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Information System for Industrial Mapping at the Industrial Department in Samarinda City

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Abstract-The progress and development of increasing data demand human progress to become someone more advanced. So that everything related to data and information will be more structured and transparent if it is carried out and processed using information technology, including in government agencies. The Department of Industry of Samarinda City always collects data. the existence of industry in the city of Samarinda every year experiences data development and changes. The obstacle is that every industrial data collection was done manually and the officers finding the location of the industry had to contact the village office while not all industries were recorded in the village data. This study uses data collection methods, namely interview and observation methods. The result of this research is an industrial mapping information system at the Industrial Office of Samarinda City based on Android that can be used to help officers find out the distribution of industrial location points in Samarinda City and make it easier for users to find out industrial location routes.

Keywords-Industry, Information System, City of Samarinda, Mapping, Android

I. INTRODUCTION

The progress and development of data are increasingly for human progress to become someone more advanced. So that all things related to data and information will be more efficiently structured and transparent if done and processed using information technology, including in government agencies.

The Samarinda City Industry Office is a government agency, having its address at Graha Ruhui Rahayu Building, Jalan Juanda No. 81, Kota Samarinda Kota. The Department of Industry has the Metal, Machinery, Engineering, Electrical, Transportation, and Miscellaneous Industries, one of which is to record the presence of Industry in the City of Samarinda. Every year the Industrial Office of Samarinda City always collects data (Perindustrian, 2022).

The obstacle faced is that every data collection in the industry is still done manually, such as using journals and recording on the form. The second obstacle is that the officers have difficulty identifying the industries surveyed and not yet surveyed, and the officers find the location of the industries so they have to contact the village office while not all industries are recorded in the village data. The purpose of this study is to determine the distribution of industrial location points in the city of Samarinda, to make it easier for users to know the route of the industrial location, and to design and create a mapping information system that is used to manage industrial data from industrial office (Susena et al., 2019).

The expected result in this final project is to build a system application that can make it easier for officers to obtain information about various industries along with industrial location data in Samarinda City.

II. LITERATURE REVIEW

According to research conducted by Maita and Nurhah (2018), entitled "Android-Based Application for Mapping the Distribution of Small and Medium Industries in Pekanbaru". It is easy and makes it easy to report any developments based on the turnover obtained. The results of this study are that the presence of an Android-based application makes it easier for people to report and see the distribution in Pekanbaru City.

In the research of (Wilda, 2020) with the title " Mapping of small and medium-sized industries using a Web-Based Geographic Information System in Tanjungbalai City ". This system can display the location various industries accompanied by information related to these industries. This is aimed at making it easier to find out the growth of small and medium industries in Tanjungbalai City as well as assisting the Tanjungbalai City Trade and Industry Office in taking routes and distances for mapping small and medium industries. The results of this research are that this application can make it easier for users to find the location of the distribution of small and medium industries in Tanjungbalai City and display information related to small and medium industries in Tanjungbalai City.

Research conducted by Amelia Fadhila (2017), entitled Development of a Web-Based Geographic Information

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System for Mapping the Distribution of Micro, Small and Medium Enterprises (UMKM) in Blitar Regency. The purpose of this research is to map the distribution of Micro, Small, and Medium Enterprises in Blitar Regency which aims to assist the community in promoting the marketing and publication of the distribution of Micro, Small and Medium Enterprises (UMKM) using WebGIS and as an inventory for the Department of Industry and Trade, Cooperatives and Micro, Small and Medium Enterprises (UMKM), Agency Regional Planning and other related agencies in Blitar Regency, as well as establishing community involvement through the existence of the Web. The results of this research are showing 45 points of distribution of Micro, Small and Medium Enterprises (UMKM) and information through Google Maps online maps.

Research conducted by Nella Rosa Sudianjaya (2016), entitled Geographic Information System for Micro, Small and Medium Enterprises (UMKM) as a Web-Based Mapping, Promotion and Marketing Media in Mataram City. Aims to build a geographic-based information system as a mapping media, promotional media, marketing media, and web-based ordering of UMKM products in Mataram City. The results of this study are that this system provides facilities to find out UMKM in Mataram City by features geographic information, provides various information about the world of UMKM, becomes a means of promoting UMKM in Mataram City, assisting entrepreneurs as e-commerce marketing media, and becoming a medium between UMKM and consumers for ordering facilities.

Research conducted by Deo Marta Dipayana (2020) from Informatics Engineering, Faculty of Engineering, University of Mataram conducted study in 2020 entitled Design of a Web and Android-Based Geographic Information System for Mapping Small and Medium Industries in Mataram City. The results of this study are that the application can provide information about the distribution of locations in the city of Mataram in real-time so that it can make it easier for both the community, owners, and the Department of Industry to obtain the information needed, make it easier for owners to register what they have with the Department of Industry and helps users to be able to find suggestions for the closest route that can be taken to get to a place.

A. System

According to Arif Setiawan (2021), Understanding a goal system is a group of elements that are integrated with the same goal to achieve. The organization consists of several humans, materials, machines, money, and information resources. These resources work together towards achieving a certain goal determined by the owner or management.

B. Information

According to Wilda (2014), information is data that has been processed to reduce uncertainty about a situation or event. Information can also be defined as the result of processing data in a form that is more useful and more meaningful to the recipient which describes a real event that is used for information system decision-making.

C. System Information

An information system is a system within an organization that brings together daily transaction processing needs, supports managerial operations and strategic activities of an organization and provides certain outside parties with the necessary reports (Solihin & Fuja Nusa, 2017).

D. Industry

The industry is a collection of similar businesses producing the production of goods and services. The industry is all human activities in the economic field that are productive or produce goods and money (Julianto, 2016). According to the Law of the Republic of Indonesia in 1984, Article 1 concerning industry states that industry is: "Economic activities that process raw materials, raw materials, semi-finished goods, or finished goods, or finished goods into goods of higher economic value for their use, including design activities. building and industrial engineering." (Indonesia, P.R.,& Indonesia, 1984). Meanwhile, according to the Central Statistics Agency (Badan Pusat Statistik, n.d.), the definition of industry is a process of changing basic materials into finished goods from goods of less value to being of higher value with the intention of part or all of the results being sold or obtaining income or profit. So it can be concluded that the definition of industry is a collection of various similar activities and production goods or services by using labor and other equipment to change goods so that they can have a higher economic value in their use. Classification of the Industrial Sector The industrial sector can be classified into several types, but the main industrial sector is divided into three, namely large industry, medium industry, and small industry as follows:

a) Large industry

A large industry itself can be interpreted, namely an industry with a workforce of more than 100 people. The characteristics of a large industry are that it has large capital which is collected collectively in the form of stock maintenance, the workforce must have special skills, and the company's leaders are selected through a fit and proper test.

b) Medium industry

The medium industry is an industry that uses a workforce of about 20 to 99 people. The characteristics of the medium industry are that they have sufficient or moderate to large capital, while workers with certain skills and company leaders have certain managerial abilities.

c) Small industry

Industries where the number of employees or workforce is between 5-19 people. Capital is relatively small because capital is provided by an owner or a small group of capital owners, the workforce comes from the surrounding environment or there are still relatives.

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E. Google Maps Application Programming Interface (API)

According to Triansah (2016), Google Maps is currently a popular web-based mapping service. Users can add Google Maps services to a website using the Google Maps Application Programming Interface (API). The Google Maps Application Programming Interface (API) can be added to a website using JavaScript. The Application Programming Interface (API). provides many facilities and utilities to take advantage of maps and add content to maps through various services, enabling users to create powerful map applications on a website. However, to be able to access Google Maps, the user must first register an Application Programming Interface (API) key with registration data in the form of a web domain name that we built.

F. XAMPP

Xampp is an application that can turn our computer into a server. Xampp's usefulness is to create your local network in the sense that you can create websites offline for trial and error on your computer. So the function of the Xampp server itself is our website server for how to use it. It is called a server because in this case, the computer that we will use must provide services to access the web, and for that our computer must be a server. It can be concluded that XAMPP is an application tool to provide software packages that contain configurations for Web Server, Apache, PHP, and MySQL to help us in the process of making web applications that are integrated into one so that it is easier for us to create web programs. (Josi, 2017).

G. Android Studio

Android Studio is an Integrated Development Environment (IDE) for Android Development that was introduced by Google at the 2013 Google I/O event. Android Studio is an extension of the Eclipse Integrated Development Environment (IDE) and is based on the popular Java Integrated Development Environment (IDE), IntelliJ IDEA. Android Studio is the official Integrated Development Environment (IDE) for Android application development. With the development of Eclipse, Android Studio has many new features compared to Eclipse Integrated Development Environment (IDE) (Yati, 2018)
.

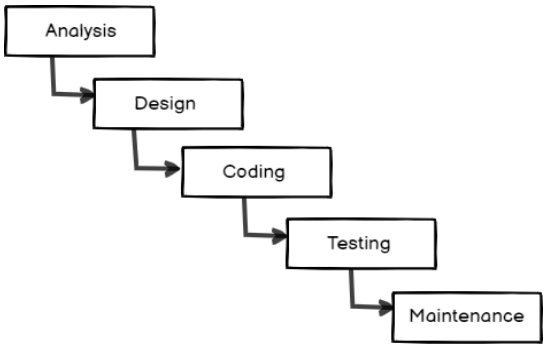
H. Unified Modeling Language (UML)

Unified Modeling Language is the "language" that is becoming the industry standard for visualizing, designing, and documenting software. Unified Modeling Language (UML) offers a standard for designing models of a system. Unified Modeling Language (UML) is a substitute for object-oriented analysis and object-oriented design (OOAD&D/object oriented analysis and design) methods which were introduced around the late 80s and early 90s. Unified Modeling Language (UML) is a combination of the Booch, Rumbaugh and Jacobson methods. But Unified Modeling Language (UML) covers a wider range than object oriented analysis and design (OOAD). In the middle of the development of Unified Modeling Language (UML), standardization of the process was carried out with Object Management Group (OMG) with the hope that Unified Modeling Language (UML) would become the standard modeling language in the future which is now widely used by various groups of people (Kurniawan et al., 2021).

III. RESEARCH METHODS

A. Research Procedure

The research method used is the waterfall model. The research method is the steps that will be taken by the author to make it easier to conduct research can be seen in picture 1.



Picture 1. Waterfall Model

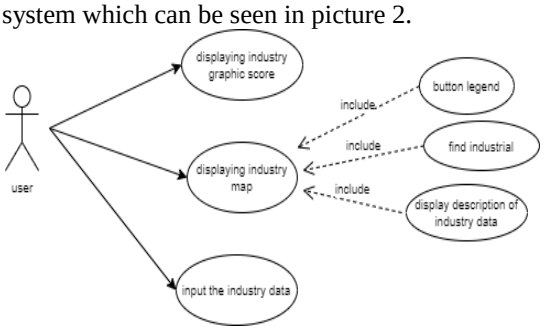
Description:

1. Analysis

In the early stages of developing this application, two diagrams were used, namely Use Case Diagrams and Class Diagrams. The following is an overview of each diagram:.

1) Use Case Diagram

According to Tabrani and Aghniya (2020), concluded that use cases are a collection of several things that are interrelated and form a system regularly carried out by an actor. The following is a use case diagram design for this system which can be seen in picture 2.



Picture 2. Use Case Diagram

2) Activity Diagram

According to Tabrani and Aghniya (2020), activity diagram is a modeling performed on a system and describes the system activities that are currently running. Activity diagrams are used as an activity explanation program without looking at the coding or appearance. It can be seen in Picture 3.

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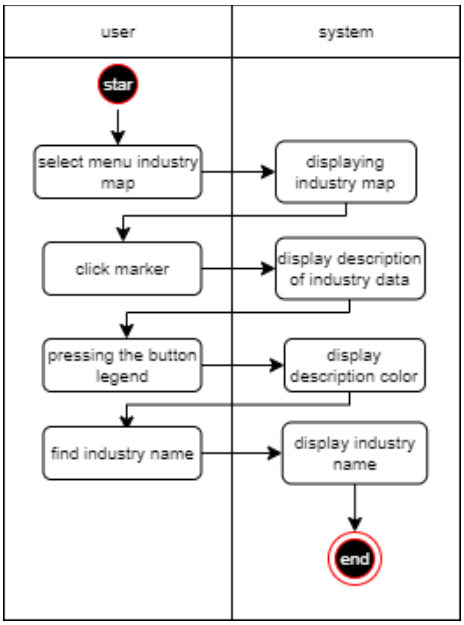
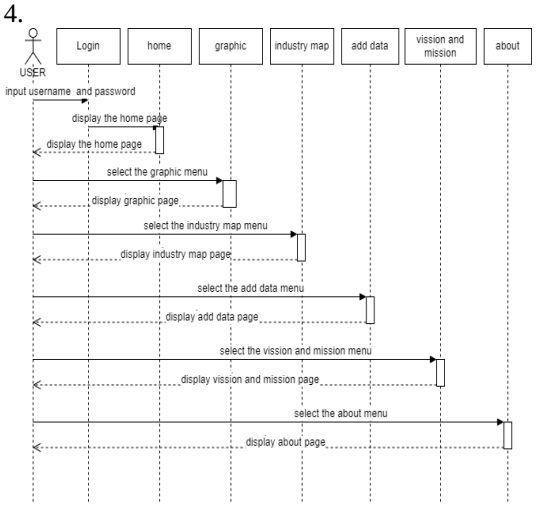


Picture 3. Activity Diagram

3) Sequence Diagram

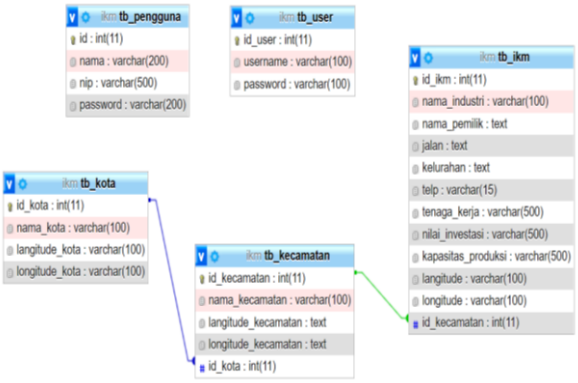
This sequence diagram is a diagram that describes the dynamic collaboration between a number of objects. Its use is to show a series of messages sent between objects as well as interactions between objects. Something that happens at a certain point in system execution (Kurniawan et al., 2021). Can be seen in Picture 4.



Picture 4. Sequence Diagram

4) Class Diagram

According to Tabrani and Aghniya (2020), class diagram is a specification that, if instantiated, will produce an object and is the core of object-oriented development and design. The following is a class diagram design for this system which can be seen in picture 5.



Picture 5. Class Diagram

2. Design

System design is the making of an application design for a clear description of the application that will be made later, taking into account the data that has been analyzed. The design includes data structure, software architecture, interface representation, and coding procedures.

3. Coding

The process of changing the form of the system design into a programming language so that it can be read by the computer through the coding process by the programmer. The coding process uses MySQL, XAMPP, and Android Studio programming languages.

4. Testing

The application trial stage has been made to find out whether there are errors in the system.

5. Maintenance

System maintenance is an action taken so that the efficiency of a system is maintained properly so that the system can be used more optimally. At this stage, the system will continue to be developed and updated gradually following the development of existing software in the future so that the system does not become unfamiliar.

IV. Results And Discussion

This system discusses the appearance of the Industrial Mapping Information System Application on the Industrial Office of Samarinda City Based on Android which will be used to obtain information about various industries along with data on the location of distribution in the city of Samarinda. Here are some views of the applications that have been made.

A. Login page

On the login page, if the user has created an account, then he or she can login and access the existing menu. By filling in the nip and password. The login page can be seen in the picture 6.

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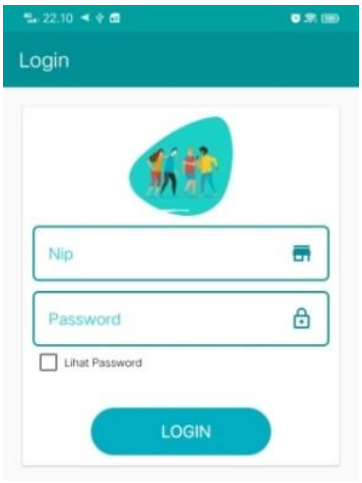


Picture 6. Login Page

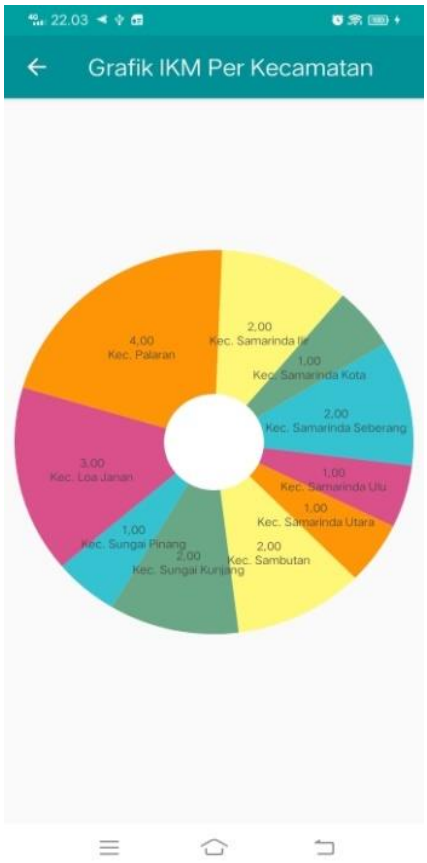
B. Home menu page

After logging in, the system will display the home menu page in which there is a menu on the application and there is a button to exit the application. The home page can be seen in the picture 7.

Picture 7. Home menu page

C. Graphic menu page

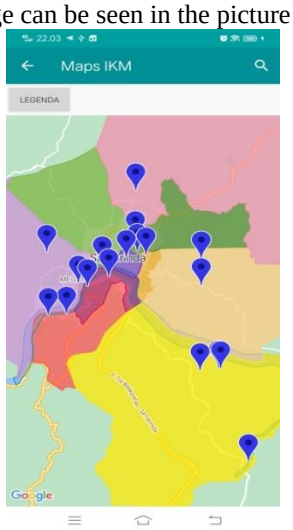
The graphic menu page displays a layout for the user, where the user can see the percentage of the district's industrial data. the graphic page can be seen in the picture 8.



Picture 8. Graphic menu page

D. Maps menu page

The industrial maps page displays the location points of several industries in sub-districts in Samarinda City. if the user clicks on one of the existing location points it will display the name of the industry, and the name of the sub-district. map page can be seen in the picture 9.



Picture 9. Maps menu page

E. Add data page

Users can add Industry data containing the name of the business, owner, road, village, telephone number, labor, investment value, production capacity, the value of raw materials, production value, longitude, longitude, and name of the sub-district. Latitude is if the line is above the

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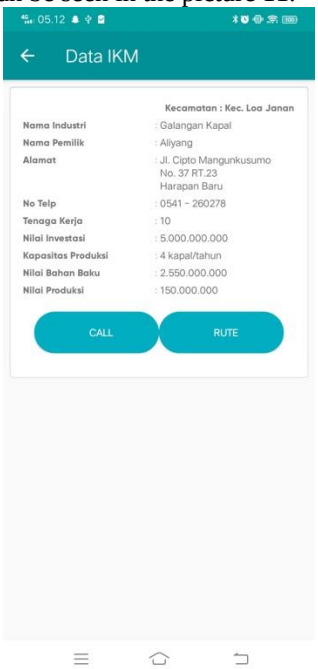
equator then the value is positive but if the line is below the equator then the value is negative. Add data page can be seen in the picture 10.

Picture 10. Add data page

F. Data menu page

On the data page, the user selects or clicks on one of the location points it will display industrial data information then there is a call button to call the industry owner and a route button to show the industrial location. Display data can be seen in the picture 11.



Picture 11. Data menu page

G. Vision and mission menu page

This view displays a layout for users, where users can see the vision and mission as well as the address of the Industrial Office of Samarinda City. The vision and mission display can be seen in the picture 12.

Picture 12. vision and mission menu page

H. About menu page

The about menu page displays the layout for the user, where the user can view the history and main tasks of the industry department. Display about can be seen in the picture 13.

Picture 13. About menu page

Black box testing is a method of testing that tests the functions in the system to find out whether these functions work as expected or not. The following is a description of several functions as samples in the industrial mapping information system at the industrial office of the city of Samarinda which will be tested using the black box method. The system test results are show in Table 1.

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Table 1. System testing

Input	Output	Test Result
Click Login	Show main page	Succeed
Click Home menu	Displays the home page, menu button, and a button to exit the application.	Succeed
Click the graphic menu	Displaying information on how to use the system	Succeed
Click the maps menu	Show location point and search for industry name	Succeed
Click add data	display the add data page	Succeed
Click the vision mission menu	display the vision and mission of the industry service and the button to exit the application	Succeed
Click menu about	displays about and a button to exit the application	Succeed

In the test results, it can be seen that all functions produce valid results as expected by the user and the system runs with its functions

V. CONCLUSION

The results of the study showing the distribution map of each sub-district that has been registered by the service to the system, and the point of distribution also makes it easier for the industrial office to know the location. The authors provide suggestions for the development of this application or system in the future, namely that Industrial owners can register themselves to the system, and it is necessary to add uploads of business license documents for everyone who had a business license, and it is necessary to add a graph of the number of industry names per district.

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