

Development of an Information System for Sales of Building Materials in a Building Store Using Model View Controller (MVC)

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Abstract

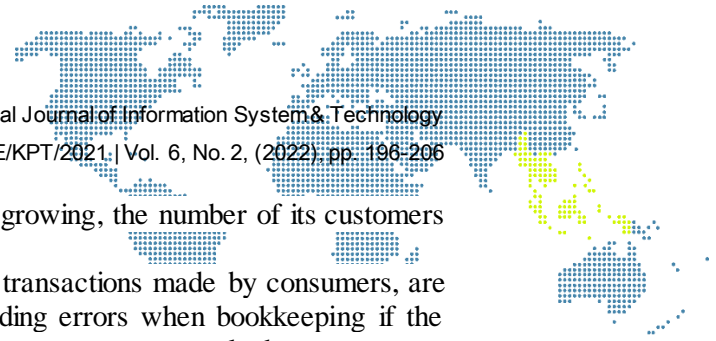
One area that has an important role in the business world is sales. There are different types of goods and services offered to the wider community and can be used to meet their needs. One example is the material of the building that is used as materials to build a house, building, school and other buildings. The building's material items are sold in the Building Store. However, most of the processing of data on the sale of building materials in the Building Store is still done conventionally, thus causing problems. Like, there were errors in data recording, data searches that took a long time, and the making of inaccurate sales reports. If this is allowed to happen, then the place of the venture could suffer a lot of losses and not be able to take the right steps to resolve the existing problem. Therefore, the place of the venture requires the construction of a system, especially for the sales information system. With the development of the system, it is hoped that we will solve existing problems and be able to monitor the performance of the system and evaluate it well. And in the development of the system, it has to be supported with the use of the right method, where one of the methods that can be used is MVC (Model View Controller). Using this MVC, we can see the data structure used, the view and also the list of programs for the creation of the program application. The sales program applications generated from the development of this system, of course, are very much expected to help improve the existing system and improve the service and generate accurate data.

Keywords: System Building, Material sales, MVC

1. Introduction

At the moment, even though the pandemic period is not over, we often see development everywhere, both by governments, corporations, organizations up to society. Many communities have built public facilities that can be used together, such as the building of the mosque even to the point of repairing roads. In addition, construction is also done by individuals from the community, such as by doing home repairs to make it even better. And as a means of support in doing those constructions, it certainly takes building materials such as sand, cement, iron, stone and so on so that what is the goal of building is achieved.

By looking at things like this, surely the material materials of the building are still one of the needs that society needs either for now and for the future. Where the material material of this building is the most important element in determining the quality of the building's construction. Good material choices can determine the strength, sustainability, security, and safety of building construction, according to Nasution in [1]. So it takes a good information system, of course, in places of business like building stores to process the data of the building's material materials. And it's worth knowing that building stores are becoming important and key to providing building material materials [2]. And the current situation is, there's still a lot that we've found building stores are still implementing a conventional system in processing the data, from bookings done by consumers, payments to report-making. This, of course, can cause all sorts of problems in



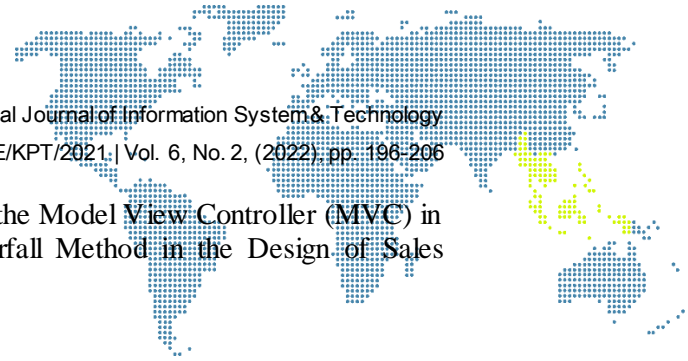
the building store, especially if the building store is growing, the number of its customers and the income it receives is increasing.

These common problems, such as the writing of transactions made by consumers, are still using handwriting, which can lead to data reading errors when bookkeeping if the writing is done poorly. Other problems such as document storage, sample document notes or proof of pay that are not well-kept and are not in one place. This can give rise to the fact that the documents could be lost or tucked away, and could also be damaged. In addition, the most worrying problem that appears to be the delay and the error in the making of the report. This problem can arise due to previous problems, where report making can be too late because of having to find the documents in advance that are not stored properly, and the problem of errors in the making of the report due to errors in reading the data, so that there can be errors in the writing. This causes the data presented in the report to be inaccurate. But we know that the report is very important, because it can be used as a basis for evaluating the running system.

Knowing the situation in a building store as described above, surely if this condition is left unchecked then it can be detrimental to the store. And also the steps taken in the decision-making became inaccurate. This is due to the fact that sales have an important role to play in the place of business, where sales provide the main source of income for the place of business [3]. Therefore, there needs to be improvement or construction in the system especially for the information system of the sale of material materials of the building in the building store. We need to know that systems are a collection of elements or variables that are organized, interconnected, and systematically interdependent with each other to achieve a goal, according to Munawar in [4]. The development of this sales information system is done in order to solve the problems that are being faced in the system, especially for the processing of its sales data. In addition, to increase the ministry to consumers, so that the ministry performed does not disappoint the consumer. And with increasing competition in the business world, especially with regard to the use of technology, it's certainly also one of the reasons for system building, so that the systems that will be applied are able to process data quickly, generate accurate information and be able to provide information that updates both for consumers and for places of effort.

To do the building of the system, of course, there needs to be mature planning and preparation, since the funds released must be large. One of the things to note is the determination of the exact method so that the measures taken are more structured. As for in the development of information systems on the sale of material materials of buildings on this Building Store using the Model View Controller (MVC) method. Using this MVC, we can figure out what the data structure is used for, what it looks like and the program listing as well. So it can see how the progress of the manufacturing of the application is made in the framework of its system development. In the construction of the system, it certainly has to be completely adapted to the needs of the place, so it is necessary to do a detailed analysis to learn how the system works and the problems that exist.

This previous research has also been done by other authors, with various points of view such as: Build a House: Marketplace Application for Sales of Building Materials Based on Android (Case Study: Bali Building Shop) ? [5], Analysis of Marketing Strategy in Increasing Sales of Building Materials at Sri Rejeki Stores in Lamasi District, Luwu Regency [6], Design and Build Applications for Sales and Stock of Materials (Case Study: XYZ Building Shop) [7], Development of Sales and Purchase Applications Building Materials at the Bagja Jaya Store Using the Waterfall Methodology [8], Web-Based Information System for Sales of Goods at Sribayu Building Stores [9], Designing of Building Materials Information Systems at the Siantan Jaya Store [10], Design and Construction of Building Material Sales Applications [11], The Design of Information Systems for Sales of Goods in Desktop-Based MR Building Stores [12], Implementation of Enterprise Resource Planning for Building Stores Case Study UD. Mandala Jaya [13], Analysis of Web Application Architecture Using the Model View Controller (MVC) on



the Java Server Faces Framework [14], Analysis of the Model View Controller (MVC) in the Php Language [15] and the Use of the Waterfall Method in the Design of Sales Information Systems [16].

2. Research Methodology

Here the author explains the Methodology of Research. As for the kind of research that the authors use is qualitative research, for the study of the development of information systems on the sale of building materials to a building store. Previously, the authors did research in several places, eventually choosing the Building Store as the object of study in the writing of this journal. Where from the results of the analysis and observations of the authors, it can be concluded that there are still many Building Stores that use manual systems to process the data, especially the system of the sale of materials of the building. This led to a wide range of problems and the need for system building to solve the problem. By doing this research, authors can collect data based on the results of interviews, observations and library studies. Interviews are conducted with the responsible parties in the information system of the sale of materials of this building, whereas in observation, the author observes directly on the performance of his information system. From the results of the interviews and observations, the author can find out in detail about the workflow of the sales information system, the documents used and the problems that arise in the implementation of the information system of the sale of materials of the building for the time being. In addition to conducting interviews and observations, the author also uses library studies to assist writers in building their systems by using references either in the form of books or journals.

From the above explanation, it can be concluded that the author used several techniques to collect the data used. To support this qualitative research such as interviews, library studies and observations. From the results of the data collection, then the authors analyze more deeply, so it is known how the workflow is applied in the information system of the sale of materials of the building today. After clearly knowing the problem to be solved, the author also performs an analysis of the needs of the system. Where the analysis of the needs of this system is done to determine what the system needs for the development of its system, so that the new system, which will be applied, is really in line with the needs of the system and its users. And to assist in the development of the system, the authors used the Model View Controller (MVC) method. Using this MVC is expected to help solve existing problems and monitor the progress of the program applications it creates.

The Model View Controller (MVC) is a concept introduced by the discovery of Smalltalk (Trygve Reenskaug) to encapsulate data along with processing (model), isolate from the manipulation process (controller) and view (view) to be represented on the face view, according to Deacon in [17].

According to Burbeck in [17], it is explained that the MVC architecture is divided into three layers, which is:

a) Model

Model, used to manage information and notify observers when there is a change in information. Models contain data and functions related to data processing.

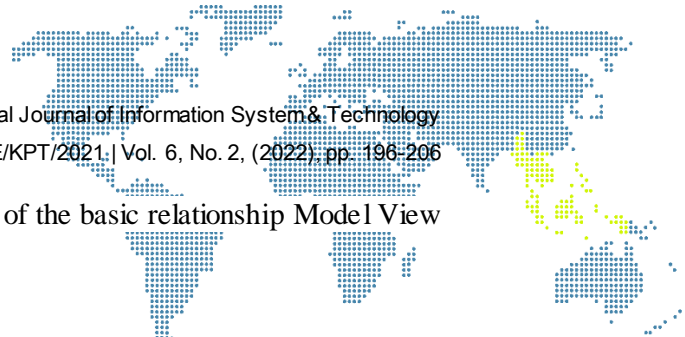
b) View

View, responsible for graphic mapping into a device.

c) Controller

Controller, receives input from users and distributes models and views to perform actions based on the input. So that the controller is responsible for mapping the actions of the end user to the application response.

Models, View and Controllers are intertwined with each other, therefore all three have to refer to each other. In outline it can be concluded that, the Model describes the structure of the data, View describes its appearance while the Controller is the bridge between the



Model and the View. The following is an illustration of the basic relationship Model View Controller (MVC) can be described as follows:

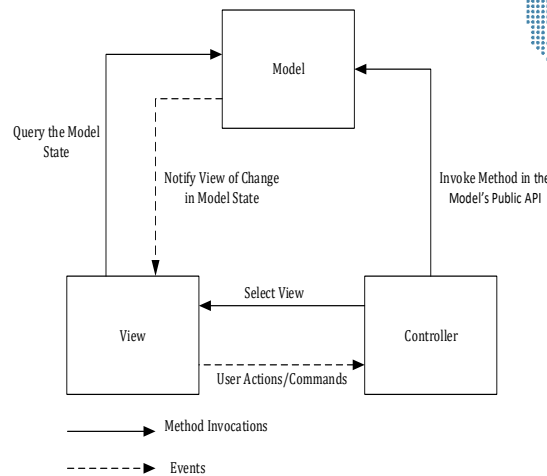


Figure 1. MVC Illustration

3. Results and Discussion

Based on the research that has been done and the data collected, it can be known about the workflow of the information system for the sale of building materials to the Building Store as follows:

The consumer comes to the Building Store to perform the ordering of the necessary building materials received by the Store Officer. Based on the reservation made by the Consumer, then the Officer will conduct an inspection of the material material of the building, whether there is or not. If the reservation is not available, then the Officer will confirm to the Consumer, whereas if the order is available, then the Officer will make a Note. Where this note is made up of white Notes and pink Notes. The White Note will be given to the Consumer, after the Consumer has made the payment in cash. As for the notes, which are pink, will be kept as evidence of a sale transaction. Once the Consumer makes the payment, the Officer will ask the Driver to make the order delivery. Where when the Driver sent the order, the Driver was given a document called the Surat Jalan. The Surat Jalan amounted to two sheets, which were used as evidence of the receipt of goods ordered by the Consumer. When the Consumer receives his order, the Consumer is required to sign on the Surat Jalan, and will obtain the original Surat Jalan, whereas a copy of the Surat Jalan signed by the Consumer is given back to the Driver. By Driver, the copy of the Surat Jalan will be returned to the Officer for later being used as a supporting document in the making of the sales report. This Sales Report is made monthly and submitted to the Building Store Owner.

From the above workflow, it can be illustrated in the form of a Diagram, the Activity Diagram. As for the illustration of the Activity Diagram information system on the sale of building materials to the Building Store, as follows:

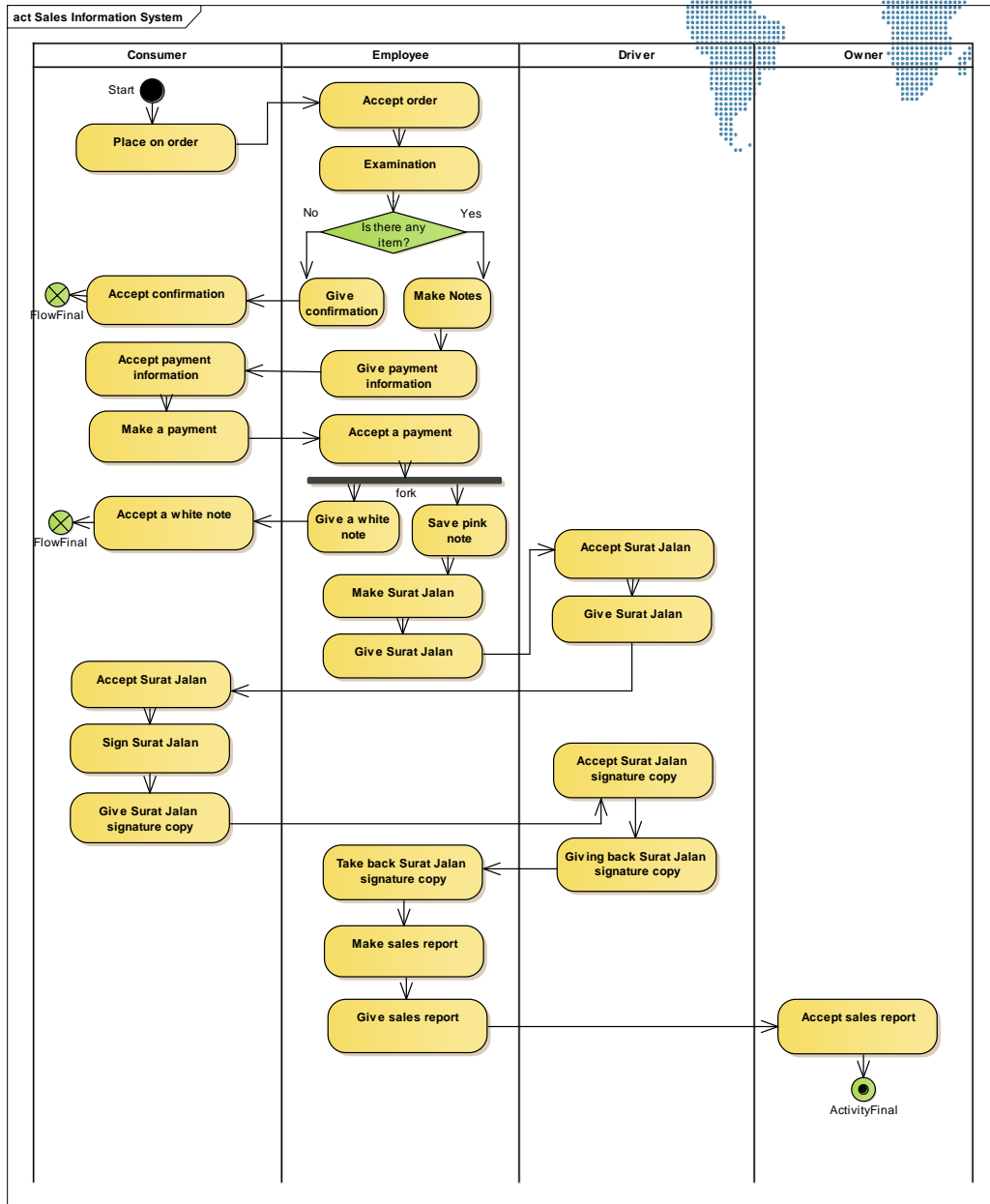
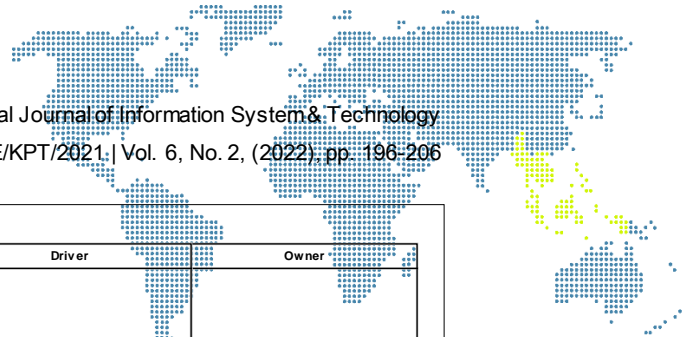


Figure 2. Activity Diagram

Based on the workflow of the information system for the sale of materials of the building above, it can be made the development of the system where in building a system must certainly be known in advance the necessary requirements for the system. In determining the needs of the system, there is a communication between the user and the system developer, so that with this communication, what the user wants can be realized in accordance with the initial goal of doing the system building. As for the blindness of the system can be described in a diagram, the Use Case Diagram. As for, the Use Case Diagram as follows :

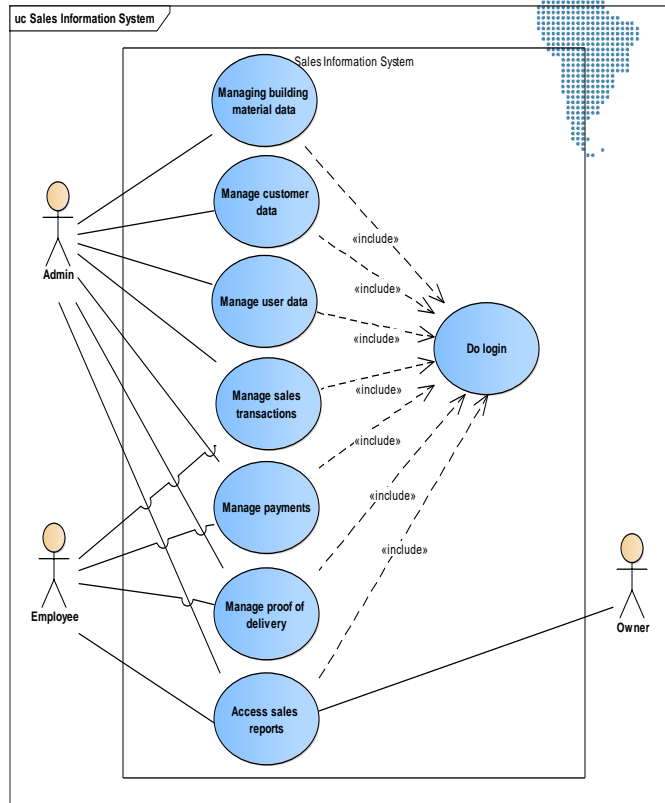
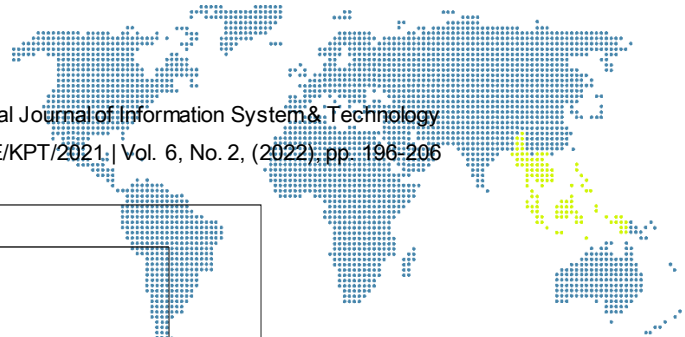


Figure 3. Use Case Diagram

Based on the use case diagram above, the development of the information system for the sale of building materials to the Building Store can be done using the MVC (Model View Controller) method, which is described as follows:

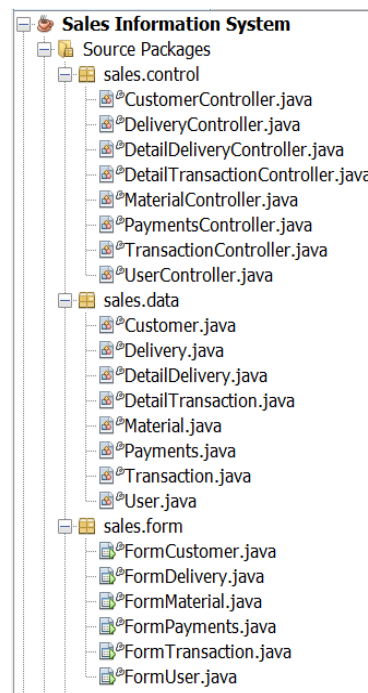
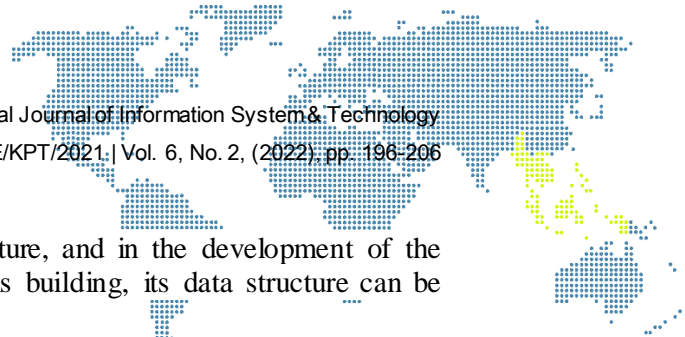


Illustration of the Model View Controller above uses the Java programming language. Here's an explanation of the illustration:



1) Model

This model is used to determine its data structure, and in the development of the information system for the sale of materials of this building, its data structure can be described in the form of a scheme as follows:

- a) Material (kdMaterial, jnsMaterial, nmMaterial, spectMaterial, priceMaterial, stockMaterial)
- b) Customer (kdCust, nmCust, addCust, tlpCust)
- c) User (kdUser, nmUser, accessUser, passUser)
- d) Transaction (kdTrans, dateTrans, TotTrans, kdCust)
- e) DetailTransaction (qtyTrans, kdTrans, kdMaterial)
- f) Payments (kdPays, datePays, ketPays, totPays, kdTrans)
- g) Delivery (kdDev, dateDev)
- h) DetailDelivery (kdDev, kdMaterial, qtyDev)

From the above scheme, it can be described in more detail back in the form of class Diagram, where in this Class Diagram we can see about class (class name, attributes and operations) and Inter-Class Relationship.

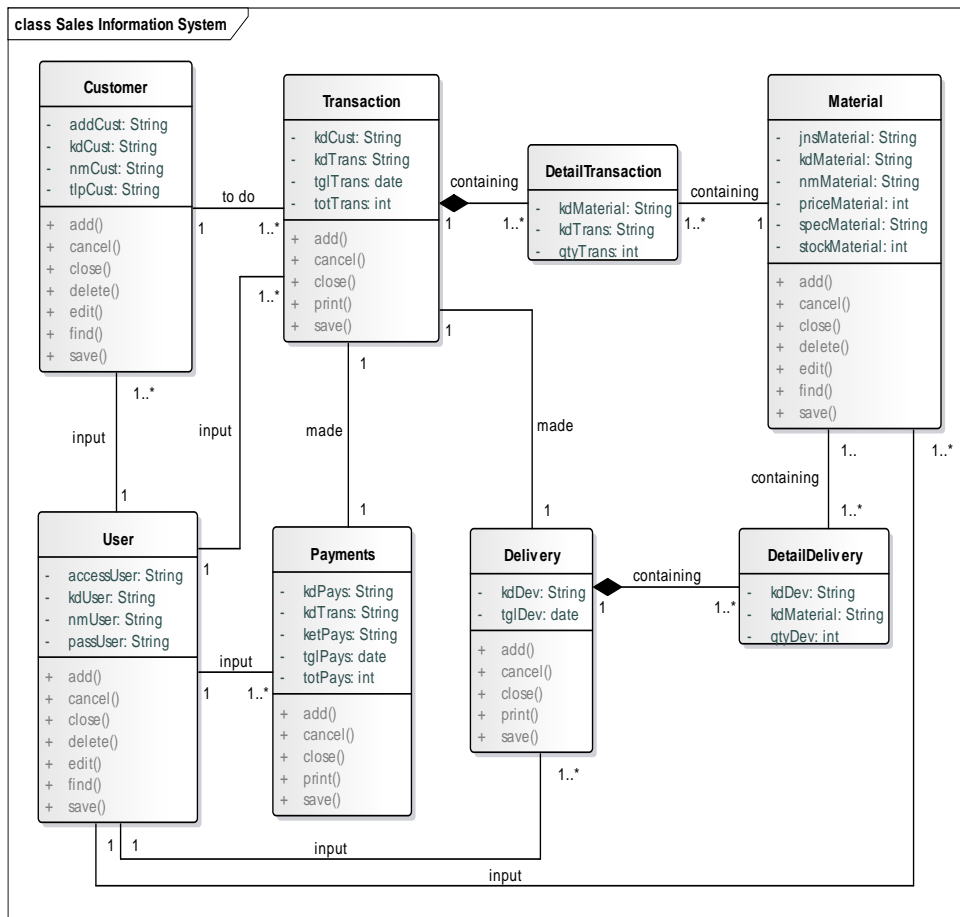
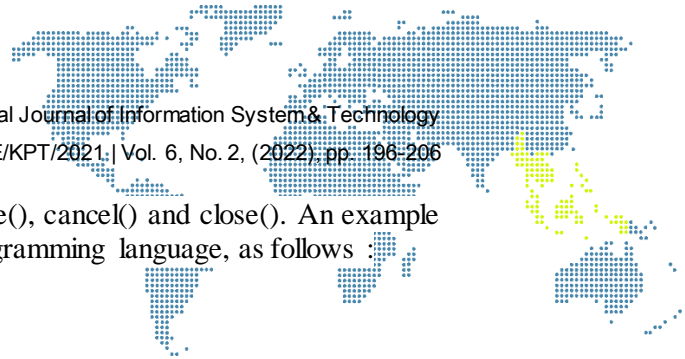


Figure 4. Class Diagram

The above Class Diagram is a form of visualization of the data structure that will later be used in the development of information systems on the sale of building materials, where in the 4th image, we can find out the classes used such as Material classes, Customer classes, User classes, Transaction classes, DetailTransaction classes, Payments classes, Delivery classes and DetailDelivery classes. Each of those classes that are formed has attributes and operations. For example, for material classes, have attributes such as kdMaterial, jnsMaterial, nmMaterial, spectMaterial, priceMaterial, stockMaterial. And has



operations such as add(), edit(), delete(), find(), save(), cancel() and close(). An example of applying the Model to User by using the Java programming language, as follows :

```

public class User {
    private String kdUser;
    private String nmUser;
    private String accessUser;
    private String passUser;

    public User (String kdUser, String nmUser, String accessUser, String passUser) {
        this.kdUser = kdUser;
        this.nmUser = nmUser;
        this.accessUser = accessUser;
        this.passUser = passUser;
    }

    public String getkdUser() {
        return kdUser;
    }

    public void setkdUser( String kdUser){
        this.kdUser = kdUser;
    }

    public String getnmUser() {
        return nmUser;
    }

    public void setnmUser( String nmUser){
        this.nmUser = nmUser;
    }

    public String getaccessUser() {
        return accessUser;
    }

    public void setaccessUser( String accessUser){
        this.accessUser = accessUser;
    }

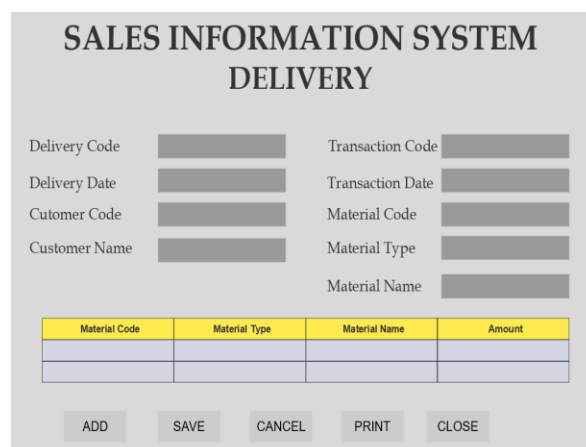
    public String getpassUser() {
        return passUser;
    }

    public void setpassUser( String passUser){
        this.passUser = passUser;
    }
}

```

2) View

View related to the displays or user interfaces designed in the development of information systems on the sale of material materials of buildings. As for the planned views such as view Login, view Customer, view Material, view User, view Transaction, view Payments, view Delivery dan View Laporan. The result of that design, as follows :



Material Code	Material Type	Material Name	Amount

Figure 5. Delivery User Interface

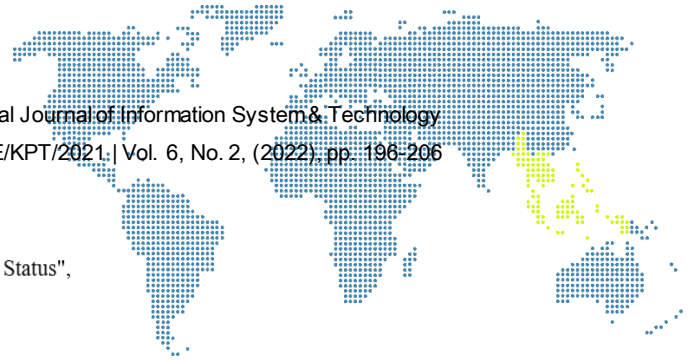
3) Controller

The following is an example controller, which connects between Model and View, using the Java programming language :



```

package login1;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
import java.sql.Statement;
import java.sql.ResultSet;
import javax.swing.JFrame;
import javax.swing.JOptionPane;
import koneksi.koneksi1;
public class form_login1 extends javax.swing.JFrame {
    Connection con;
    Statement ss;
    ResultSet rs;
    String sql;
    public form_login1() {
        initComponents();
        JFrame form=new JFrame();
        form.setSize(400, 400);
        koneksi1 DB = new koneksi1 ();
        DB.config();
        con = DB.con;
        ss = DB.ss;}
    private void fkeluarActionPerformed(java.awt.event.ActionEvent evt) {
        dispose();
        this.setVisible(false);
        this.setDefaultCloseOperation(EXIT_ON_CLOSE);
        System.exit(0);}
    • private void fmasukActionPerformed(java.awt.event.ActionEvent evt) {
    •
        aksi_login();
        dispose();
        }
        private void aksi_login() {
        String accessUser =aksescb.getSelectedItem().toString();
        try{ String sql="select * from User where kdUser='"+kdUser.getText()+" and
        passUser='"+String.valueOf(passUser.getText())+" and
        accessUser='"+accessUser+"'";
        ss=con.createStatement();
        rs=ss.executeQuery(sql);
        while(rs.next() {
        rs.getString("kdUser");
        rs.getString("nmUser");
        rs.getString("accessUser");
        rs.getString("passUser"); }
        rs.last();
        if(rs.getRow()!=1) {
        JOptionPane.showMessageDialog(rootPane, "Sorry, wrong username, password or
        access user ", "Warning",JOptionPane.ERROR_MESSAGE);
        kdUser.setText(null);
        passUser.setText(null) }
        else
        {if(accessUser=="Administrator")
        {
        userakses.set_accessUser("Administrator");
        JOptionPane.showMessageDialog(null,"Well Done ", "Login Status",
        JOptionPane.INFORMATION_MESSAGE);
        new menu_utama2().setVisible(true);
        this.dispose();
        }
        }
        else if(accessUser=="Employee")
  
```



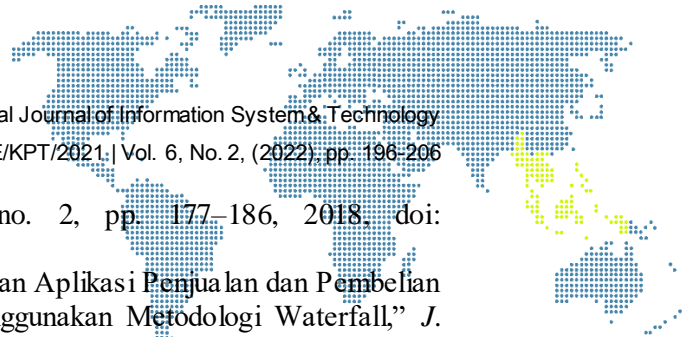
```
{
    userakses.set_accessUser("Employee");
    JOptionPane.showMessageDialog(null, "Well Done ", "Login Status",
    JOptionPane.INFORMATION_MESSAGE);
    new menu_utama2().show();
}
else if(hakAkses=="Owner")
{
    userakses.set_accessUser ("Owner");
    JOptionPane.showMessageDialog(null, "Well Done ", "Login Status",
    JOptionPane.INFORMATION_MESSAGE);
    new menu_utama2().show();
}
}
} catch(Exception e){
    JOptionPane.showMessageDialog(null, "Failed Login", "Warning",
    JOptionPane.ERROR_MESSAGE);
    System.err.print(e);
} } }
```

4. Conclusion

Based on the above explanation, it can be concluded that the processing of information systems on the sale of building material materials that is still being carried out conventionally for the time being, raises some problems. So that it requires the development of the system. The development of the system is certainly the result of communication and coordination between the owner and the system developer, so that it can be determined the needs of the system user. With the development of this system, it is hoped that it will solve all existing problems. And from the development of this system, it will result in a new application that will be applied in the Building Store. Using the MVC method, it can be clearly illustrated the needs of the system user by looking at his Model, View and Controller. This study can be redeveloped by other researchers, so that the results are getting better for the future of this Building Store

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