REPUBLIK INDONESIA
KEMENTERIAN HUKUM DAN HAK ASASI MANUSIA

SURAT PENCATATAN

CIPTAAN

Dalam rangka pelindungan ciptaan di bidang ilmu pengetahuan, seni dan sastra berdasarkan Undang-Undang Nomor 28 Tahun 2014 tentang Hak Cipta, dengan ini menerangkan:

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Judul Ciptaan	:	**Paspor UMKM**
Tanggal dan tempat diumumkan untuk pertama kali di wilayah Indonesia atau di luar wilayah Indonesia	:	12 Juli 2022, di Tangerang Selatan
Jangka waktu pelindungan	:	Berlaku selama 50 (lima puluh) tahun sejak Ciptaan tersebut pertama kali dilakukan Pengumuman.
Nomor pencatatan	:	000359920

adalah benar berdasarkan keterangan yang diberikan oleh Pemohon.
Surat Pencatatan Hak Cipta atau produk Hak terkait ini sesuai dengan Pasal 72 Undang-Undang Nomor 28 Tahun 2014 tentang Hak Cipta.

a.n Menteri Hukum dan Hak Asasi Manusia
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THE APPLICATION OF "PASPOR UMKM" BLOCKCHAIN AND API TECHNOLOGIES TO CHECK CHICKEN MEAT HISTORY BASED ON THE SHARIAH

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SEMESTER IV

TECHNICAL REPORT

Bachelor of Information Technology

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ABSTRACT

THE APPLICATION OF "PASPOR UMKM" BLOCKCHAIN AND API TECHNOLOGIES TO CHECK CHICKEN MEAT HISTORY BASED ON THE SHARIAH

Using Blockchain and API Technologies that have been developed with React (JS and Native versions,) and Express JS, Paspor UMKM can make it easier for Muslim customers to buy chicken meat easily by scanning a QR code that lets them know how the chicken was cut, based on the Shairah. Though most people may know that chicken meat is not haram for Muslim believers, unlike pork, and other kinds of meat that are explicitly prohibited, how a chicken was cut in the slaughterhouse before reselling it at retailers could affect whether or not the meat is halal for Muslims to eat. Paspor UMKM provides the answer to this issue.

Other than the utility of React JS, React Native, Express JS and API technologies, this project utilizes the MySQL database to store details regarding the journey of the chicken meat.

AUTHOR'S STATEMENT

I hereby declare that this journal is an original work of my own creation to the best of my ability, and does not contain any previously published material or material that has been substantially accepted for awards at any educational institution, unless otherwise stated in the references.

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CHAPTER 1 - INTRODUCTION

1.1 Background

In Indonesia, Muslims constitute around 87 percent of the population. [1] Eating halal cuisine is mandatory for all Muslims, hence some foods, such as pork and even wild animals, are forbidden. However, many people are unaware that killing even ostensibly "halal" animals such as chicken and cattle without according to Islamic sharia can render the halal animals haram. There have been reports of farms using the Halal label without approval, and some of those farms do not even slaughter the animals in accordance with Sharia law.

1.2 Objective

To ensure that agricultural animals are slaughtered in accordance with Sharia, we would need to create a system that follows the chicken's path from the farm to the reseller. This ensures that farm animals are halal since we know their path and if there are any hiccups along the way, such as if they died before slaughtering or if they are butchered in a non-sharia-compliant manner.

1.3 Project Scope

Our project "Paspor UMKM" is targeted to tracking down the journey of chickens from the farm to the resellers. We will create a system using a database to record all the steps that the chicken is taking. These steps consist of the farm, then it continues at the slaughterhouse, then from the slaughterhouse, it continues to the vendor. One farm can sell the chickens to several slaughterhouses, and one of the slaughterhouses can sell the chicken pieces to several vendors. Some examples of vendors include supermarket franchises around the country and even the small sellers in the village. By using the "Paspor UMKM" technology that has been developed by this project, it would make any Muslim meat buyer to be at ease as they would be able to

track down the journey of the meat that they are buying, as it would be in accordance with their beliefs.

1.4 Project Limitation

Our project will only be limited to the journey of broiler chicken from the farm until the reseller. We will not record who bought the chicken from the reseller. We are also not making the system for other farm animals.

CHAPTER 2 - LITERATURE REVIEW

2.1 MySQL Database

MySQL Database is defined as an open-source relational database management system developed by oracle to allow users to create and manage databases by creating tables to store data and keys to create relations between different tables. [2] The Structured Query Language, or SQL, allows users to construct, manage, control, and query data. [3]

2.2 Relational Database Management System

Relational Database Management System (RDBMS) is a collection of programs that enables the user of the database to create, read, update, and delete items from the database. It is stored in the form of tables, with most RDBMS using SQL. RDBMS is the most widely used database system across the world because it provides a dependable method to retrieve and store large amounts of data. [4]

2.3 React JS

React JS is an open-source JavaScript library which allows users to build user interfaces more specifically for single-page applications. The programming language is based on JSX and was developed by Meta and the community. The user interfaces are based on UI components. React allows for developers to create large web applications that allow them to change data without having to reload the page. [5] The advantages of react compared to others are its speed, scalability and simplicity. Another key advantage of react is the ability to combine it with other JavaScript libraries or frameworks such as Angular JS.
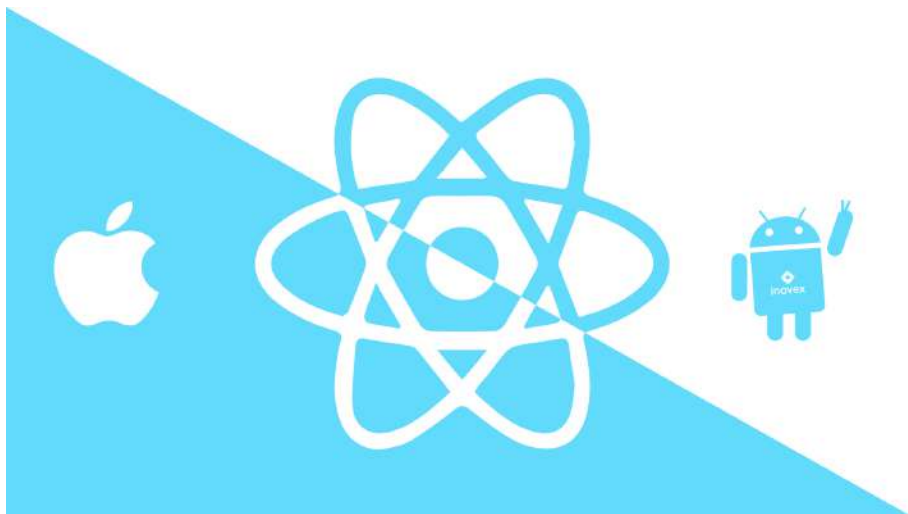
2.3.1 JSX
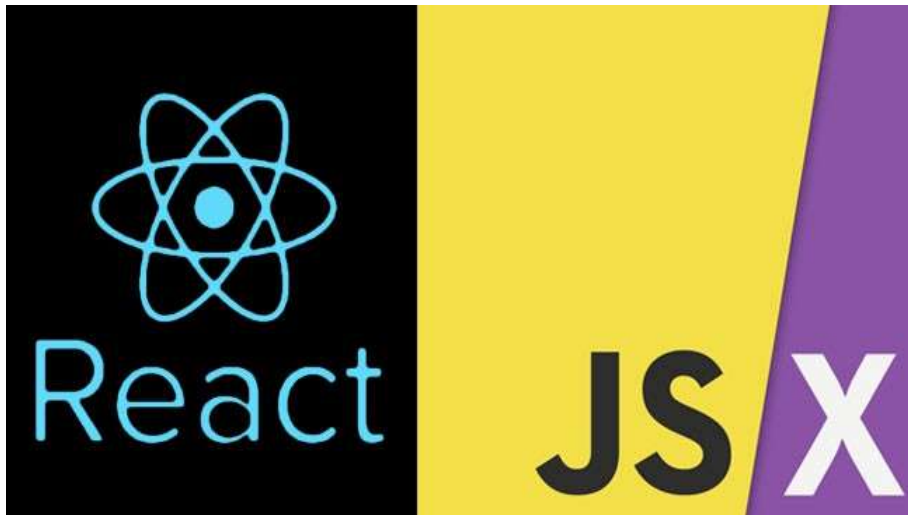
Figure 1: React JSX

JSX is a syntax extension to JavaScript that allows HTML quoting and uses the HTML tag syntax to render subcomponents. JSX makes it easier for developers to write and add HTML to React. [6]

2.3.2 React Native

Figure 2: React Native

React Native

React Native (also known as RN) is a popular JavaScript-based mobile app framework that lets you create native-looking iOS and Android apps. The framework allows you to use the same codebase to develop applications for several platforms. [8]

2.3.3 Single-Way Data Flow
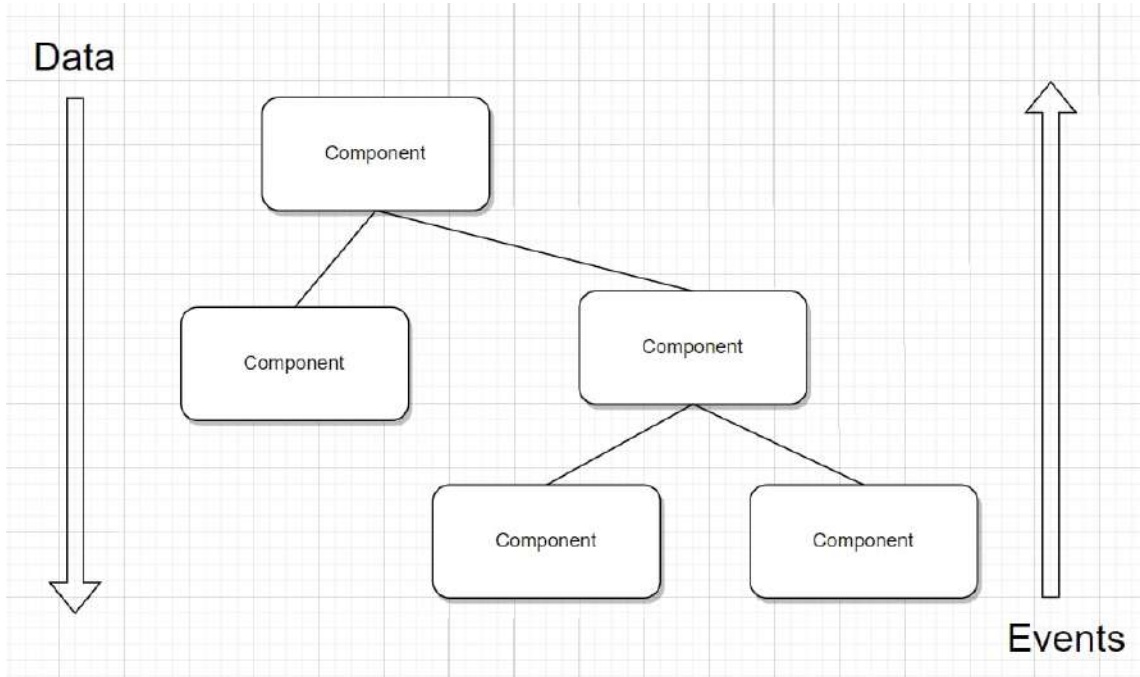
Figure 3: Single-Way Data Flow

When using React, there is a set of immutable values that are passed to the component's renderer as properties in the specific HTML tags. These components cannot directly modify any properties but what is allowed is passing a callback function which can allow us to do modifications. The complete process is commonly known as "properties flow down; actions flow up".

2.4 Express JS

Figure 4: Express JS

Express.js is a Node.js web application framework that is free and open-source. It is used to rapidly and simply design and create web apps. Web applications are applications that run on a browser. Because Express.js simply requires javascript, programmers and developers may quickly and easily create web apps and APIs. The majority of the code is already developed and ready for programmers to use. Express.js may be used to create single-page, multi-page, and hybrid web applications. Express.js is a lightweight server-side framework that aids in the organization of web applications into a more ordered MVC architecture. [7]

2.4.1 Node JS

Figure 5: Node JS

The Node.js application operates in a single process, rather than establishing a new thread for each request. Node.js' standard library includes a set of asynchronous I/O primitives that prevent JavaScript code from blocking, and libraries in Node.js are often created following non-blocking paradigms, making blocking behavior the exception rather than the rule. When Node.js conducts an I/O action, such as reading from the network or accessing a database or filesystem, instead of pausing the thread and wasting CPU cycles waiting for the response, Node.js will restart the operations when the response is received. This enables Node.js to handle thousands of concurrent connections with a single server without incurring the load of thread concurrency management, which might be a substantial cause of errors. [9]

CHAPTER 3 - SYSTEM DESIGN

3.1 System Design
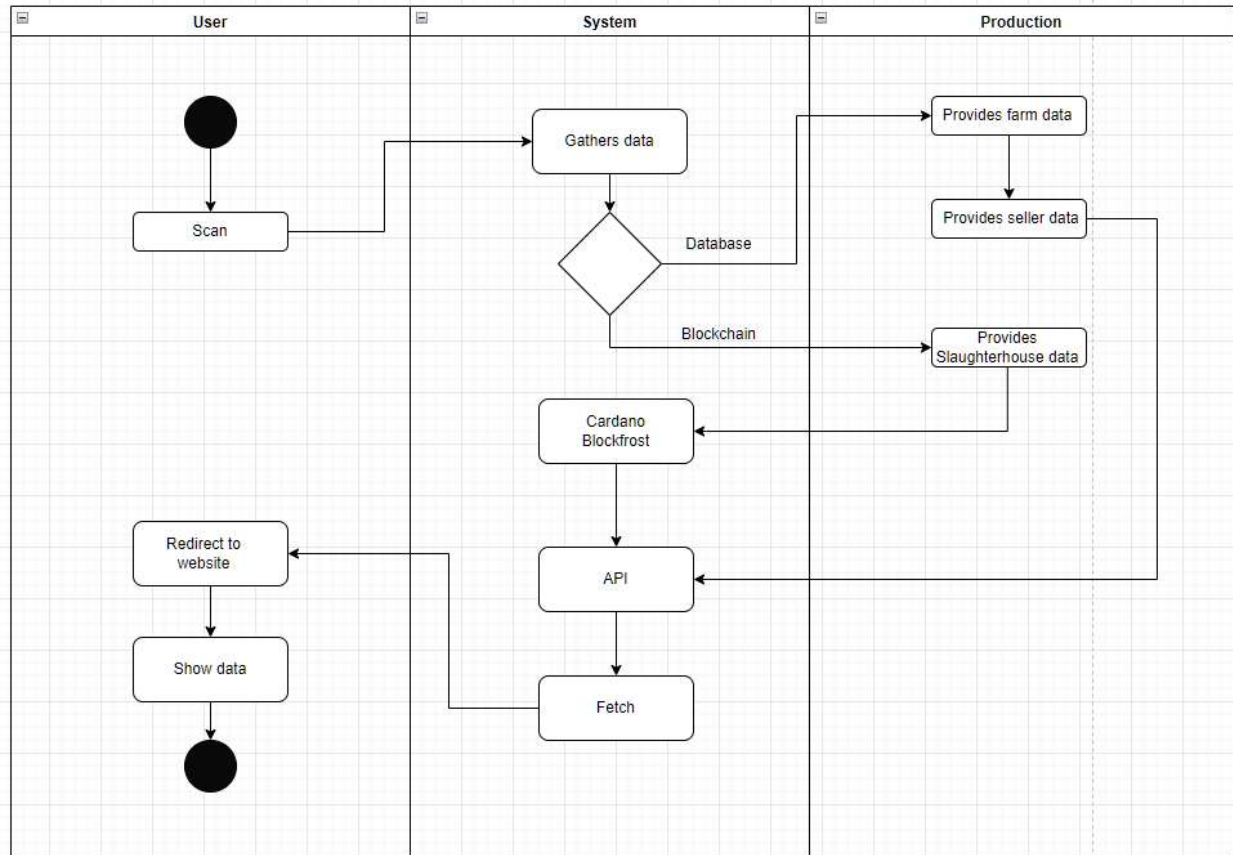
Figure 6: Activity Diagram

This activity diagram depicts how the user interacts with the Paspor UMKM system. The user will scan the barcode in the chicken broiler, and the system will pull data from the database and the blockchain. The database and the blockchain contain information from the farm, the vendor, and the abattoir. The slaughterhouse data is in the form of blockchain and will be uploaded to Cardano Blockfrost, while the farm and sale data is saved in a database. Both sets of data will be submitted to an API, which will then fetch and redirect the user to the website, which will then be displayed to the user.

3.2 Entity Relationship Diagram
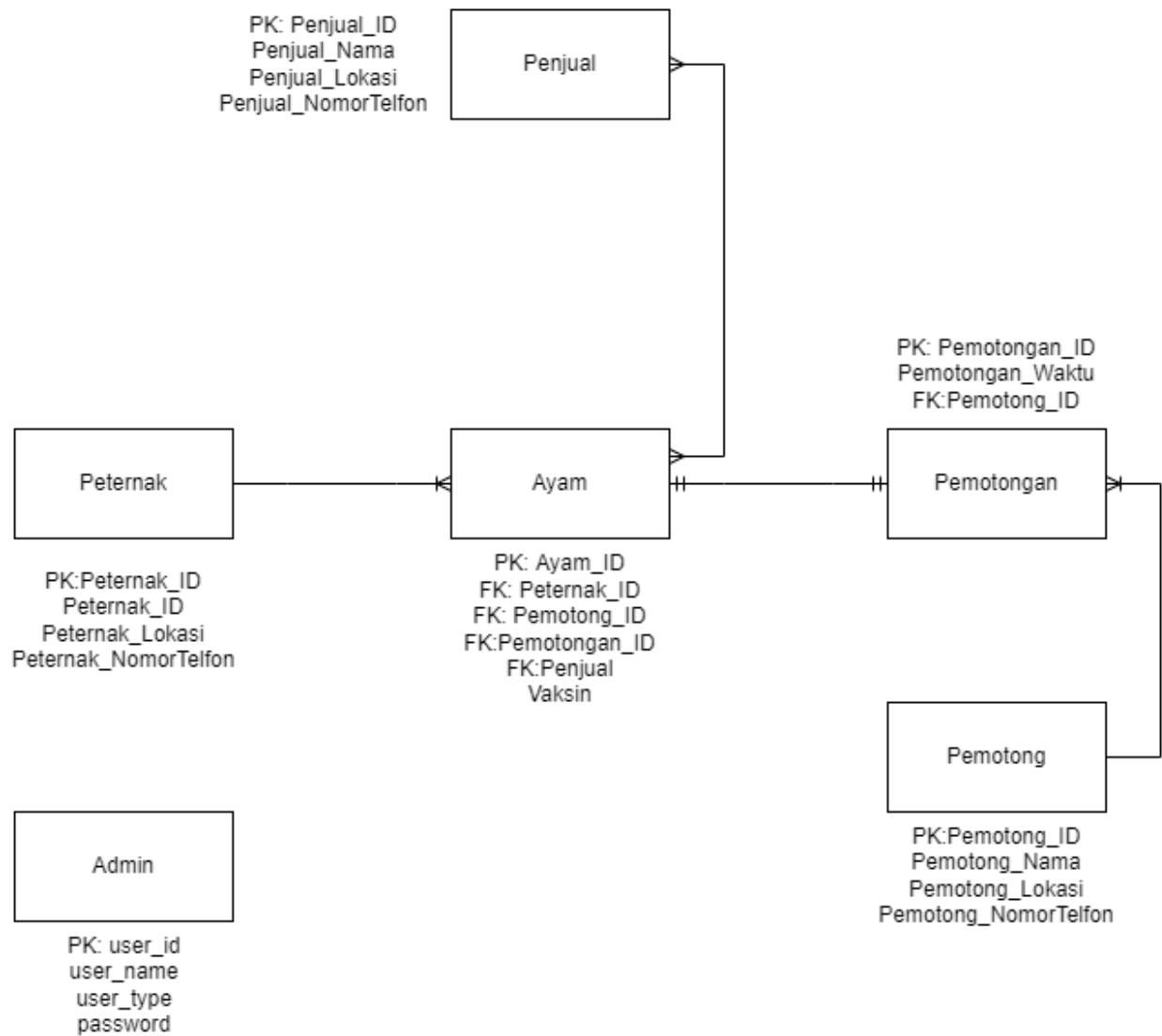
Figure 7: Entity Relationship Diagram

The database is relatively simple, with the project only having 5 tables. The tables that are kept are named "Penjual (*Eng: Seller*)," "Peternak (*Eng: Chicken Keeper*)" , "Ayam (*Eng: Chicken*)," "Pemotongan (*Eng: Cutting Process*)," and "Pemotong (*Eng: The Cutter*)." As shown by the connections on the table, the database is a relational database stored in SQL.
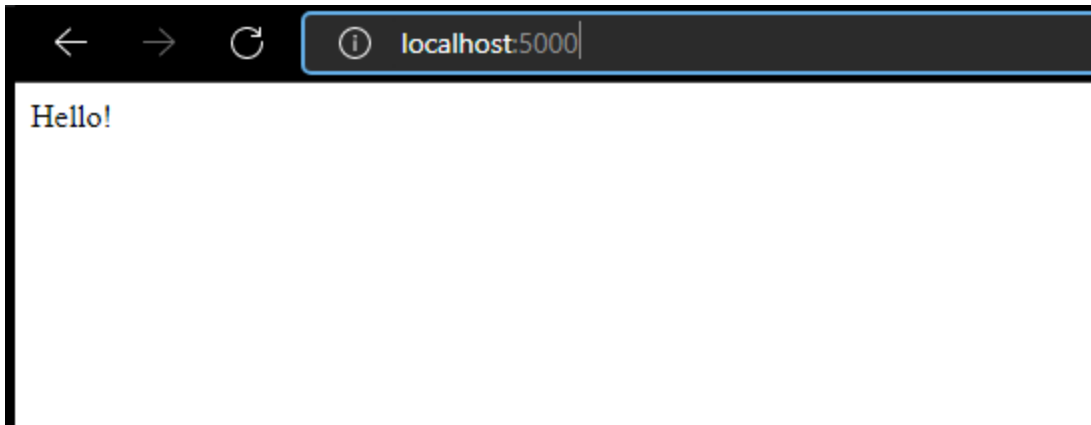
3.3 Use-Case Diagram
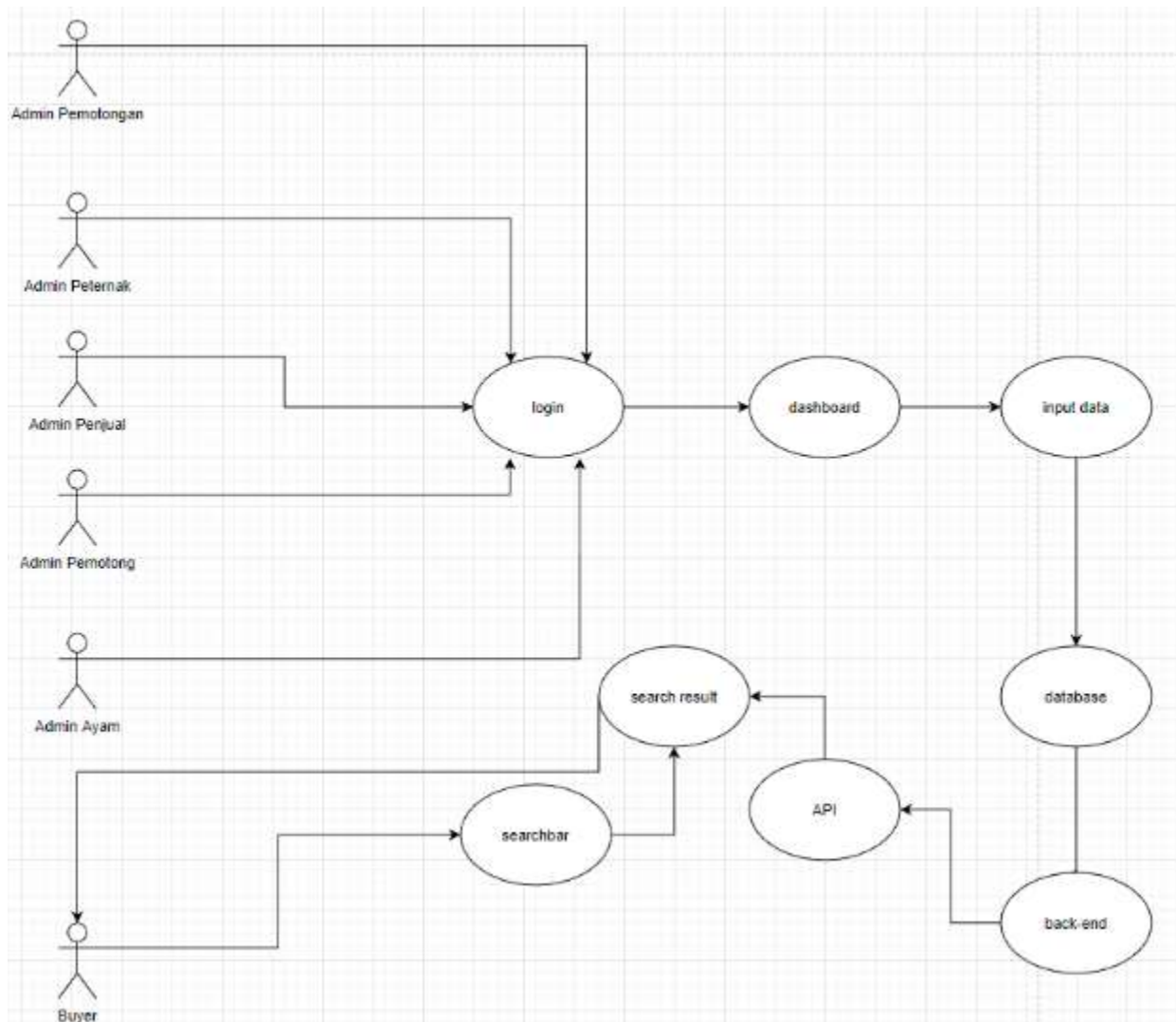
Figure 8: Use-Case Diagram

Above is the Use-Case Diagram for the Paspor UMKM project. It shows the flow of interaction between the different admins, the buyers, and even the databases.
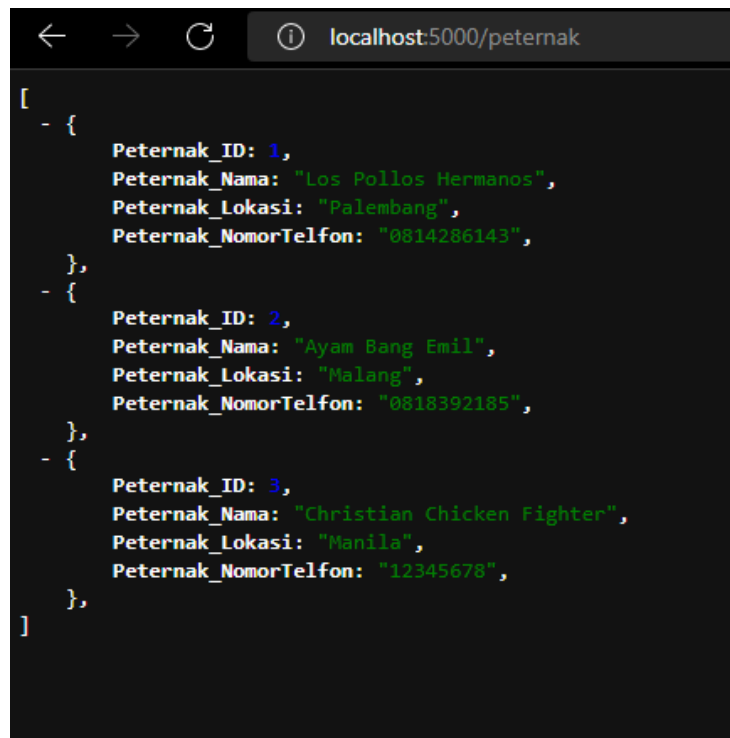
3.4 Screen Layout Design

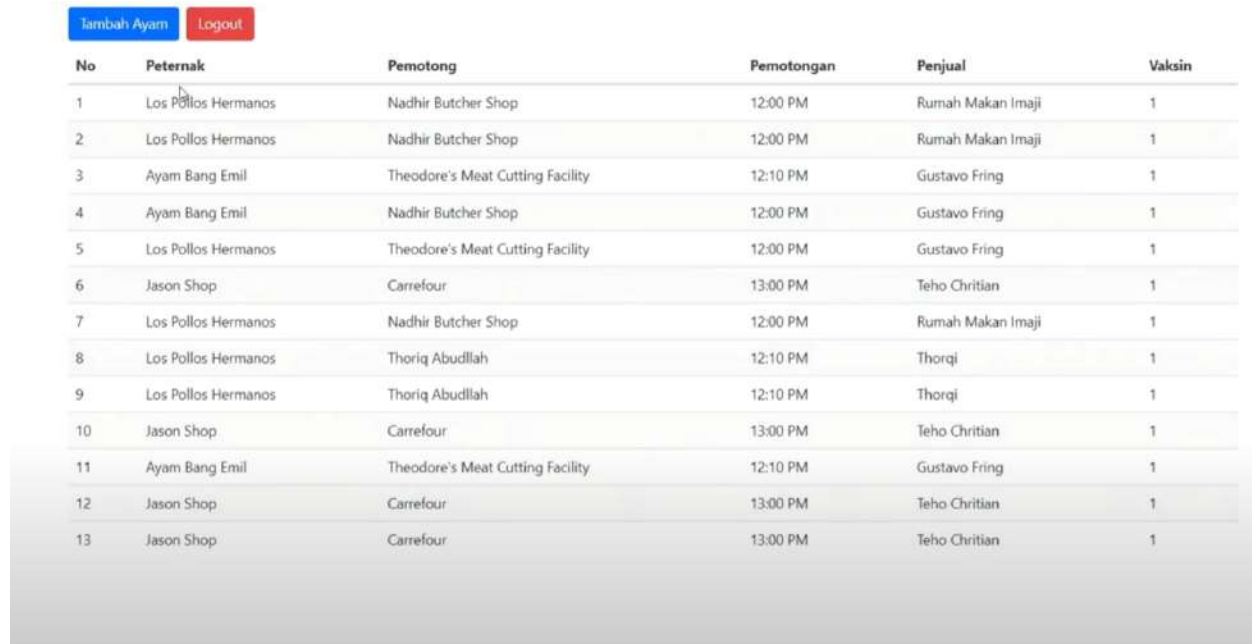*Figure 9: Testing localhost:5000 (Back-End)*

The database of the project is located on localhost:5000. However, when you just type down localhost:5000, it will just say hello as it's the way to test if the database is up. If you want to check for the databases, you can add a "/peternak", "/ayam", etc. to check the data inside the database.

Figure 10: Testing localhost:5000/peternak

Figure 11: Testing localhost:5000/ayam

Above are the examples of testing the "/peternak" and "/ayam" databases using the localhost:5000 page. It will show the data's JSON on the page as expected.

No	Peternak	Pemotong	Pemotongan	Penjual	Vaksin
1	Los Pollos Hermanos	Nadhir Butcher Shop	12:00 PM	Rumah Makan Imaji	1
2	Los Pollos Hermanos	Nadhir Butcher Shop	12:00 PM	Rumah Makan Imaji	1
3	Ayam Bang Emil	Theodore's Meat Cutting Facility	12:10 PM	Gustavo Fring	1
4	Ayam Bang Emil	Nadhir Butcher Shop	12:00 PM	Gustavo Fring	1
5	Los Pollos Hermanos	Theodore's Meat Cutting Facility	12:00 PM	Gustavo Fring	1
6	Jason Shop	Carrefour	13:00 PM	Teho Chritian	1
7	Los Pollos Hermanos	Nadhir Butcher Shop	12:00 PM	Rumah Makan Imaji	1
8	Los Pollos Hermanos	Thoriq Abudllah	12:10 PM	Thorqi	1
9	Los Pollos Hermanos	Thoriq Abudllah	12:10 PM	Thorqi	1
10	Jason Shop	Carrefour	13:00 PM	Teho Chritian	1
11	Ayam Bang Emil	Theodore's Meat Cutting Facility	12:10 PM	Gustavo Fring	1
12	Jason Shop	Carrefour	13:00 PM	Teho Chritian	1
13	Jason Shop	Carrefour	13:00 PM	Teho Chritian	1

Figure 12: Testing localhost:3000 (Front-End)

Above is the image of the localhost:3000 page, where the Front-End is located. It shows the data of "Penjual" in the image as an example, and the users can see the ID number, name, location and the phone number of the sellers.
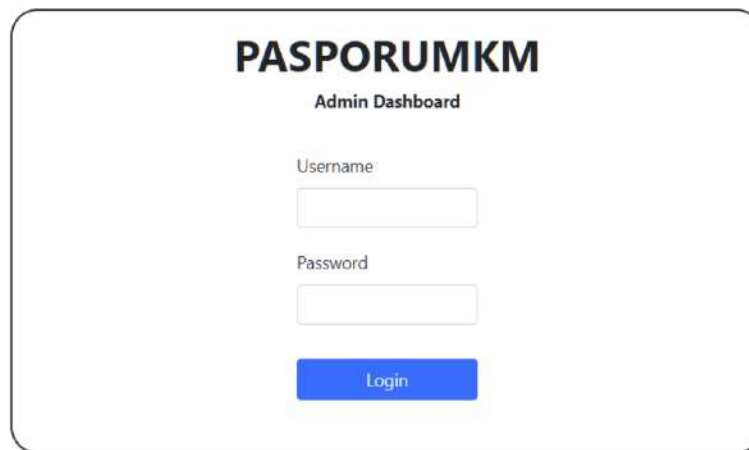

Figure 13: localhost:3000/addpenjual

The screenshot above shows the page that appears when you click the button that says "Tambah Penjual." It allows the users to add more sellers into the database in a more user-friendly way. They would just have to fill in the form that asks for name, location and phone number, then they can click add to add a new seller.


Figure 14: Admin Dashboard Login

Paspor UMKM also has an Admin Dashboard login feature so that Paspor UMKM can authenticate those who access the website. The authentication feature includes the authentication of the username and password that the user enters into the text boxes. If they match the ones that have been stored in the database, then the Admin would be able to enter the rest of the website and use the features that have been created for their advantage.
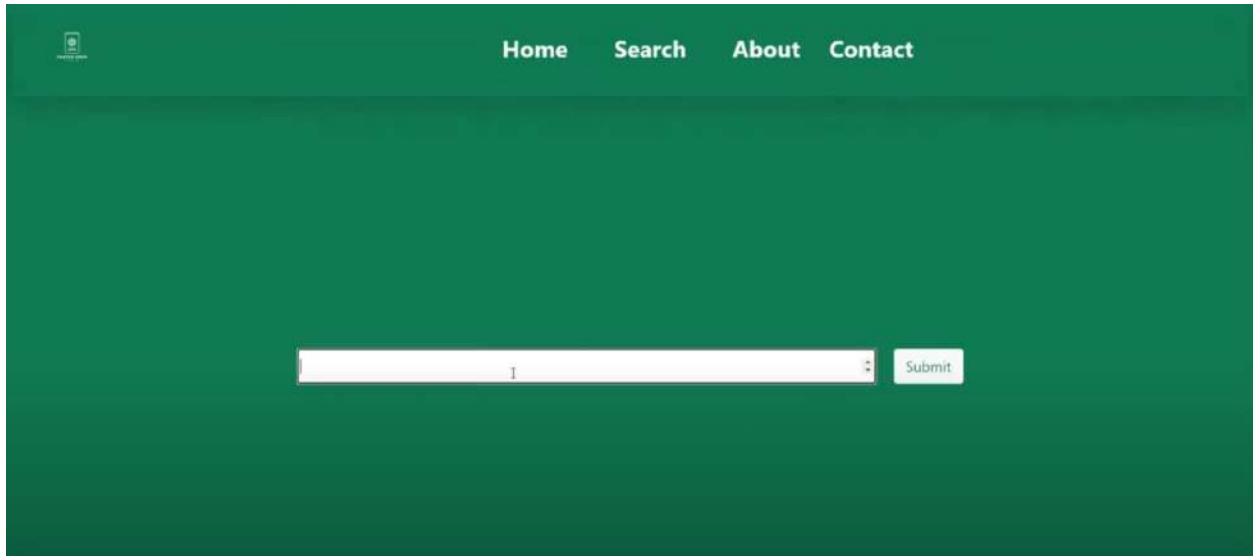
Figure 15: Chicken ID Search Bar

Once the admin has entered the web with the correct credentials, then one of the features that they would be able to use is the Chicken ID Search Bar. The admin will be given the ability to search all the chickens in the database according to their ID, and their information will pop up on the screen.
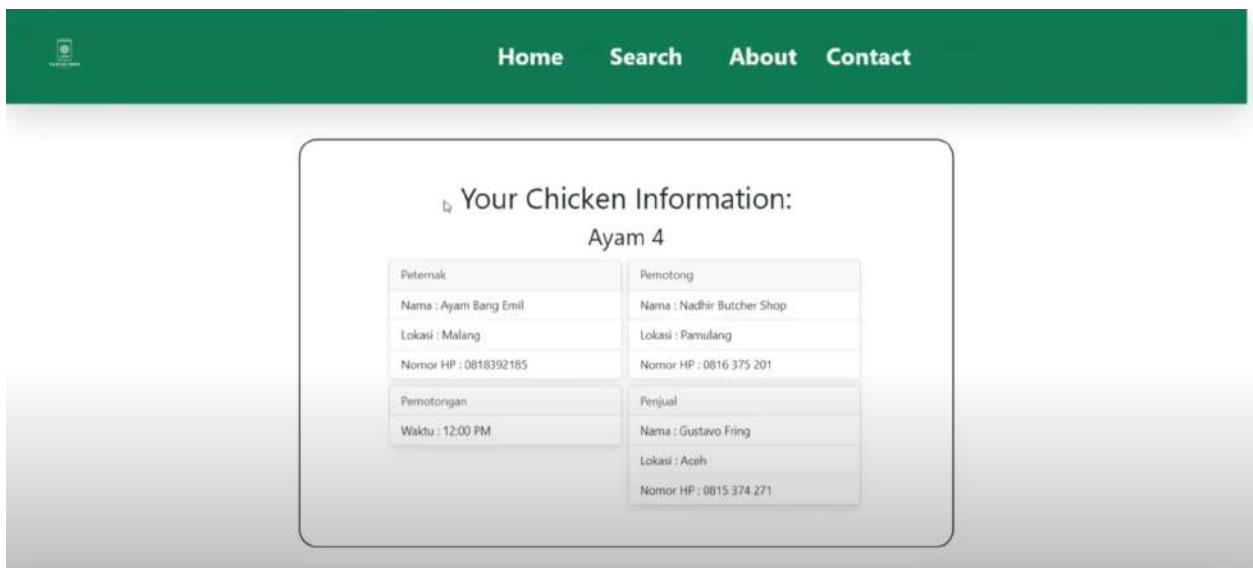
Figure 16: Chicken Information Page

The chicken's information will be shown to the Admin like the above picture. It includes the chicken's original caretaker, the person who has cut the chicken, and the seller that is selling the chicken. It even includes the time of slaughter for the chicken.

Figure 17: Landing Page (1)

Figure 18: About Section on Landing Page (2)

Figure 19: About Section on Landing Page (3)

The landing page of Paspor UMKM uses the color green, as green is heavily associated with Muslims and the Shariah rule, especially in Indonesia. This is because in the Muslim Al-Quran, the Verse 31 of Surah Al-Kahf describes the splendor of paradise's unique landscape and its people, who dress in green. Because of this, the connotation of the color green in Islam includes descriptions of cooling, fertility, and beauty. [11] A lot of logos in Indonesia that are related to Muslim goods are often colored green as well.

The landing page of Paspor UMKM has a navigation bar that can take its users anywhere around the product. It has "Home," that takes the users back to the top of the page, and then "Search," which takes the users to the search bar that allows them to look for a chicken's ID, "About," that takes the users to a simple explanation of what is Paspor UMKM, and a "Contact" page that allows users to access the contact information of the company.

CHAPTER 4 - CONCLUSION AND FUTURE WORKS

Paspor UMKM may make it simpler for Muslim clients to buy chicken meat by scanning a QR code that tells them how the chicken was sliced according on the Shairah, using Blockchain and API Technologies created using React (JS and Native versions,) and Express JS. All information on the chicken, resellers, slaughterhouses, and other details is stored in the MySQL RDBMS Database. There are several ways that ExpressJS, ReactJS, and NodeJS interact. NodeJS's request processing is made simpler via ExpressJS, and ReactJS handles the front end.Though most people understand that chicken flesh is not haram for Muslim believers, unlike pork and other types of meat that are officially forbidden, how a chicken was slaughtered before being resold at stores might effect whether or not the meat is halal for Muslims to eat. Paspor UMKM offers a solution to this problem by creating a web-based app.

The database is located on localhost:5000, and the front-end is located on localhost:3000. The project's database may be accessible at localhost:5000. However, if you just type in localhost:5000, it will only say hello since that is the technique to see if the database is up and running. If you wish to check for databases, use "/peternak", "/ayam", and so on to verify the data inside the database. On the other hand, The localhost:3000 page is the page that contains the Front-End view. As an example, it displays the data of "Penjual" in the image, and consumers can see the ID number, name, location, and phone number of the merchants. This also applies to all the other pages of the website, even for the chickens, slaughterhouses and the time of cutting can be displayed on the website in an easy-to-read way, not in the form of the JSON.

Due to time constraints, we were unable to apply Blockchain technology directly in the project. If the authors were to be given another chance in the future after gathering more information and experience on how to apply them on a website, then that will be a future work that can be set as a goal for the Paspor UMKM team of Swiss German University's IT department.

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Assignment Letter / Surat Tugas

No. : AL/ARCS/1072-1/II/2022
Date : February 01st, 2022
Page : 1 of 1
Doc. Type : Main Document/*Dokumen Utama*

James Purnama, M.Sc

Activity Assignment	***Penugasan Kegiatan***

Director of Academic Research and Community Services Department

In consideration of:
His appointment as Director of Academic Research and Community Services of Swiss German University under Decree no. SK/020/HR/XI/2019, November 13rd, 2019

Herewith gives the task to:

Name : James Purnama, M.Sc
Position : Team Leader
NIDN : 0418017702

Direktur Departemen Penelitian Akademik dan Pengabdian Masyarakat

Mengingat:
Pengangkatannya sebagai Direktur Dept. Penelitian Akademik dan Pengabdian Masyarakat dengan SK pengangkatan SK/020/HR/XI/2019, 13 November 2019

Dengan ini menugaskan kepada:

Nama : James Purnama, M.Sc
Jabatan : Team Leader
NIDN : 0418017702

To follow the activities below:

Untuk mengikuti kegiatan di bawah ini:

No	Activity	Organizer by	Date Period
1.	Submission of Research Proposal to DIKTI year 2016 with the tittle: "*Traceability Smart Contract Blockchain dan Big Data Analytics pada proses Pengembangan Platform Digital PasporUMKM Untuk membantu UMKM Memenuhi Program Pemerintah Wajib Sertifikasi Halal*"	Kemendikbud Ristek	the latest proposal submission on February 18th, 2022

The appointed shall accomplish the task in responsible ways in line with the related guidelines and other regulations given by SGU.

Pihak yang bersangkutan harus melaksanakan tugas dan tanggung jawab sebaik-baiknya, sesuai dengan petunjuk dan peraturan dari SGU.

Assignor/*Pemberi Tugas:*

Kholis A. Audah, M.Sc., Ph.D
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