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Analyze the Interactive Biography System of the President of Indonesia: Portfolio

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ABSTRAK

Interactive biography systems have become an important tool in introducing and understanding important figures in history. This article aims to analyze and describe an interactive biography system that focuses on Indonesian presidents. By utilizing various media, including text and images, the system offers an immersive learning experience and interacts with information about Indonesian leaders. Our analysis covers content structure, user interface, and interactivity, as well as their impact on people's understanding of history and leadership. By exploring the various features and technologies used in this system, this article provides an in-depth insight into how information technology can enrich historical learning and promote a better understanding of the role of leaders in the formation of the country. The conclusions of this analysis can provide valuable guidance for the development and improvement of future interactive biography systems.

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INTRODUCTION

Indonesia, as a country with a rich political history, has been led by various presidents who each brought significant changes and contributions to the country. To celebrate and document these contributions, the development of the Indonesian President Interactive Biography System is crucial. The system aims to provide complete, accurate, and easily accessible biographical information about each Indonesian president, from Soekarno to the current leader [1], [2], [3], [4]. The background of this system development is based on the community's need for a reliable and structured source of information about the country's leaders [5], [6]. In this digital era, access to information quickly and easily is a must. This Interactive Biography System is designed to meet those needs by integrating modern technology, ensuring that information can be accessed through various devices such as mobile phones, tablets, and laptops [7], [8]. In line with this goal, the development of this system considers several important aspects. First, the system must be responsive and user-friendly, ensuring users of all ages can easily navigate and obtain the information they need [9], [10]. Second, the system should be comprehensive, covering each president's personal data, political career, contributions and achievements in detail. In addition, to enhance the user experience, the system is also equipped with interactive features such as maps and timelines that can visualize the president's life and career in an interesting and informative way [11].

The purpose of developing the Indonesian President Interactive Biography System is not only to provide accurate historical information but also to educate the younger generation about the importance of leadership and the country's political history. With this system, it is hoped that people can better appreciate the struggles and contributions of the country's leaders in developing Indonesia. In addition, this system is also expected to be an important reference for researchers, historians, and the general public who are interested in exploring Indonesia's political history. The system was developed with a comprehensive approach, involving various stages ranging from feasibility studies, system design, development and implementation, to testing and evaluation [12], [13], [14], [15]. Each stage is carefully conducted to ensure that the resulting system not only meets user needs but also has high technical quality. The use of the latest technology and best practices in software development is expected to produce a reliable, secure, and efficient system. With the Indonesian Presidential Interactive Biography System, it is hoped that the public can have better and easier access to important information about Indonesia's presidential history. It is not just about providing data, but also about how the data is presented in an interesting and easy-to-understand manner for all. Through the development of this system, we are committed to continue supporting the efforts of historical preservation and education for future generations [1].

METHOD

Data Collection

Data collection in the development of the Indonesian President Interactive Biography System is carried out through several methods to ensure that the data obtained is accurate, complete, and in-depth. The methods used include questionnaires, interviews, observations, and literature reviews. The following is an explanation of each method:

a) Questionnaire

A questionnaire was used to collect data from potential users of the system. The questionnaire contained questions designed to understand the needs and preferences of users regarding presidential biography information. Some of the aspects asked include the type of information desired, the most interesting way of presenting information, and the expected interactive features. The data obtained from this questionnaire is used as the basis for designing the system interface and features to match user expectations [7], [8], [9].

b) Interview

Interviews were conducted with various stakeholders, including historians, academics and general users. The purpose of these interviews was to gain deeper insights into the content and presentation of presidential biography information. Interviews with historians and academics helped to ensure that the data entered into the system was accurate and authentic. In addition, user interviews help identify specific needs and preferences of users that may not be covered by questionnaires [2].

c) Observation

Observations were made to understand how users interact with similar information systems. The development team observed the use of several online biography and encyclopedia systems to find out user interaction patterns, difficulties encountered, and

the most frequently used features. This information was invaluable for designing user interfaces that were intuitive and easy to use. Observation also helps in understanding the accessibility needs for users with specific limitations [3], [4], [5].

d) Literature Review

A literature review was conducted to collect secondary data from various literature sources, including books, journals, articles and official documents related to the history and biography of Indonesian presidents. This review ensures that the information presented in the system is complete and based on valid references. In addition, the literature review also helped in understanding the historical context and contribution of each president, which was then translated into informative and educational system content.

Each of these data collection methods complement each other to ensure that the Indonesian Presidential Interactive Biography System not only provides accurate and complete information but is also relevant and accessible to users from various backgrounds. Through a combination of questionnaires, interviews, observations, and literature reviews, this system is expected to fulfill the information and education needs of the public regarding the history of leadership in Indonesia.

System Development Method

The development of the Indonesian President Interactive Biography System uses a structured and iterative system development method to ensure that the resulting system meets user needs and has high quality. The development method used is Agile Development Method. The following are the stages in this development method:

a) Planning

The planning stage involves identifying user needs and overall system goals. At this stage, data collection is carried out through various methods such as questionnaires, interviews, observations, and literature reviews. The results of this data collection are used to formulate specifications of user requirements and expected system functionality. In addition, a development schedule and division of tasks among the members of the development team were also made.

b) Requirement Analysis

At this stage, the requirements that have been collected are analyzed in depth to determine the priorities and technical specifications of each feature to be developed. Requirements analysis involves mapping functional and non-functional requirements and creating a Software Requirements Specification (SRS) document. This SRS document becomes the main guide during the development process.

c) System Design

System design is carried out based on the requirements specifications that have been compiled. This design includes system architecture design, database design, and user interface design. At this stage, an initial prototype of the system to be developed is also made to get initial feedback from users and other stakeholders. This prototype is used to ensure that the design created is in accordance with user needs.

d) Implementation

The implementation phase involves coding the design. The development team works in short sprints to iteratively develop system features. Each sprint ends with a demonstration of the deliverables to users for feedback. Agile methods allow changes and

adjustments to be made quickly based on feedback received during this implementation stage.

e) Testing

Testing is carried out to ensure that the system functions in accordance with predetermined specifications and is free of errors (bugs). Testing includes unit testing, integration testing, system testing, and user acceptance testing (UAT). Any errors found during testing are corrected before the system is launched. Testing is also done to ensure that the system is secure and can handle the expected user load.

f) Deployment and Maintenance

Once the system has passed testing, it is launched for use by users. This stage involves installing the system in a production environment and training users. In addition, technical support is provided to assist users in operating the system. System maintenance is carried out on an ongoing basis to ensure the system remains in good working order and can be updated according to user needs that may evolve over time.

The Agile Development method used in the development of the Indonesian President Interactive Biography System allows the development team to adapt to changing needs and ensure that the resulting system is truly in line with user expectations. This iterative and user-centered approach helps in creating a system that is not only functional but also user-friendly and responsive to user feedback[4].

Table 2.1. Project Estimates

Timeline	**Estimasi Waktu Pengerjaan** Bulan				
	1	2	3	4	5
Planning					
System Request					
Feasibility Study					
Development					
Testing					

- Planning : User Requirement Identification, Specification Compilation, Project Planning, Scheduling, Source Identification.
- Analysis : Collection of User Requirements, Use Case Creation, Database Design.
- Design : System Design, User Interface Design.
- Implementation : Software Development, Coding, Unit Testing.
- Testing : Functionality, Performance, Security, and User Testing.

RESULTS AND DISCUSSION

The development of the Interactive Biography System of the President of Indonesia has gone through various stages ranging from planning, needs analysis, design, implementation, to testing. The following are the results and discussion of the development of this system.

Planning Stage

At this planning stage, there are needs or features needed to create a Biography of the President of Indonesia information system. The following are the desired features in the information system:

a. Fitur Admin
   - User data input and editing features
   - Input and edit contact admin features
   - Add features and edit the latest information data for the Indonesian president biography system

   Before these features are fulfilled, a feasibility study is carried out which aims to measure whether the Indonesian President Interactive Biography Information System is feasible to run this Portfolio platform. The feasibility study is feasibility in terms of technical and feasibility in terms of organization. The following are the results of the feasibility study carried out:

b. Technical Feasibility

Table 3.1. Information System Technical Feasibility

Technical Feasibility **:**
The Indonesian President Interactive Biography System is technically feasible, although it has some risks as follows: 1. The sensitivity of the information to be stored in the portfolio, information security risks are a major concern. Threats such as hacking, data theft, or malware attacks can result in costly data leaks. 2. Technical development projects such as these can face risks related to difficulties in implementing complex features or using new technologies. This can lead to delays in development or sub-optimal end results. 3. Risks can also arise from inappropriate use of the information provided in the portfolio, both by internal and external parties. For example, inaccurate or misrepresented information could result in a misunderstanding of the President of Indonesia.

c. Organization Feasibility

Table 3.2 Feasibility of Information System Organization

Organization Feasibility:
The President Interactive Biography information system is organizationally feasible, with low risk. Here are the details: a. Team Members • Project Leader: Yudha Nurfaiz • System Analyst: Khilma Zulfani Shobiyya • Designer: Risha Febrianti • Programmer: Dzaky Raihan Muharram

b. The main purpose of the Indonesian President Interactive Biography Site is to provide easy and interactive access to information about Indonesian presidents to the wider community. Build a sense of pride in Indonesian history and culture and strengthen national identity.

Analysis Stage

a. System Description

The Indonesian President Interactive Biography System is a digital platform designed to provide easy and interactive access to information about Indonesian presidents. Utilizing web and multimedia technologies, the system presents comprehensive information about the lives, careers, and contributions of Indonesia's leaders over time. The Indonesian President Interactive Biography System is an ideal tool for students, researchers, historians, and the general public who want to gain in-depth insight into the country's leaders and the course of Indonesian history through their leadership [16].

b. Functional Requirements

Functional requirements (FR) or functional needs describe the running of a feature of an application or system starting from the input process to the output that will be produced.

Table 3.3. *Functional Requirements*

ID	Functional Requirements	Explanation
FR 1	Login Display	In this information system, login serves to allow users to access their accounts in a secure and authenticated manner. It is the entry point that allows users to access the features provided in this information system.
FR 2	Register Display	The register function in this information system is to allow new users to create their own account or profile in the system. This involves filling out a form with the required information, such as username, email address, and password.
FR 3	Home Display	This homepage is designed to give users a good experience and help them navigate the site or app easily.
FR 4	About	In the about view of this information system, it displays the profile of the member who created the information system.
FR 5	History	In the History view, displays a brief biography of the Presidents of the Republic of Indonesia
FR 6	Portofolio	This feature lists presidents, profiles, personal information, Leadership: Period in office, key achievements, significant policies, etc.
FR 7	Contact Us	In this feature, it is designed for users to send messages or comments to this information system. with suggestions or criticisms about this website, so that it can

		help developers in assessing the website that has been created.

Table 3.4. Actors

Actor	Needs
User	Login to the website, can provide criticism on the website on the Contact Us page.
Admin	Manage user access to the system. This includes creating new user accounts, deleting inactive accounts, setting user access rights and roles, and changing user information.

a. Use Case Diagram

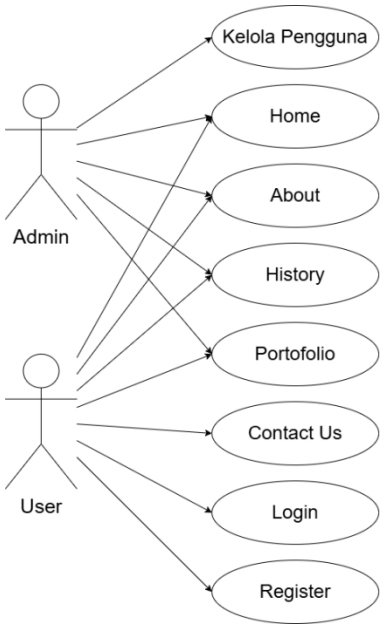


Figure 3.1. *Use Case Diagram*

b. *Non-Functional Requirements*

Table 3.5. *Non-Functional Requirements*

ID	Non-Functional Requirements	Explanation
NFR - 001	**Availability**	The system must be available at all times so that it can be accessed anytime and anywhere.
NFR – 002	**Reliability**	The system must be able to operate efficiently and not experience problems when used such as freeze, lag, bugs and other obstacles.
NFR – 003	**Ergonomy**	The system must have a user interface that is easily understood by various people
NFR – 004	**Portability**	The system must be compatible across devices and OSes.

NFR - 005	**Memory**	The system should maximize the use of RAM so that it does not take up too much space.
NFR - 006	**Response Time**	The system can respond in a short time to each feature activity used
NFR – 007	**security**	The system must be able to guarantee the security of user data.
NFR - 008	**SoftwareQuality**	The system must be responsive and able to accommodate a large number of users at the same time without experiencing performance degradation.

Design Stage

In this design stage, the tools that will be used in the Portfolio Information System will be discussed. Devices that will be discussed include hardware interfaces, software interfaces, and initial designs or temporary descriptions as an initial benchmark for the design of the Portfolio Information System display.

a. User Interface

The user interface of the Indonesian President Interactive Biography System provides elements designed to make it easier for users to obtain information related to the work and achievements of the former President of Indonesia [17]. The user interface in this information system is:

1) Login

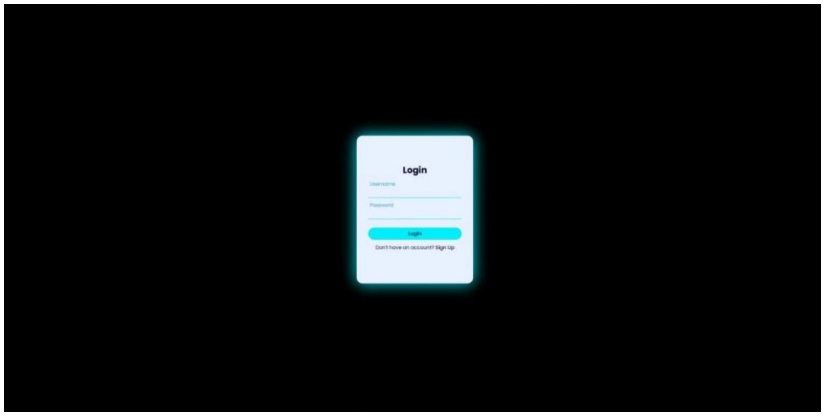
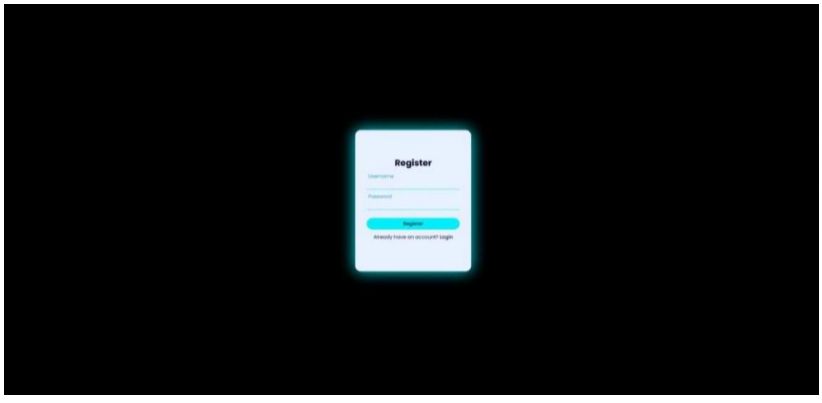


Figure 3.2. User Interface Login

2) Registrasi



Gambar 3.3. *User Interface* Halaman Registrasi

3) Home

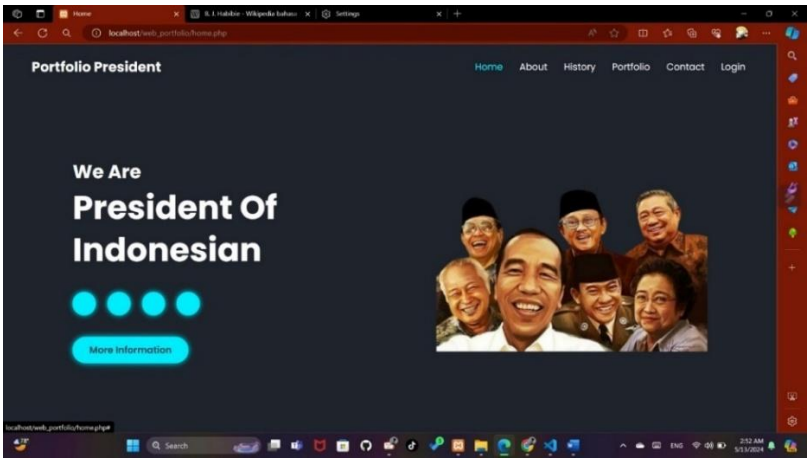


Figure 3.4. User Interface Home

4) About

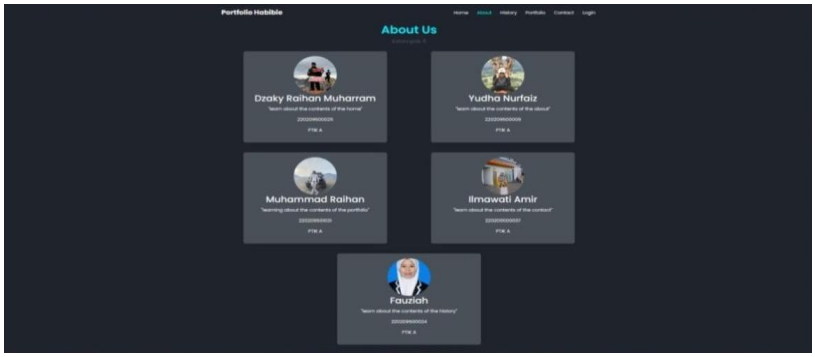


Figure 3.5. User Interface About

5) Portofolio

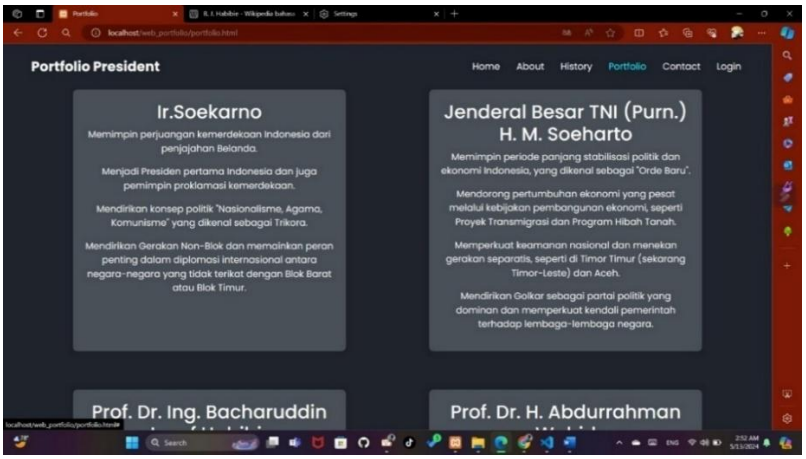


Figure 3.6. User Interface Portofolio

6) Contact Us

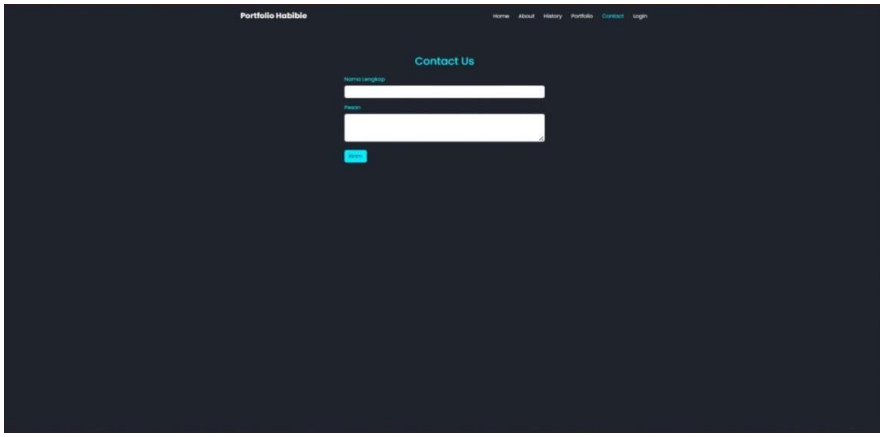


Figure 3.7. User Interface Contact Us

b. Hardware Interface
   1) Hardware interfaces needed to help the development process of this information system are: PC or Laptop: users can access this web interface through a desktop or laptop computer.
   2) Web Browser: the web interface should be designed to work well on various web browsers commonly used by users, such as Chrome, Edge, etc.
   3) Internet Connection: the web interface must be able to operate well under different network conditions, including slow or even unstable internet connections, as well as using optimized images and efficient processing needs to be considered so that the page load time remains fast.

c. Software Interface
   1) The software required to operate this information system is:
      PHP (Personal Home Pages), which is a server-side programming language specifically designed for the development of dynamic web applications. This programming language is widely used to create intractive websites and can communicate with databases. As a development tool,
   2) HTML (Hypertext Markup Language), which is used to build and structure web pages. HTML uses tags or elements to define elements on web pages, such as titles, paragraphs, images, links, tables, etc.
   3) MySql, which is used to store, manage data in a database.
   4) Google Chrome, Edge, Firefox and so on which are internet browsers for users.
   5) XAMPP (Cross-Platform Apache, MySql, PHP and Perl) which combines several key components to create a complete and easy-to-use local web development environment. XAMPP is used as a standalone server or localhost which facilitates the process of editing, designing, and developing applications.

d. Communication Interface
   Communication interface requirements on the Indonesian President Interactive Biography System website include:
   - User Interface: a display that can adapt to various devices such as desktops, tablets, and smartphones.
   - Data Interface: allows integration with other systems, so that presidential biography data can be accessed and updated automatically.

Testing

After the design is complete, testing is carried out to ensure that the system functions as expected. First, White Box testing is a software testing method that tests the internal or working structure of the application. This testing involves analyzing source code, algorithms, and data structures to ensure that all paths, branches, loops, and statements have been thoroughly tested. White Box testing is also known as structural testing or open box testing. The main focus of this test is to verify the internal logic flow of the program and ensure that all functions run as expected [5]. Black Box method used to test the president's web portfolio, focusing on the functional requirements of the software to ensure that the application program produces the desired output and in accordance with its functions [6].

a. *White Box Testing*

1) Login

- Script

```php
<?php
require 'function.php';
?>

<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Login</title>
    <link rel="stylesheet" type="text/css" href="style_login-register.css">
</head>

<body>
    <div class="wrapper">
        <div class="form-wrapper sign-in">
            <form method="post">
                <h2>Login</h2>
                <div class="input-group">
                    <input type="text" name="username" required>
                    <label for="" class="" collab">Username</label>    "collab": Unknown word.
                </div>
                <div class="input-group">
                    <input type="password" name="password">
                    <label for="" class="" collab">Password</label>    "collab": Unknown word.
                </div>
                <button type="submit" name="login">Login</button>
                <div class="signUp-link">
                    <p>Don't have an account? <a href="register.php" class="signUpBtn-link">Sign Up</a></p>
                </div>
            </form>
        </div>
    </div>
    <script src="script.js"></script>
</body>

</html>
```

Figure 3.8. Script login.php

```php
<?php

$koneksi = mysqli_connect('localhost','root','','login-register');    "koneksi": Unknown word.

if (isset($_POST['login'])) {

    $username = $_POST['username'];
    $password = $_POST['password'];

    $cekdb = mysqli_query($koneksi, "SELECT * FROM user where username='$username'");    "cekdb": Unknown word.
    $hitung = mysqli_num_rows($cekdb);    "hitung": Unknown word.
    $pw = mysqli_fetch_array($cekdb);    "cekdb": Unknown word.
    $passwordbaru = $pw['password'];    "passwordbaru": Unknown word.

    if ($hitung>0) {    "hitung": Unknown word.
        if (password_verify($password,$passwordbaru)) {    "passwordbaru": Unknown word.
            header('location:home.php');
        } else {
            echo '
            <script>
                alert("Password Salah");    "Salah": Unknown word.
                window.location.href = "login.php";
            </script>
            ';
        }
    } else {
        echo '
        <script>
            alert("Login Gagal");    "Gagal": Unknown word.
            window.location.href = "login.php";
        </script>
        ';
    }
}

?>    The closing ?> tag should be omitted from files containing only PHP.
```

Figure 3.9. Script proses_login.php

- Flowchart

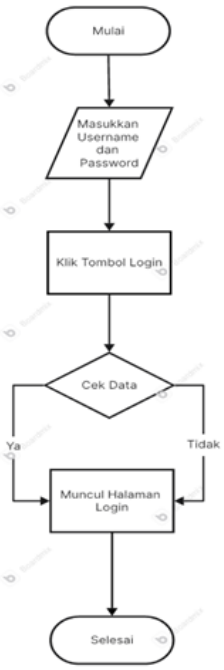


Figure 3.10. Flowchart Login

- Flowgraph Login

Node: 9 (based on HTML elements) Edge: 10 (number of opening and closing tags, as well as the "href" attribute in the <a> tag) Calculate Cyclomatic Complexity using the formula E - N + 2:
E = 10 (number of edge)
N = 9 (number of nodes)
Cyclomatic Complexity = E - N + 2 = 10 - 9 + 2 = 3

2) Register
   - Script

```php
<?php
require 'function.php';
?>

<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Animated Login & Registration Form | Codehal</title>    "Codehal": Unknown word.
    <link rel="stylesheet" type="text/css" href="style_login-register.css">
</head>

<body>
    <div class="wrapper">
        <div class="form-wrapper sign-in">
            <form method="post">
                <h2>Register</h2>
                <div class="input-group">
                    <input type="text" name="username" required>
                    <label for="" class="collab">Username</label>    "collab": Unknown word.
                </div>
                <div class="input-group">
                    <input type="password" name="password" required>
                    <label for="" class="collab">Password</label>    "collab": Unknown word.
                </div>
                <button type="submit" name="register">Register</button>
                <div class=" signUp-link">
                    <p>Already have an account? <a href="login.php" class="signUpBtn-link">Login</a></p>
                </div>
            </form>
        </div>
    </div>
    <script src="script.js"></script>
</body>

</html>
```

Gambar 3.11. Sript register.php

```php
<?php

$koneksi = mysqli_connect('localhost','root','','login-register');    "koneksi": Unknown word.

if (isset($_POST['register'])) {
    $username = $_POST['username'];
    $password = $_POST['password'];

    $epassword = password_hash($password, PASSWORD_DEFAULT);    "epassword": Unknown word.

    $insert = mysqli_query($koneksi, "INSERT INTO user (username, password) values ('$username', '$epassword')");

    if ($insert) {
        header('location:login.php');
    } else {
        echo '
        <script>
            alert("Registrasi Gagal");    "Registrasi": Unknown word.
            window.location.href = "register.php";
        </script>
        ';
    }
}
```

Gambar 3.12. Script proses_register.php

- Flowchart

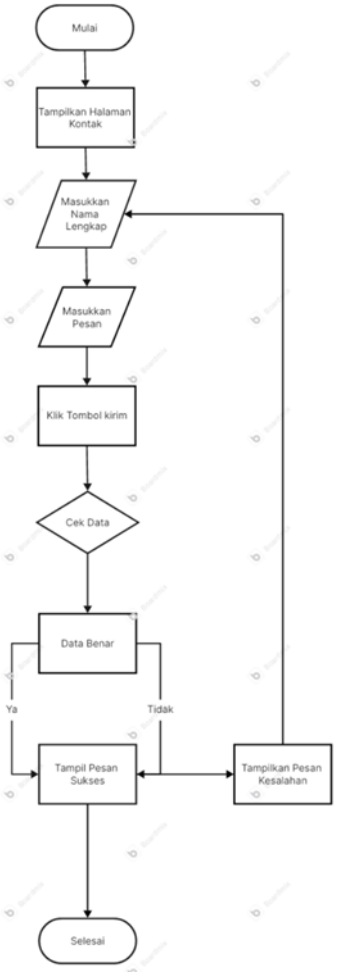


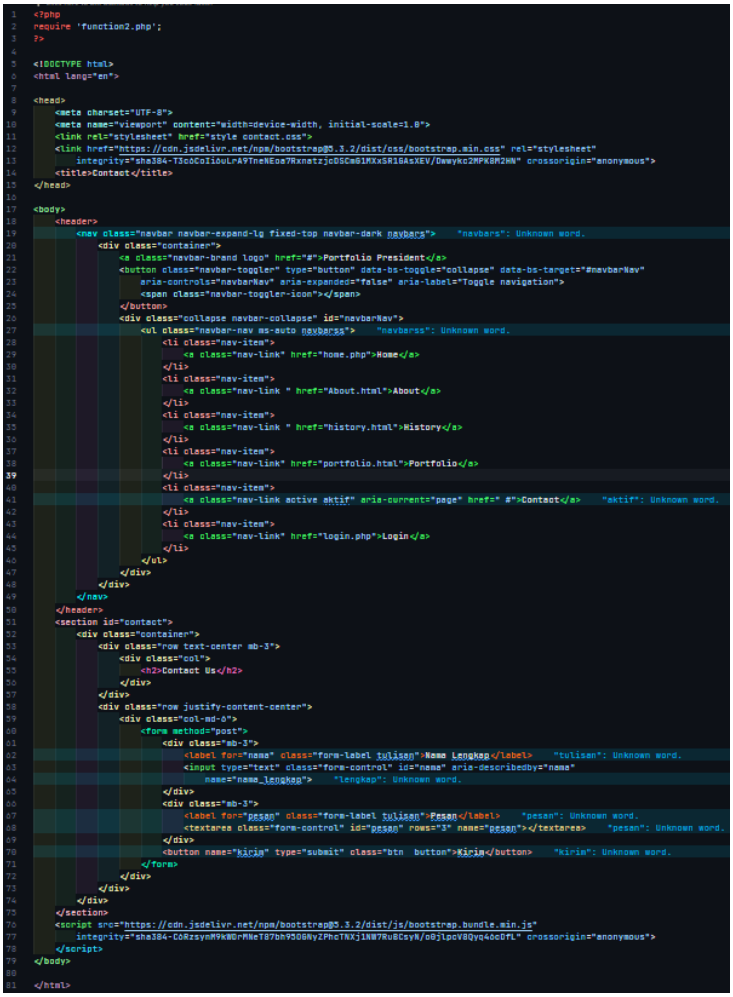
Figure 3.13. Flowchart Register

- Flowgraph

Node (N): 19 main HTML elements: html, head, meta (two), link (two), title, body, header, nav, div (some), a (some), button, ul, li (some), section, h2, form, label (two), input, textarea Edge (E): 21
Opening and closing tags: html, head, meta (two), link (two), title, body, header, nav, div (some), a (some), button, ul, li (some), section, h2, form, label (two), input, textarea Tags with href attribute Cyclomatic Complexity Calculation E = 21 N = 19 Cyclomatic Complexity = E - N + 2 = 21 - 19 + 2 = 4 The Cyclomatic Complexity of the HTML code is 4.

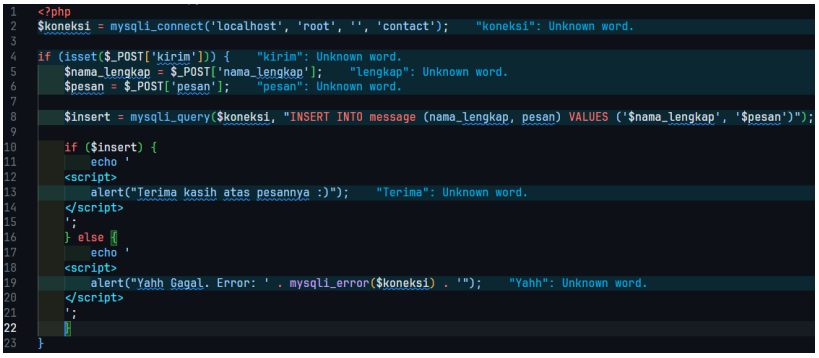
3) Contact Us

- Script



```php
<?php
require 'function2.php';
?>

<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="stylesheet" href="style contact.css">
    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/css/bootstrap.min.css" rel="stylesheet"
        integrity="sha384-T3c0CoI1ouLrA9TneNEoa7RxnatzjcDSCmG1MXxSR1GAsXEV/Dwwykc2MPK8M2HN" crossorigin="anonymous">
    <title>Contact</title>
</head>

<body>
    <header>
        <nav class="navbar navbar-expand-lg fixed-top navbar-dark navbars">    "navbars": Unknown word.
            <div class="container">
                <a class="navbar-brand logo" href="#">Portfolio President</a>
                <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarNav"
                    aria-controls="navbarNav" aria-expanded="false" aria-label="Toggle navigation">
                    <span class="navbar-toggler-icon"></span>
                </button>
                <div class="collapse navbar-collapse" id="navbarNav">
                    <ul class="navbar-nav ms-auto navbarss">    "navbarss": Unknown word.
                        <li class="nav-item">
                            <a class="nav-link" href="home.php">Home</a>
                        </li>
                        <li class="nav-item">
                            <a class="nav-link " href="About.html">About</a>
                        </li>
                        <li class="nav-item">
                            <a class="nav-link " href="history.html">History</a>
                        </li>
                        <li class="nav-item">
                            <a class="nav-link" href="portfolio.html">Portfolio</a>
                        </li>
                        <li class="nav-item">
                            <a class="nav-link active aktif" aria-current="page" href=" #">Contact</a>    "aktif": Unknown word.
                        </li>
                        <li class="nav-item">
                            <a class="nav-link" href="login.php">Login</a>
                        </li>
                    </ul>
                </div>
            </div>
        </nav>
    </header>
    <section id="contact">
        <div class="container">
            <div class="row text-center mb-3">
                <div class="col">
                    <h2>Contact Us</h2>
                </div>
            </div>
            <div class="row justify-content-center">
                <div class="col-md-6">
                    <form method="post">
                        <div class="mb-3">
                            <label for="nama" class="form-label tulisan">Nama Lengkap</label>    "tulisan": Unknown word.
                            <input type="text" class="form-control" id="nama" aria-describedby="nama"
                                name="nama_lengkap">    "lengkap": Unknown word.
                        </div>
                        <div class="mb-3">
                            <label for="pesan" class="form-label tulisan">Pesan</label>    "pesan": Unknown word.
                            <textarea class="form-control" id="pesan" rows="3" name="pesan"></textarea>    "pesan": Unknown word.
                        </div>
                        <button name="kirim" type="submit" class="btn  button">Kirim</button>    "kirim": Unknown word.
                    </form>
                </div>
            </div>
        </div>
    </section>
    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/js/bootstrap.bundle.min.js"
        integrity="sha384-C6RzsynM9kWDrMNeT87bh95OGNyZPhcTNXj1NW7RuBCsyN/o0jlpcV8Qyq46cDfL" crossorigin="anonymous">
    </script>
</body>

</html>
```

Figure 3.14. Script contact.php



```php
<?php
$koneksi = mysqli_connect('localhost', 'root', '', 'contact');    "koneksi": Unknown word.

if (isset($_POST['kirim'])) {    "kirim": Unknown word.
    $nama_lengkap = $_POST['nama_lengkap'];    "lengkap": Unknown word.
    $pesan = $_POST['pesan'];    "pesan": Unknown word.

    $insert = mysqli_query($koneksi, "INSERT INTO message (nama_lengkap, pesan) VALUES ('$nama_lengkap', '$pesan')");

    if ($insert) {
        echo '
    <script>
        alert("Terima kasih atas pesannya :)");    "Terima": Unknown word.
    </script>
    ';
    } else {
        echo '
    <script>
        alert("Yahh Gagal. Error: ' . mysqli_error($koneksi) . '");    "Yahh": Unknown word.
    </script>
    ';
    }
}
```

Figure 3.15. Script proses_contact.php

- Flowchart

Figure 3.16. Flowchart Contact Us

- Flowgraph

Node (N): 18 - Main HTML elements: html, head, meta, title, link, body, div (3), form, h2, input (2), label (2), button, p, a, script Edge (E): 19 - Opening and closing tags: html, head, meta, title, link, body, div (3), form, h2, input (2), label (2), button, p, a, script
- Tags with href attributes

Cyclomatic Complexity Calculation
- E = 19
- N = 18
- Cyclomatic Complexity = E - N + 2 = 19 - 18 + 2 = 3 The Cyclomatic Complexity of the HTML code is 3.

b. ***Black Box Testing***

Table 3.6. System Testing Components

No.	Testing Components	Test Scenario	Testing Type	Conclusion
1.	Login	Displays the login page, then the user is asked to fill in the username and password (for those who already have an account).	Black Box	[√]Successful [ ] Unsuccessful
2.	Register	Displays register, where users who do not yet have an account can create a new account.	Black Box	[√]Successful [ ] Unsuccessful
3.	Contact Us	Displays contact, where the user enters a name and message, as well as a send button if they want to send a message.	Black Box	[√]Successful [ ] Unsuccessful

Table 3.7. System Testing Scenario

No	Test Scenario	Expected Results	Testing Results	Conclussion
1.	Entering the wrong name and password on the login form	Can display an incorrect password or name alert	Successfully displayed an alert that the password and name were incorrect.	[√]Successful [ ] Unsuccessful

Implementation

This implementation stage displays the results of the design of the interface of the finished Interactive Biography Information System of the President of Indonesia. The following is a view of this system. The system used to develop the Indonesian President's Interactive Biography Information System uses PHP as a programming language with Visual Studio Code as the code editor, and MySQL database. The use of PHP as a programming language, Visual Studio Code as a code editor, and MySQL as a database provides reliable and efficient capabilities in this system. In developing the system interface, HTML, CSS, and JavaScript technologies are often used together in web development. HTML serves to build the structure and content of the page, while CSS is used to organize the visual appearance of the page. In addition, JavaScript plays a role in adding dynamic interactions and functions. By combining these three technologies, developers can implement the planned interface design. The use of HTML, CSS, and JavaScript is essential in developing a responsive and interactive interface, which allows users to navigate and interact with the president's biographical information easily and intuitively.

The implementation of this interface includes features such as an interactive map that shows important locations related to the president, a timeline that displays the president's life and career, and various multimedia content such as photos and videos. The user-friendly interface design ensures that users from all walks of life can easily access and understand the information

presented. In addition, with the application of responsive design techniques, the interface can be well accessed from various devices, including mobile phones, tablets, and desktops. Overall, this implementation stage ensures that the Indonesian President Interactive Biography Information System not only provides complete and accurate information, but also provides an optimal user experience through an interactive and user-friendly interface.

a. Home
Each president's profile contains information about his childhood, education, career and political journey. This information is presented in the form of text, images and videos to provide an interactive user experience.

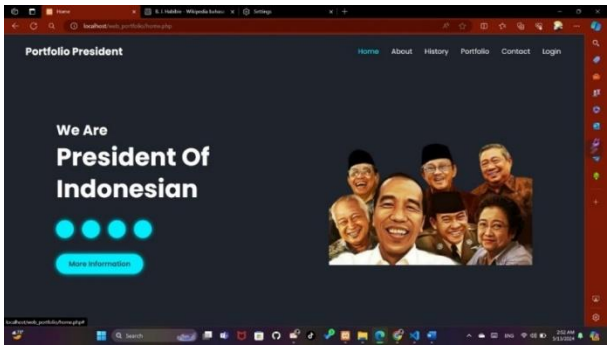


Figure 3.17. Home

b. About
This About page is to display about the information system developer members.

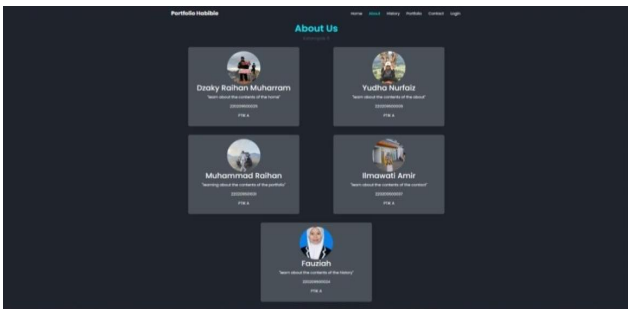


Figure 3.18. About

c. History
Displays the identity of each president, the term of office from time to time and the experience of each President of Indonesia.

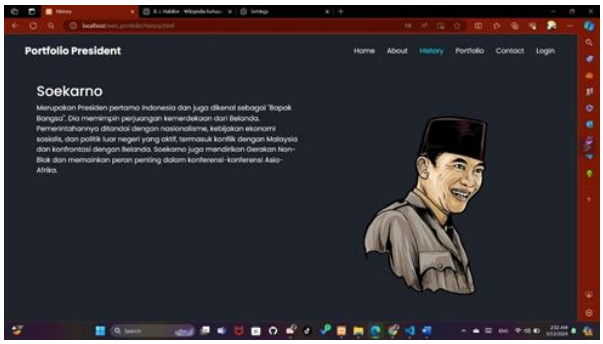


Figure 3.19. History

d. Portofolio
Presents information about the life journeys and contributions of Indonesian presidents, including Ir. Soekarno and Joko Widodo, which can be considered as history-related features.

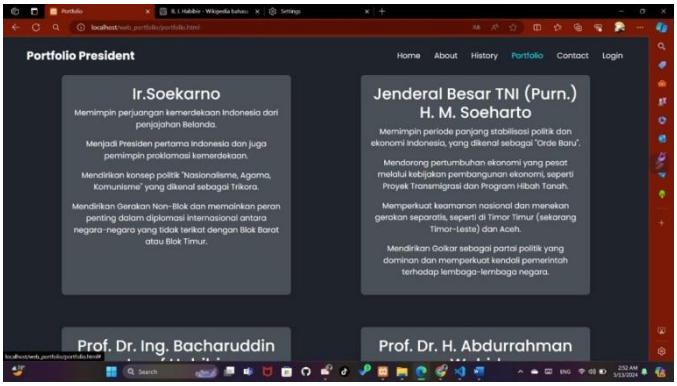


Figure 3.20. Portofolio

e. Contact Us
The Contact page in the Interactive Biography System of the President of Indonesia serves as a tool to send messages that have a name platform and the message itself.

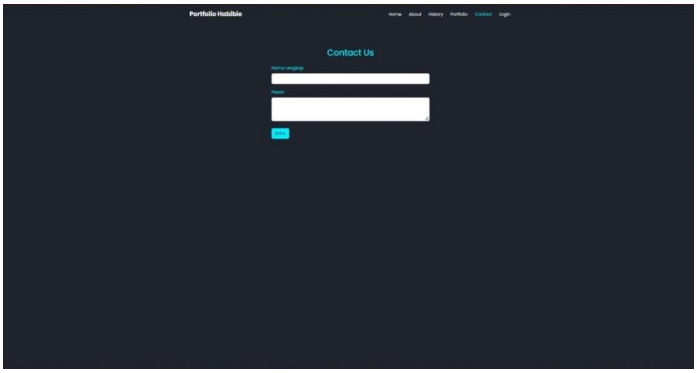


Figure 3.21. Contact Us

f. Login
Displays a login form where users must fill in the username and password that has been registered when registering to enter the Interactive Biography of the President of Indonesia website.

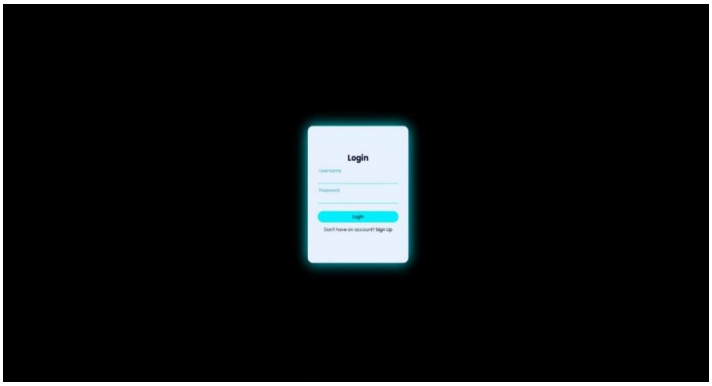


Figure 3.22. Login

g. Register
Displays a registration form to create an account in order to access the Indonesian President Biography Interactive website, where users must fill in a username, and password.

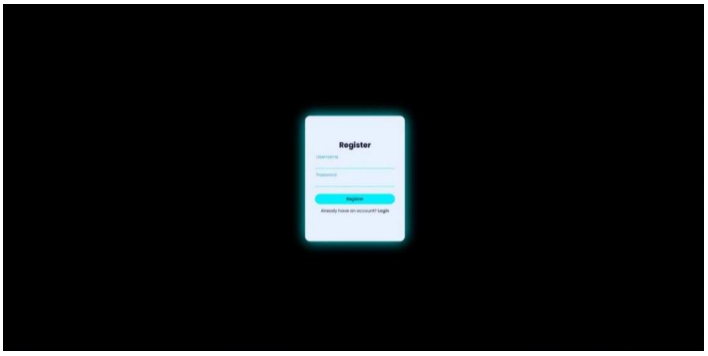


Figure 3.23. Register

Maintenance

Maintenance of the Indonesian President Interactive Biography System is an important aspect that ensures that the system continues to run properly, accurately, and relevantly over time. This maintenance includes several main activities that must be carried out regularly to maintain the performance and functionality of the system.

- First, content updates are a crucial element in system maintenance. Presidential biography information should be regularly updated to reflect the most recent and accurate data. This includes adding new relevant information, updating existing data based on the latest research, and correcting any errors or inaccuracies found. Multimedia content such as photos, videos and documents should also be updated to maintain the visual and informative appeal of the system.
- Secondly, technical maintenance should be performed to ensure the system functions optimally. This involves bug checking and fixing, software updates, as well as security upgrades. The use of Agile development methods allows the development team to quickly respond to technical issues and user feedback, ensuring the system remains responsive and secure. The implementation of strong security protocols, such as data encryption and two-factor authentication, is essential to protect user data from cyber threats.
- Third, periodic testing is part of the maintenance process to ensure all system features work according to specifications. This includes functional testing, usability testing, and performance testing. Functional testing ensures that each feature works as intended, usability testing ensures that users can access and use the system easily, and performance testing ensures that the system can handle high user loads without problems.
- Fourth, feature enhancement is part of a long-term strategy to maintain the relevance and appeal of the system. Based on feedback from users, the development team can add new features or enhance existing ones. For example, adding new interactive features, improving the interface, or integrating with social media platforms to increase user engagement.

- Fifth, continuous monitoring and evaluation is necessary to identify areas of improvement and assess the effectiveness of the system. The use of analytics tools to monitor system usage, collect data on user interactions, and analyze usage trends can provide valuable insights for further development. Periodic evaluation allows the team to assess whether the system's objectives are being met and whether there is a need for change or improvement.

By conducting comprehensive and structured maintenance, the Indonesian President Interactive Biography System can continue to function properly, provide accurate and relevant information, and provide an optimal user experience. Good maintenance also ensures that the system remains secure and able to adapt to technological developments and changing user needs.

CONCLUSSION

The development of the Interactive Biography System of the Indonesian President is an important step in utilizing information technology to document and disseminate the country's leadership history. The system is designed to provide comprehensive, interactive, and easily accessible biographical information on presidents to the public. Using reliable sources such as official documents and scholarly articles, as well as data validation through interviews with historians, the system presents accurate and valid information. The user-friendly interface, coupled with interactive map and timeline features, makes it easy for users to understand the historical context and contributions of the presidents. The system is also responsive and accessible on various devices, and uses Agile development methods to continuously adapt to user needs and feedback.

However, there are still some areas that could be improved, such as the addition of multimedia features (video and audio) to enrich the content and provide a more immersive experience. The system should also be continuously updated with the latest information to ensure data accuracy and relevance. Improved security through strong encryption and authentication, as well as the addition of biographical information of other important figures, such as vice presidents or national heroes, are also suggestions for development. In addition, opening communication channels for user feedback can help developers understand needs and issues that may not be apparent during the development phase, which in turn can improve the quality of the system.

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