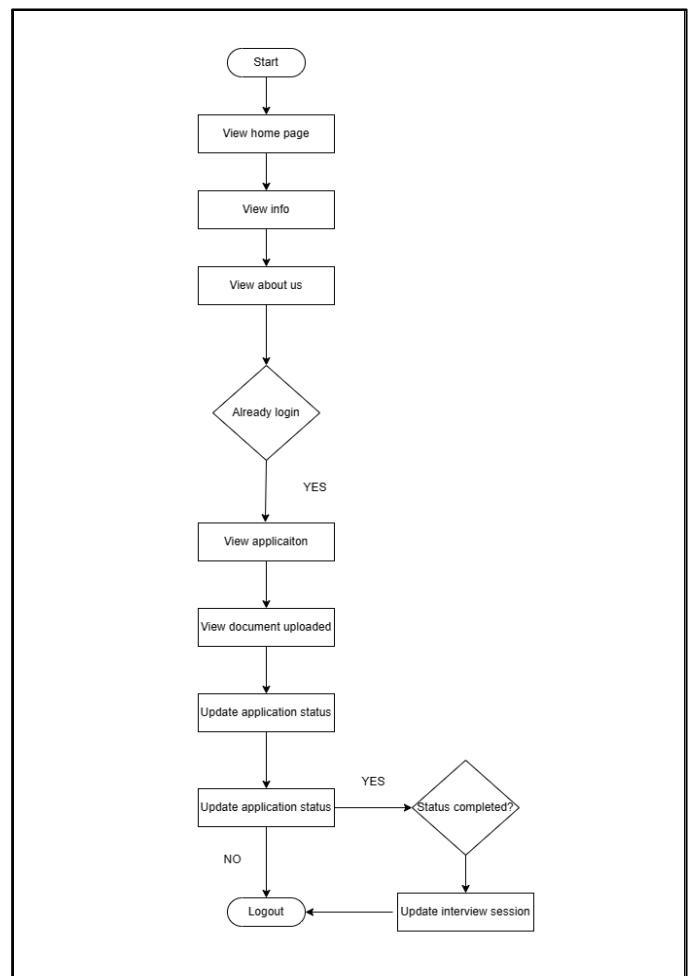


Fig. 5 Flowchart of the administrator

Fig. 5 illustrates the flowchart of the administrator's activities. The administrator has access to the homepage, adoption application process information, and information about the company. A single registered account is used by the administrator to log in and handle the application process initiated by the users.

Once applicants or adopters apply through the OrphanCare website, the administrator can review the application and access the uploaded documents. Additionally, the administrator has the authority to update the application status based on their evaluation. They can also approve or disapprove the selected interview session time as chosen by the users.

In summary, Fig. 5 showcases the flowchart of the administrator, who can view the homepage, adoption application process information, and company details. They handle the application process, including reviewing applications, viewing uploaded documents, updating application status, and approving or disapproving interview session times selected by the users.

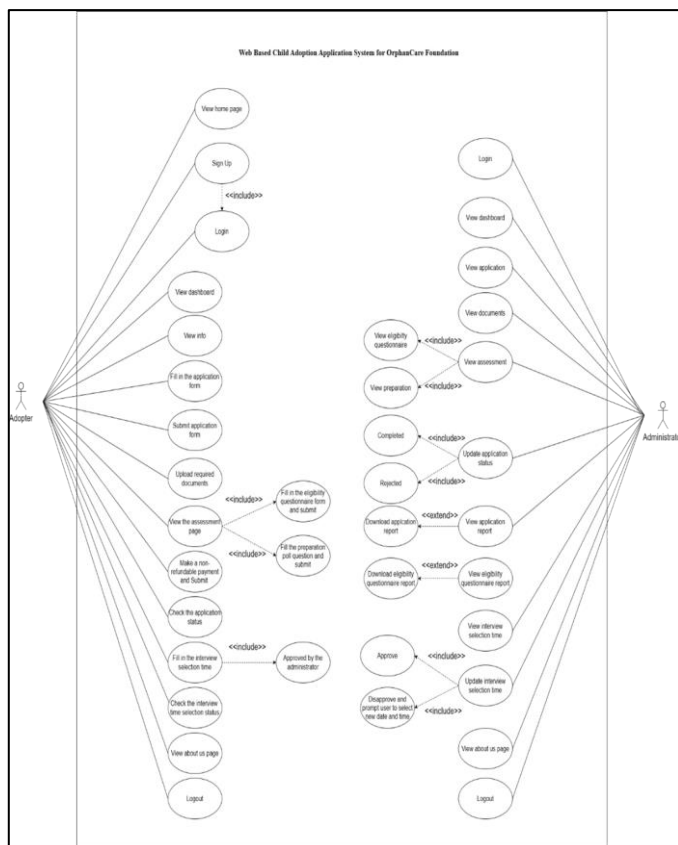


Fig. 6 Use case of the OrphanCare system

The use case diagram, shown in Fig. 6, provides an overview of the system's functional requirements. It illustrates the

interactions between actors and use cases, simplifying the understanding of system functionality and user engagement.

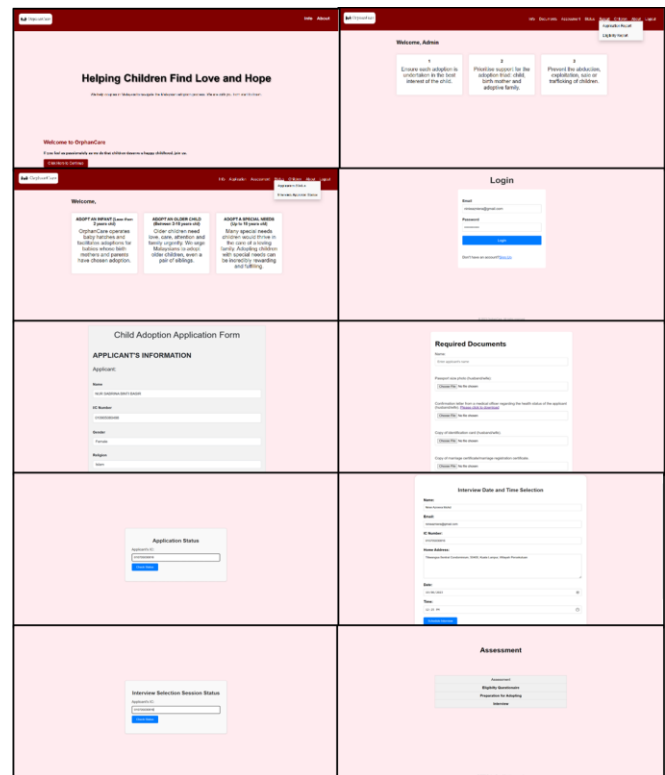


Fig. 7 Prototypes

Fig. 7 showcases prototypes of the Online Child Adoption Application System, designed to automate the adoption application process. The system adheres to the standard requirements of Jabatan Kebajikan Masyarakat Malaysia (JKM), which is the Department of Social Welfare in Malaysia. It offers a user-friendly interface for individuals or couples interested in adopting, streamlining the process while ensuring compliance with legal and ethical considerations in Malaysia [7].

V. RESULT AND DISCUSSION

The Child Adoption Application System underwent system testing after the completion of integration testing. The primary objectives of system testing were to identify defects, ensure the application's quality, and validate its compliance with user requirements. The testing approach utilized the black-box technique. The system testing phase lasted approximately five weeks. In case of any test case failures, prompt code fixes were implemented to achieve the expected results. The test results for design and appearance, performance and loading speed, and content quality are presented below.

- Design and appearance:** How would you rate the visual appeal of the website?

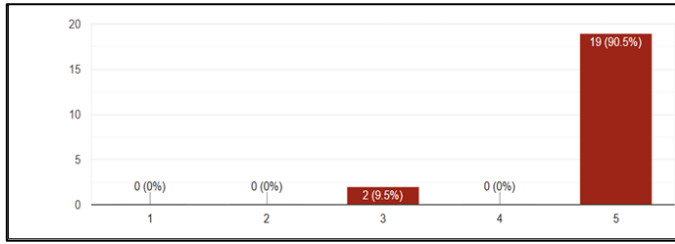


Fig. 8 Result for design and appearance

Table II Percentage for design and appearance

Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
0%	0%	9.5%	0%	90.5%

Based on Fig. 7, two respondents chose "neutral," while 19 respondents chose "very satisfied." None of the respondents chose "very dissatisfied" or "satisfied." According to Table 2, the highest percentage for question 1 regarding design and appearance is 90.5%, indicating that the majority of the respondents were "very satisfied" with the visual appeal of the website.

- ii. **Performance and Loading Speed:** Did the website load quickly and smoothly?

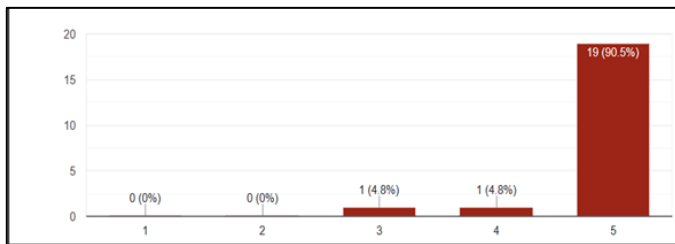


Fig. 9 Result for performance and loading speed

Table III Percentage for performance and loading speed

Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
0%	0%	4.8%	4.8%	90.5%

Based on Fig. 8, one respondent chose "neutral," one respondent chose "satisfied," while 19 respondents chose "very satisfied." None of the respondents chose "very dissatisfied" or "dissatisfied." According to Table 3, the highest percentage for question 1 regarding performance and loading speed is 90.5%, indicating that the majority of the respondents were "very satisfied" with the loading speed of the website.

- iii. **Content Quality and Relevance:** Did the website provide relevant and useful information?

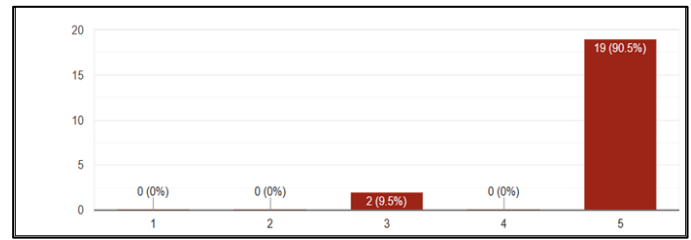


Fig. 10 Result for content quality and relevance

Table IV Percentage for content quality and relevance

Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
0%	0%	9.5%	0%	90.5%

Based on Fig. 9, two respondents chose "neutral," while 19 respondents chose "very satisfied." None of the respondents chose "very dissatisfied," "dissatisfied," or "satisfied." According to Table 4, the highest percentage for question 1 regarding content quality and relevance is 90.5%, indicating that the majority of the respondents were "very satisfied" with the information provided on the website.

To conclude, the testing section provided a comprehensive overview of the testing process for the Child Adoption Application System. It covered various aspects such as the test approach, environment, hardware, and software requirements. The testing phase ensured systematic and thorough testing with clear objectives and features to be tested. Overall, the testing phase successfully validated the system's reliability, robustness, and compliance with requirements [8].

VI. CONCLUSION AND RECOMMENDATION

The project successfully achieved its objectives for the Child Adoption Application System, including analyzing system requirements, designing a user-friendly application, implementing functionality for adoption applications, and conducting testing for acceptance. The system offers advantages such as improved efficiency, accuracy, centralized data management, secure data handling, and enhanced collaboration. However, there are limitations to consider, such as internet dependency, limited user support, compatibility requirements, scalability challenges, data integration issues, privacy and security risks, cost considerations, and adoption process complexities. It is important to address these limitations proactively. A future recommendation is to implement user authentication to enhance system security and privacy. This can be achieved through measures such as registered user access, multi-factor authentication, and strong password policies.

Table V Limitation and Recommendations

Limitations	Recommendations
Internet dependency	Implement user authentication for registered users.
Compatibility requirements	Consider implementing multi-factor authentication or strong password policies.
Data integration	Ensure optimal system functionality and user satisfaction.
Scalability challenges	Strengthen the authentication process to prevent unauthorized access.

The Child Adoption Application System has certain limitations that impact its functionality and user satisfaction. These limitations include dependence on internet connectivity, limited user support, compatibility requirements, scalability challenges, data integration complexities, privacy and security risks, cost considerations, and the complexities of the adoption process itself. It is crucial to address these limitations in order to optimize the system's performance. By mitigating internet dependency issues, providing adequate user support, ensuring compatibility across devices and platforms, addressing scalability challenges, streamlining data integration processes, prioritizing privacy and security measures, managing costs effectively, and simplifying the adoption process, the system can offer an improved and user-friendly experience for individuals seeking to adopt a child.

A future recommendation for the Child Adoption Application System is to implement user authentication for registered users. This can help enhance the security and privacy of the system by ensuring that only authorized individuals can access and interact with sensitive adoption-related information. Additionally, implementing multi-factor authentication or strong password policies can further strengthen the authentication process and safeguard against unauthorized access [9].

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