

Prototype of Support System Application for Housing Using Criteria Performance Index

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Abstract: Wider technology uses makes improving human quality of life more easier, Such knowledge that was only used for education, today could be implemented to daily life. Housing is one of main need in society, For rural and urban society. When someone able to buy a house there are several thought that must be consider, not only about budget cost but many other factors. This research using CPI (Comparative Performance Index) methode. Some general considerations that used by house buyer wil implemented as index to measure house values that gives alternative for buyer to choose their needed house. Further more, result of this research will implemented to website application using decision support system, so it can used by many users.

Key word: House, CPI, decision support system, comparative, decision support system, website application

INTRODUCTION

Housing is one of basic need for people that still hard to achieved. This situation happen within community with low income class, vice viersa for other class that has opinion about house not only for basic needing, further more buying house for investations. After they are belonging house as residence, then their second house will be investment nee. House belonging as an investment is became one factor that caused housing prices to soar even higher so it can not distinguish between high housing price because of factors location and facilities, and high prices because the market price based on demand supply law. This situation does not necessarily dampen the people desire who wants to have a house as their bassic need. House consumers will always look for a house that is worth for living, and still have high return value at an appropriate price.

Wide open opportunities in the housing sector is a little more cause consumer confusion in the housing in order to alleviate confusion when choosing a house we like to build a prototype application that can provide an alternative choice while decide buying house. These alternatives given by using the CPI methodes. This research uses the CPI because this method allows solving the problem of decision-making with a lot of criteria which the direction, range and scale for each criterion are not equall. CPI is also used to determine

the ratings or rankings of the various alternatives (i) based on several criteria (j) (Marimin, 2004). The formula of the technique CPI:

$$A_{ij} = X_{ij}(\min) \times 100 / X_{ij}(\min) \quad (1)$$

$$A_{(i+1,j)} = \left(X_{(i+1,j)} \right) / X_{ij}(\min) \times 100 \quad (2)$$

$$I_{ij} = A_{ij} \times P_j \quad (3)$$

$$I_i = \sum_j^n I_{ij} \quad (4)$$

Where :

- A_{ij} = Alternative value i at j criteria
- $X_{ij}(\min)$ = Alternative value i at j minimum criteria
- $A_{(i+1,j)}$ = Alternative value i+1 at j criteria
- $X_{(i+1,j)}$ = Alternative value i+1 at j minimum criteria
- I_{ij} = Alternative index at i
- I_i = Alternative composite index at i criteria

First step in this research is using five criteria, they are physical condition, the value of the building structure, conducive environment, state government and economic conditions. All of these criterias then sorted by the biggest points to the smallest points and we will use the highest value as result.

Literature review: Definition of property is a legal concept that coverage of interests, rights and benefits associated with an ownership of house. The property is

always encumbered by a rights in this study the right of a person to perform a specific interest at the property (for example, property rights, lease rights, land rights and so on). So we can conclude property values is something that should be received by the seller and the buyer paid with the concept of ownership or right of a person to do a particular interest, in this case the object to be used is "house" (Supardi, 2010).

Decision Support System is began in the late 1960s with the users computer time-sharing (based on time division). At first, one can do direct interaction with the computer without having to go through an information specialist. Time-sharing opens up new opportunities in the use of computers. Before 1971, these situation we called as DSS (Gorry dan Michael S. Scott Morton) DSS as a system that provides support for a decision maker as a problem solver but the approach is too wide and complex was ineffective and several systems was prove failed and is not functioning as its expected (Roberts, 2009). Application is a subclass of computer software that uses computer skills directly to perform a task that the user wants. The main examples of software applications are word processors, spreadsheets and media players (Suryatiningsih and Muhamad, 2009).

Static web is build using HTML (Hypertext modeling Language), disadvantages of this applications lies in the necessity to maintain program continuos to update our web. This weakness is covered by dynamic web applications model. In a dynamic web application if we want to update information in web page we do not have change it through coding but we can manipulate from data. As implementation, web applications can be connected to the database so every information change can be done by the operator (Pratama, 2010). Framework can be defined as a collection of pieces compiled program that organize so t it can be used to create applications without having to make all the code from scratch. Today there are many PHP framework including: ZendFramework, Cake PHP, Symfony, Codeigniter, etc. Every framework has its advantages and disadvantages of each (Basuki, 2010). CodeIgniter is a PHP framework that can help developer to accelerate application development website based on PHP (Upton, 2009). CodeIgniter is made by using the rules of M-V-C (Model-View-Controller) that enables separation between layer application-presentation-logic (Basuki, 2010). Flow-based application program framework can be seen in Fig. 1.

Definition:

- User request: Requests made by the user on the application
- Controller: The program code (such OOPclass) that is used to control the flow of the application (as a controller model and view)

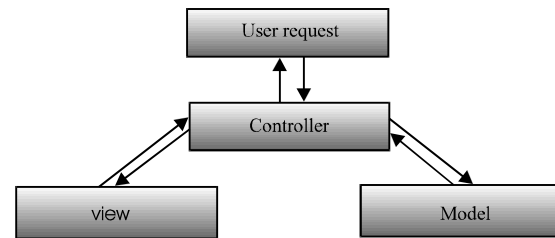


Fig. 1: Application path (Basuki, 2010)

- View. Form template html/xhtml or PHP to display data in a browser
- Model. The program code (such OOPclass) used to manipulate the database (Basuki, 2010)

MATERIALS AND METHODS

This research is using model proses UP (Unified Process) for developing system, with UML (Unified Modeling Language) notationsIts includes new development framework in the software development methodology, the following stages of development using this method:

- Inception, at this stage, developers define the limits of activities, conduct user needs analysis and perform preliminary design software (architectural design and use case)
- Elaboration, at this stage of the design of software ranging from specifying the software features and also preparations to be made for the minimum hardware what should be available for the smooth running of the software
- Construction, at this stage of the design software is implemented
- Transition, at this stage last implementation program that has been completed, including installation, deployment and dissemination

UML is independent of the particular software development life cycle process in which the software product is being designed but it is most effective when the process is case driven, architecture-centric, iterative, and incremental. For a full understanding of the software architecture, one can take five views (Fig. 2):

- The use case view-exposing the requirements of the system
- The design view-capturing the vocabulary of the problem and solution space

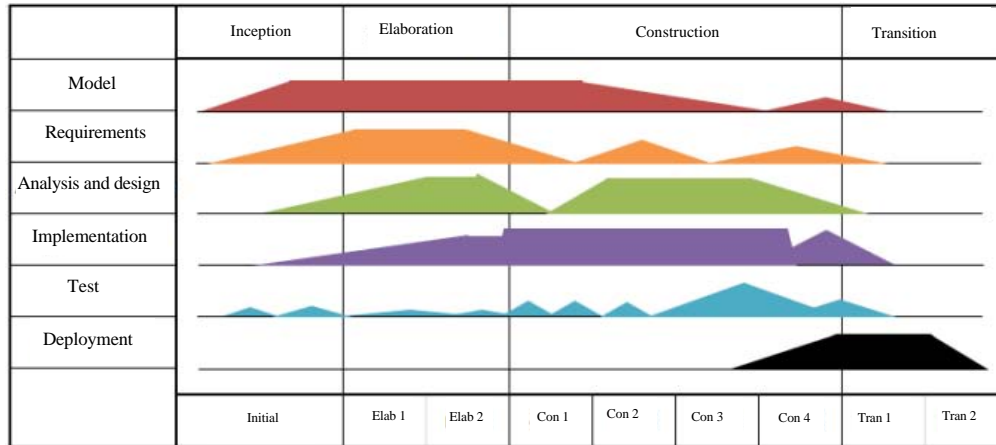


Fig. 2: Unified process (Nugroho, 2010)

- The process view-modeling the distribution of the system's processes and threads
- The implementation view-addressing the physical realization of the system
- The deployment view-focusing on the system engineering issues

RESULTS AND DISCUSSION

This research using the CPI method by entering several criteria based on factors that affect investment properties as follows (Darmawan, 2009):

- The physical condition and environment, its include type, location
- Economic conditions, its include the price level (Darmawan, 2009)

The system runs on an application that is modeled like a table ranking, points that will be used are:

- 0-20 = N/A
- 21-40 = Less worthy
- 41-60 = Self worth
- 61-80 = Worth
- 81-100 = Very worthy

There will be two parties connected when we buying a house, developer and consumer (house buyer) so if its described in use case diagram there would be two actor, admin and buyer (user). Figure 3 explaining about detail activities than happen in the application, there are two actor triggering the system, user and admin, the step by step activities that user must do are:

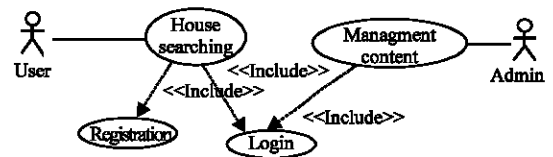


Fig. 3: Use case diagram

- User sign in to application, they will see several page for registration and the searching page
- At searching page, consumers will see some drop down box that consumers must fill the option about house description

At admin activities, beside that its must login to the system, the admin may manage content of menu in the application to ensure real-time information generated and updated. In UML, class diagram hold an important role because of its illustrates the classes within a system and how its related (Wijaya, 2009). In this application class diagram depicted connected to the model and controller, the following (Fig. 4).

Component diagrams are module program, there are libraries, files that use while program was running (Shalahuddin, 2010). We split the component diagrams into two component as user and admin. The figure is the component diagram for user (Fig. 5-9).

The application will begin with registration page, user must fill biodata for validation user. Lay out for searching page contain 2 main data which are price and house type. Afterward, application will display the result of house searching, the lay out can be seen at Fig. 8. Network architecture can be regarded as a physical description of the pattern of relationships between network components which includes the following server and client computer design network architecture Fig. 9:

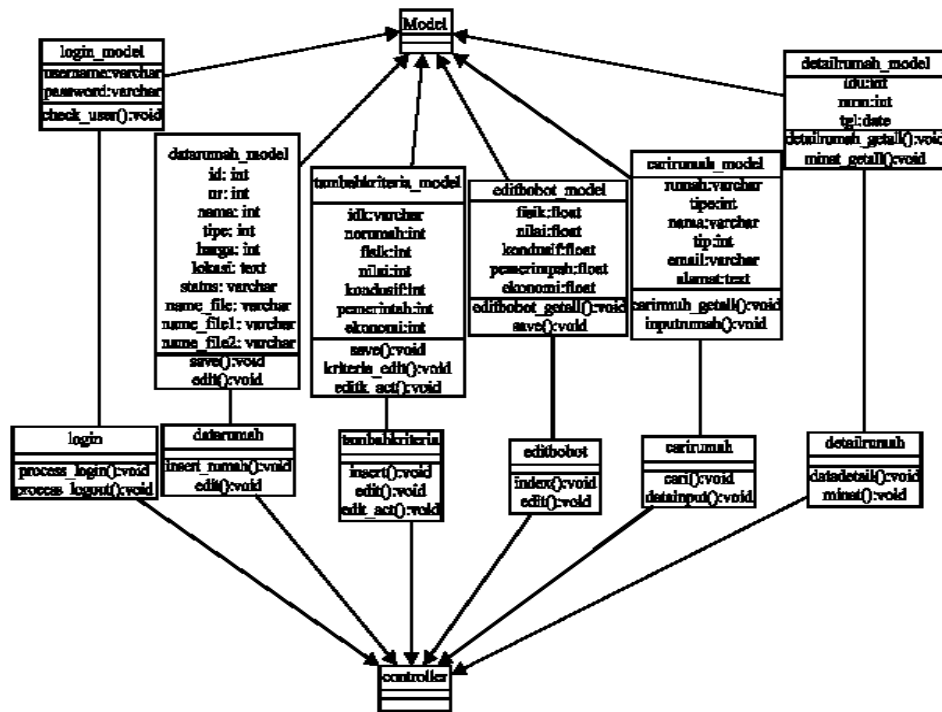


Fig. 4: Class diagram

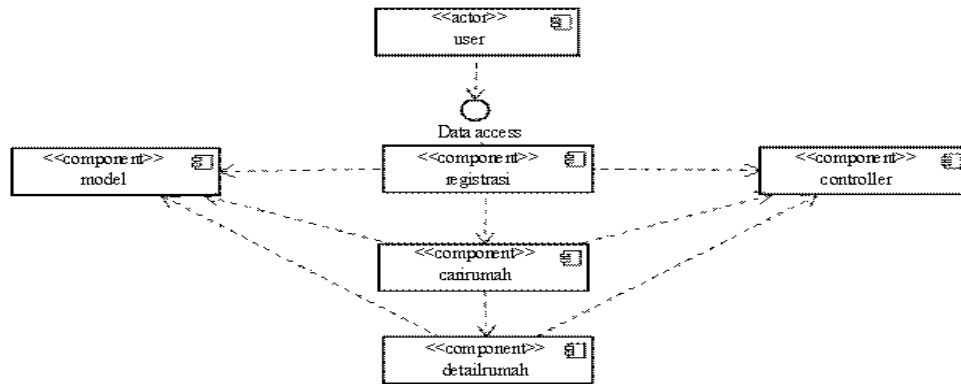


Fig. 5: Component diagram for user

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Login Admin	Registration new user <div style="border: 1px solid black; padding: 5px; margin: 5px;"> Name Phone number E-mail Password Address Submit </div> Login user <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <input type="text" value="E-mail"/> <input type="password" value="Password"/> <input type="button" value="Enter"/> </div>

Fig. 6: Registration

Fig. 7: Entering house categorization

Fig. 8: Output for searching result

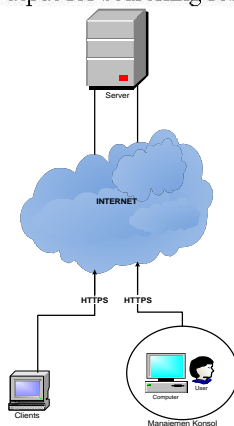


Fig. 9: Network architecture

CONCLUSION

From the results of direct observation of the object of research, the authors can draw conclusions about Prototype of Support system application for housing:

- That prototype can be build as applications for system supporting decision for consumers to buy a house
- Requirements of consumers and system that have been collected that's helpful to build this application
- This application makes consumer who want to buy a house can more easily to decide which house that fullfil their need

For further development, we will built this decision support application for whole criteria that given by Darmawan (Darmawan 2009), like : the physical condition and environment, Value of building structure, demographic, governmen regulation, Economic conditions.

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