

Deployment of Location Mapping Results Based on Application Programming Interface

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ABSTRACT

All user mapping data that has been created in the gis web can also be displayed on the user's own web and can also be displayed through mobile gis. By applying for tokens first to the admin for validation so that the mapping data can be displayed through API-based tokens. When the user wants to display in his own web then the user must enter the mapbox token first and if the user does not have a mapbox token then the user is directed to create a mapbox token first. first into the mapbox whose link has been provided, the purpose of inputting mapbox tokens is to display html scripts / code that are just copy paste in hopes of making it easier for users to see the mapping that has been made.in the gis web to his personal web without creating any more scripts and can be run And for mobile we just copy paste the tokens that are already in the gis web then The mapping data can be displayed immediately.out of the trip.

Keywords: API, Mapbox, Token, Mobile

INTRODUCTION

API is an acronym for Application Programming Interface that allows developers to make connections or links between two different types of software (Rakhmah & Purwoko, 2021). The web-based GIS ENGINE application contains a lot of data that is filled by many people. If this application stands alone, the input of coordinates and other data must be entered via the web which is less accurate in detecting coordinates if entered via a laptop device as well as if entered directly by typing, mapping data from a person may not necessarily be found on the main page so that the existence of mapping hard to find (Sujono & Kafı, 2020). This mapping is done to make it easier to store locations that can later be useful for purposes of getting to the location or just knowing the location of the coordinates. With this research, researchers want to create a mobile application that can display a coordinate point or a mapping done on the website, displaying it on this mobile application, making it easier for users not to bother opening a laptop (Widya & Airlangga, 2020). Mapbox API was chosen as a webservice because the use of the API tends to be easier and free, and the information produced is quite complete, ranging from distance, coordinates, street names, to waypoints.

THEORETICAL BASIS

- **Geographic Information System**

A GIS is a computer-based system that has the ability to handling geographical data, namely data entry, data management (storage and recall), manipulating and analyzing data, and output as the final result (output) (Kupang, 2013).

- **Mapbox**

Mapbox is one of the largest custom map providers. on well-known sites such as Foursquare, Pinterest, Evernote Since 2010, Mapbox has increased its map selection. custom to fill the limitations that the provider has Maps like Google Maps. Mapbox is the creator or contributor to a number of well-known free map libraries and applications, for example specifications of MBTiles, Cartography TileMill IDE, Java Script Leaflet library, Style language and map parser CartoCSS, and the Java Script Mapbox library.js. Data Mapbox taken from open data sources such as Open Street Maps and

NAS, and paid data sources such as Digital Globe. The technology is built using Node.js, CouchDB, Mapnik, GDAL and Leaflet.js. MapBox, that is, support for GeoJSON – encoding of geographic objects in the form of JSON. Mapbox is also a derivative of Open Street Map. (Rumondor et al., 2019)

- **Codeigniter**

Codeigniter is an open source application in the form of a framework with an MVC (Model, View, Controller) model to build dynamic websites using the PHP programming language: Hypertext Preprocessing. Model View Controller (MVC) is a concept that is quite popular in web application development, starting with the Small Talk programming language, MVC separates application development based on the main components that build an application such as data manipulation, user interface, and parts that control the application (Mala et al, 2018).

- **Framework 7**

Framework7 is a framework. Work that is open source and can be used for free to create or developing a mobile app, desktop or web with original view, Framework 7 is also a tool. Much needed prototyping for Showing the prototype application Works to be created or used As soon as and as soon as possible if It's necessary, of course, it will be Provide convenience for developers Android or programmers who usually develop or create an app, especially android and ios, because it's been included Some models are ready for developed and only add what features and functions What we need, where we are. You can easily imitate or even copy the source code model interface from the template, stay how do we enable function and adjust the features that we need it later. (Aminulloh et al., 2020)

- **Apache Cordova**

Apache Cordova is an open source application development framework that allows the developer to use web standard technologies like HTML, CSS and JavaScript developed in 2009 by Ntobi. It is also known as a platform wrapper or container for native applications that export the JavaScript API's. Formerly known as PhoneGap owned by Adobe, it can also be termed as an engine that powers PhoneGap. Traditionally developed web applications cannot make use of native device capabilities like GPS, Camera and others. These limitations are overcome by Cordova inbuilt plugins. Chrome and Safari Dev Tools make debugging the Cordova application much easier. Developers can choose options from two application paths with Cordova namely cross-platform and native. The more commonly used is the cross-platform that uses Cordova CLI (Command Line Interface) as primary tool. Native is another option where one has to modify some native code with Cordova components (Sankar, 2016),

METHOD

Research Methods

In this study the system development model used is the Agile Model. Agile model is a software development methodology based on the same principles or short-term system development that requires rapid adaptation from developers to changes in any form (Muslim & Retno, 2015). The Extreme Programming (XP) method which is part of the Agile method is used as a software development technique. The Extreme Programming method was chosen because it includes a fast, efficient and flexible software development method according to stakeholder needs. Extreme Programming Stages, including:

- **Exploration Stage** The stage of finding the basic system needs from customers which are written into User Stories. Documentation of the vision and scope of work is the result of the exploration stage.
- **Planning Phase** Oriented to the exploration phase. The planning stage makes estimates on business requirements, system requirements and user requirements. Scheduling that describes the system development planning is the result of the planning stage.
- **Iteration Stage of System Development** There are sub-stages such as system analysis, system design, system development, and unit test which will repeat iteratively until the unit test is successful.
- **Final Production Phase** The system is complete and ready to be launched and perform a full system test. For more details, the schematic of the Extreme Programming method can be seen in Figure 1.

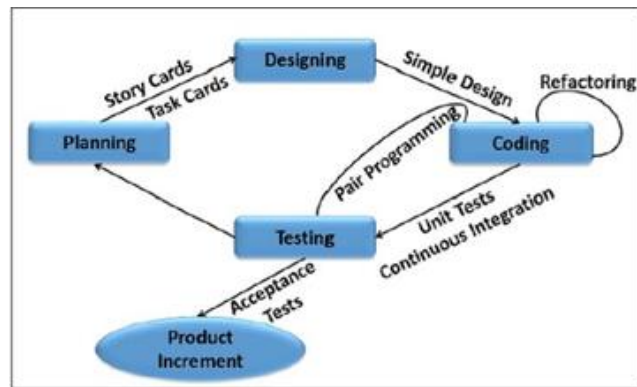


Figure 1. Extreme Programming Scheme

RESULT AND DISCUSSION

In this section, the research results are explained and at the same time a comprehensive discussion is provided. Results can be presented in numbers, graphs, tables and others which make the reader understand easily. The discussion can be divided into several sub-chapters.

The admin here has the right to verify the data that submits the token on the mapping, in this case it has 2 decisions including agree and reject, if it is approved the token will be stored in the table and the user who submits can use the token, if it is not approved then the user must correct the mapping.

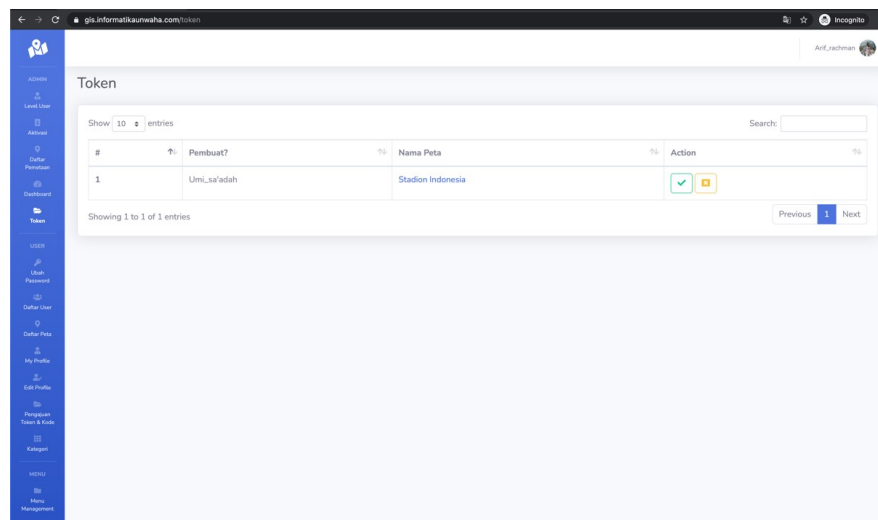


Figure 2. Token Page - Admin

The token submission page that can be accessed by admin and user levels, in the table display above is the mapping data that has been verified/approved. The table already has data that has been approved for token submission, some are still in the submission process, and some have not submitted token submissions. This page also provides documentation for making maps, allowing users to take advantage of the data that has been stored on this website, the maps used are mapbox, the user is required to have registered on the official website of mapbox, if you have registered, copy the mapbox API section to the mapbox token input and save, will automatically display the program code documentation.

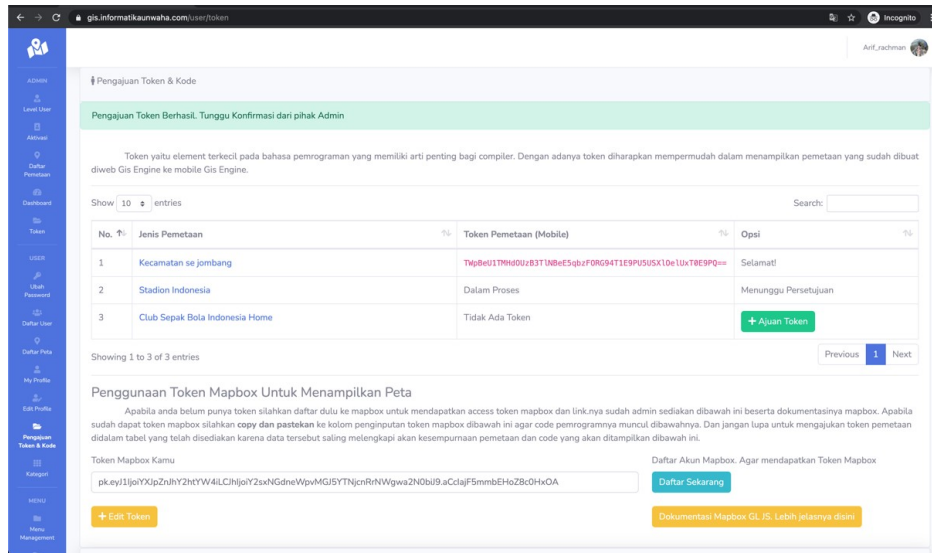


Figure 3. Token Submission and Documentation Page - Admin/User

The page below will appear when the user has entered the mapbox token and submitted a token to the admin with the aim that it can be displayed on another web or personal web.

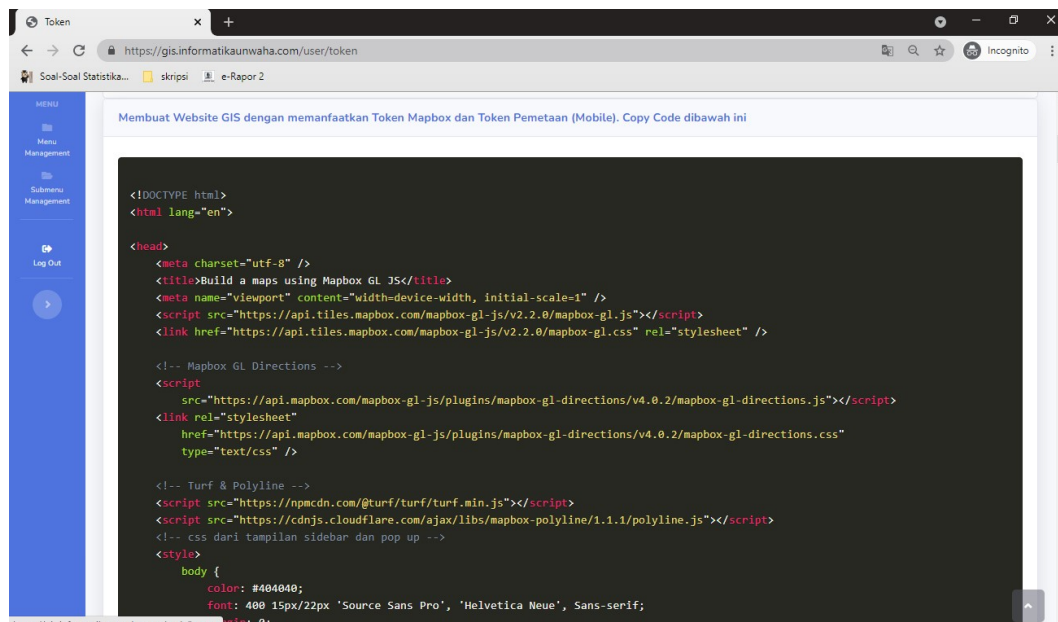


Figure 4. Token Submission and Documentation Page - Admin/User

The display of the above documentation when copied and executed will display a display like the one below, the mapping data already exists according to the copied mapping token because in the documentation there is an API to the researcher's domain whose API command is to call the mapping data according to the map token.

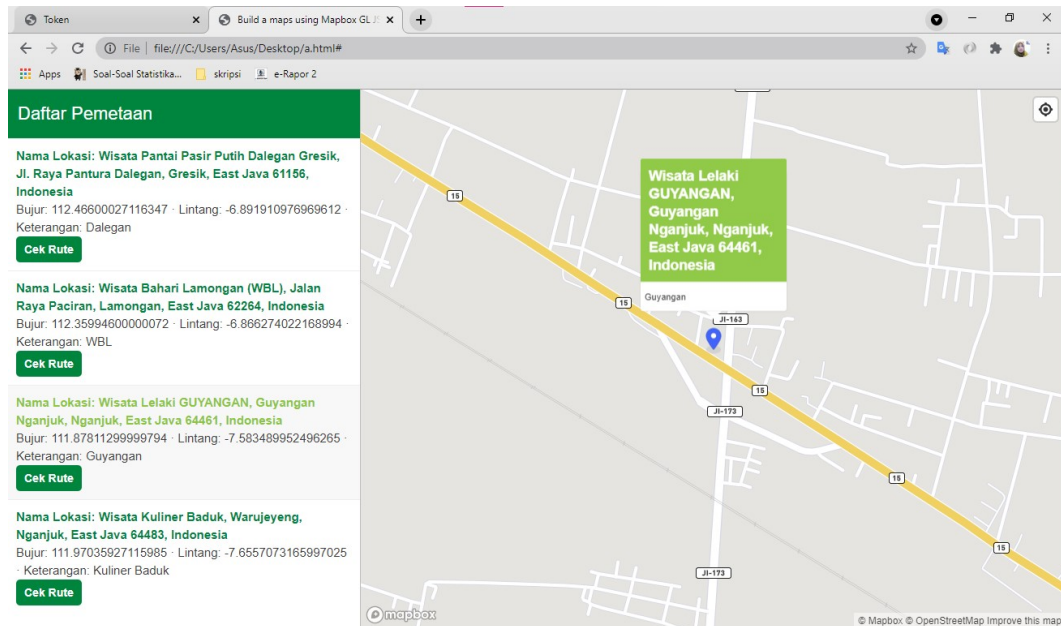


Figure 5. Mapping Documentation Page

The initial display of the mobile application contains token verification, this is intended to display mapping data according to the token.

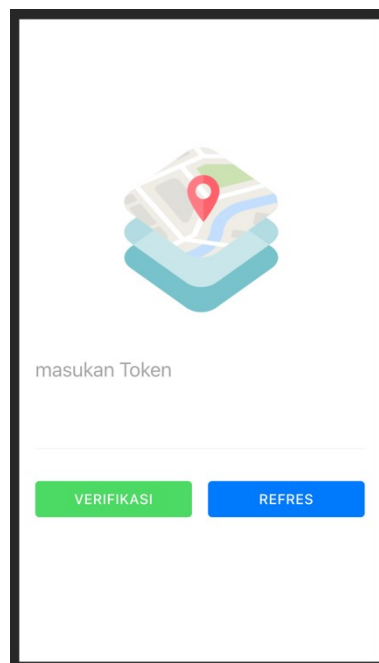


Figure 6. Mobile Token Verification Page

The initial display after checking tokens / token verification, there is some mapping data and there are several buttons on the navbar including the image button, reload button, and more. In the data section there are details of the map and it has features to view location and check routes.

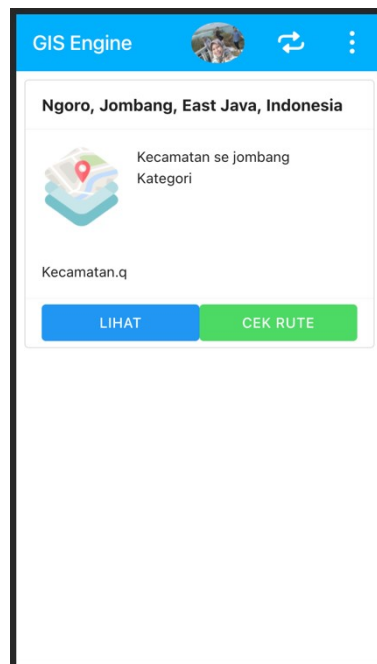


Figure 7. Mobile Home Page

The display of the more button has 2 buttons, namely the about button to view the GIS Engine application, the logout button is used to switch to another mapping token.

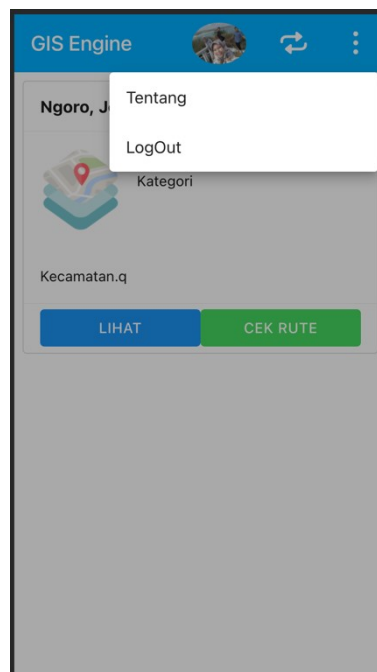


Figure 8. Home Page More Mobile

Pressing the view button will display a new page, showing the location points of the map and showing detailed data.

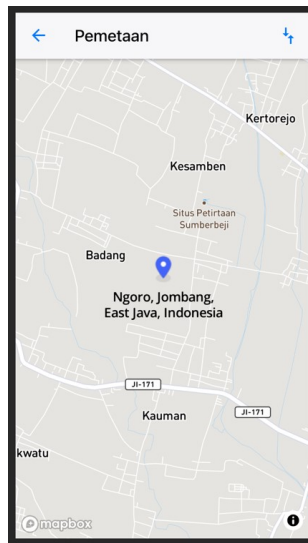


Figure 9. Page View Mobile Location

The check route button is pressed, it will display a suggestion to open the google maps application, this is because the researcher's mobile application has been integrated with the google maps application. To make a route, the user is expected to activate GPS on the android window so that the coordinates can match.

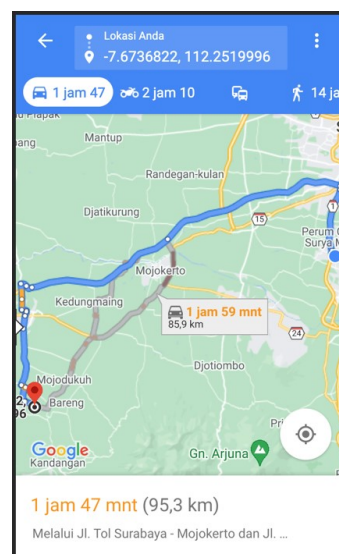


Figure 10. Google Maps Mobile Route Check Page

CONCLUSIONS

Based on the design, discussion and implementation that have been described previously, the following conclusions can be drawn:

- Mapbox is the largest map provider from well-known sites specifically for developers for an application both desktop and mobile that is integrated with maps for free use. Therefore, mapbox is the right choice for implementing a geographic information system, especially at the stage of finding accurate coordinates with the library provided by mapbox.

- The way to detect coordinates in a mobile application using the GL JS mapbox can already be done by adding a marker function.

This paper is the result of a final project research for 8th semester students at KH University. A. Wahab Hasbullah with the title Deployment of Location Mapping Results Based on Application Programming Interface, this research has met the criteria to be used as a final project with the title the researcher still thinks this research still needs to be developed again in the future by younger students or students outside the research university, What still needs to be developed is the first in the documentation section for making maps, additional documentation can be provided by implementing features such as location/place search, and the second application is expected to be able to input mapping data as is done on the website. That's all in addition to the research that the researchers made, thank you.

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