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DEVELOPMENT OF WEB-BASED VEHICLE SERVICE APPLICATION PROGRAM ON CV X IN BEKASI

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Abstract

The increasing number of motorized vehicles, followed by the addition of new brands and types of vehicles, is certainly one of the factors causing the development of the automotive world in Indonesia and reflects the increasingly fierce competition in the automotive world. The research was conducted at CV X Bekasi with qualitative descriptive research methods. Data obtained from interviews the data sources were obtained from documents and informants. Research informants were managers, staff and main documents of CV X. Data analysis was carried out using interactive analysis techniques, which included data collection, data presentation, data reduction and conclusion drawing. So far, the manufacture of work orders is still manual (handwritten), so there are still frequent errors in customer service and data. Often the wrong number of spare parts causes the car repair process to be hampered. Can provide output in the form of Work Orders (SPK), Invoices and Reports.

Introduction

Today, the high mobility needs of each individual have an impact on the increase in the number of motorized vehicles (Mulyawan & Novia, 2016). The increasing number of motor vehicles followed by the increase of new brands and types of vehicles, is certainly one of the factors causing the development of the automotive world in Indonesia and reflects the growing competition in the automotive world (Wijaya & Christian, 2019). The increasingly fierce business competition and the increasingly rapid development of the business world encourage a company to always improve the quality and service to its consumers so that the company can survive with intense business competition (Septavia, Gunadhi, & Kurniawati, 2016). This competition occurs not only in the field of sales but also in the field of service services that include maintenance or repair workshops. Currently, the development of business actors in establishing workshop services continues to increase because workshop services are followed by the development or increase in motor vehicles (Bambang Noviansyah, 2016). Workshop is an activity based on knowledge and skills about equipment and methods for improve the condition of an object that was previously damaged or not use it into a form that is both beneficial and aesthetic (Meirizky Al Arief, 2019).

To be able to continue to follow the competition in the automotive world, especially workshop companies need to utilize the development of information technology such as the internet and websites to facilitate in carrying out daily activities, data processing, customer service, decision making and others (Priyanto & Khairul, 2014). The web is an internet service

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that is used on a computer network that has a name and address and is a graphically rich source of information that can be accessed via a browser (Intan. et al., 2016). But there are still many companies that have not optimized their business with information technology as above, one of which is CV X Bekasi.

CV X is located in Bekasi, engaged in vehicle services, with an average of 8 to 28 cars entering per day (Rohi, 2016). This workshop is a repair shop for one of the car brands that only provides service and replacement of spare parts (Sumantri, 2015). CV X already has a computerized application program, but it is still not maximized by the leadership, because there are still problems such as frequent errors in making Work Orders (SPK) due to making SPK still manual (handwritten) thus hampering the vehicle service process, often the wrong part number so that the service time becomes longer and causes customers to complain, employee payroll is still done manually and there are no payroll details (salary slips) so there are often differences in employee salaries, as well as the need for web-based applications that can support the development and competition of workshop companies (Bunafit, 2013).

Therefore, to maximize employee performance and overcome existing problems, it is necessary to develop applications that can control spare parts inventory effectively, process service data and speed up the vehicle service process and can be accessed anytime and anywhere through a PC or mobile connected to the internet (Wibowo, 2015).

Method

The research was conducted at CV X in Bekasi research method using qualitative descriptive. Data obtained from interview data sources obtained from documents and informants. The research informants are managers, staff and primary documents from CV X. Data analysis is carried out with interactive technical analysis, which includes data collection, data presentation, data reduction and conclusion drawing.

Results and Discussion

This system design will be applied and developed in application programs consisting of Entity Relationship Diagram (ERD), Normalization, HIPO Structure, Program Flowchart and Program view design.

1. Entity Relationship Diagram.

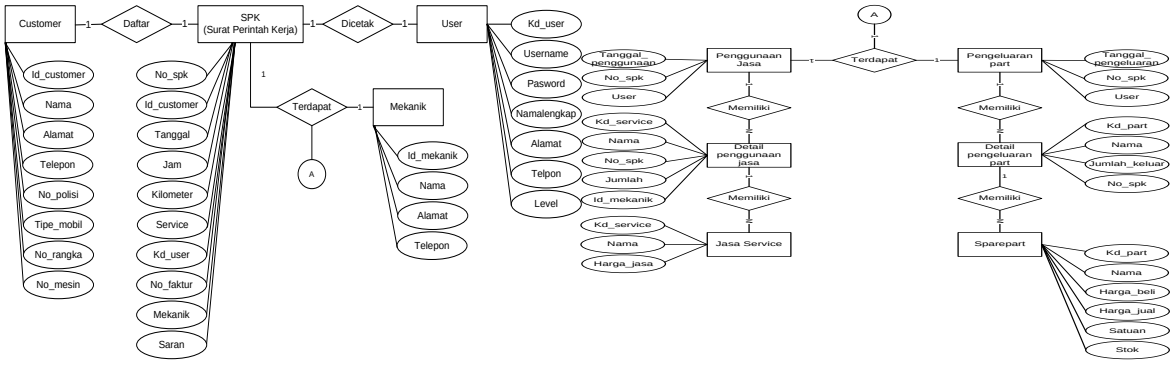


Diagram 1
Entity Relationship Diagram (ERD)

2. Normalization

   Normalization above Abnormal shape, first normal shape and second normal shape.

   a. Unnormalized Form (UNF)

   b. First Normal Form (1NF)

Diagram 2
Abnormal Shapes Table

id_customer
nama
alamat
telepon
no_polisi
tipe_mobil
no_rangka
no_mesin
no_spk
id_customer
tanggal
jam
kilometer
service
id_usser
no_faktur
mekanik
saran
kode_user
username
password
nama_lengkap
alamat
no_telepon
level
id_mekanik
nama
alamat
telepon
kode_user

tgl_pengeluaran
no_spk
user
kode_part
nama_part
jumlah_keluar
no_spk
kd_part
nama
harga_beli
harga_jual
satuan
stok
tgl_penggunaan
no_spk
user
kode_service
nama
no_spk
kd_service
nama
harga

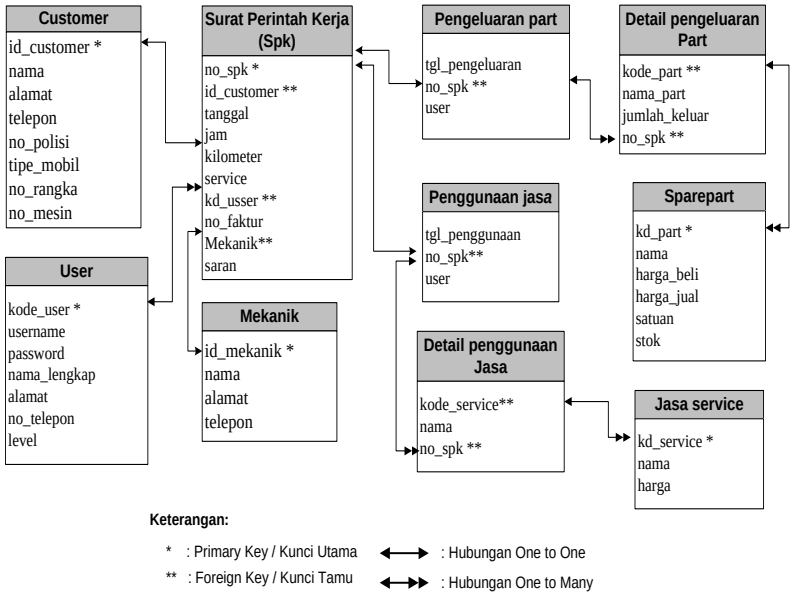
Diagram 3
First Normal Shapes Table

id_customer *
nama
alamat
telepon
no_polisi
tipe_mobil
no_rangka
no_mesin
no_spk *
id_customer **
tanggal
jam
kilometer
service
id_usser **
no_faktur
mekanik
saran
kode_user *
username
password
nama_lengkap
alamat
no_telepon
level
id_mekanik *
nama
alamat
telepon

tgl_pengeluaran
no_spk **
user
kode_part **
nama_part
jumlah_keluar
no_spk **
kd_part *
nama
harga_beli
harga_jual
satuan
stok
tgl_penggunaan
no_spk **
user
kode_service**
nama
no_spk **
kd_service *
nama
harga

c. Second Normal Form (2NF)

Diagram 4
Second Normal Shapes Table



3. Structure HIPO
   Hipo structure of service application program development on CV Suzuki Jaya Motor can be seen in the diagram as follows:

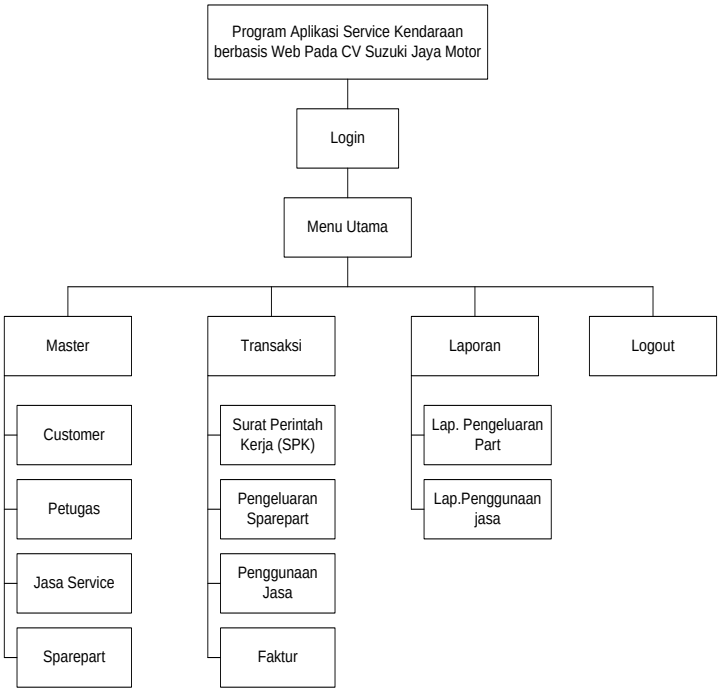


Diagram 5
Structure HIPO

4. Flowchart Program

   Flowchart program consists of main menu, customer data, mechanical data, service data, spare parts data, work orders, part expenditure transactions, service usage transactions, invoices and reports.

   a. Main Menu

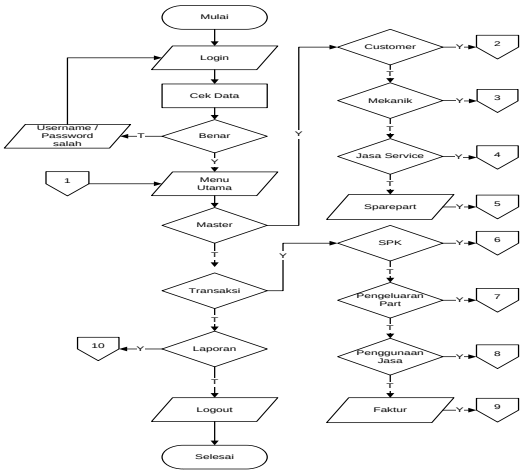


Diagram 6
Flowchart Main Menu

   b. Customer Data

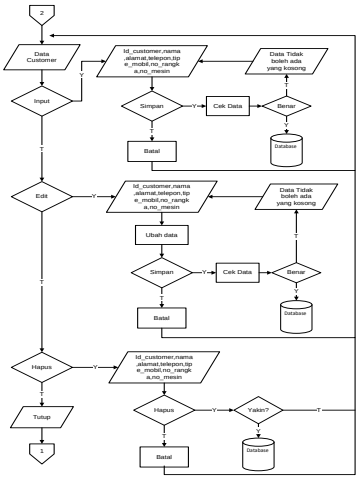


Diagram 7
Flowchart Customer Data

   c. Mechanical Data

   d. Data Service

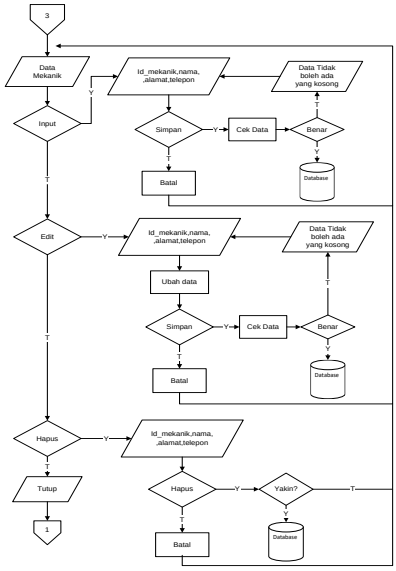


Diagram 8 Flowchart Mechanical Data

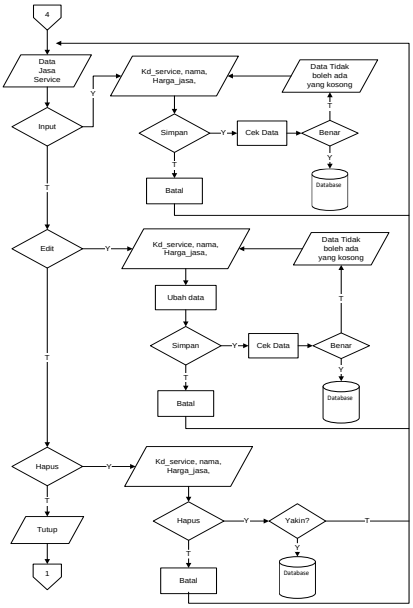


Diagram 9 Flowchart Data service

e. Sparepart Data

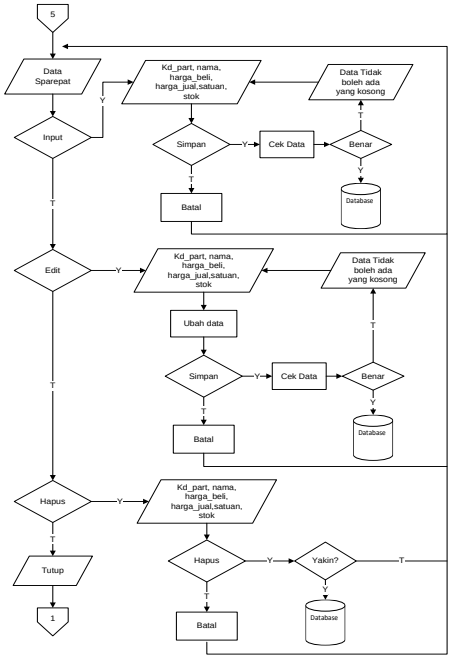


Diagram 10
Flowchart Sparepart Data

f. Work Order Data (SPK)

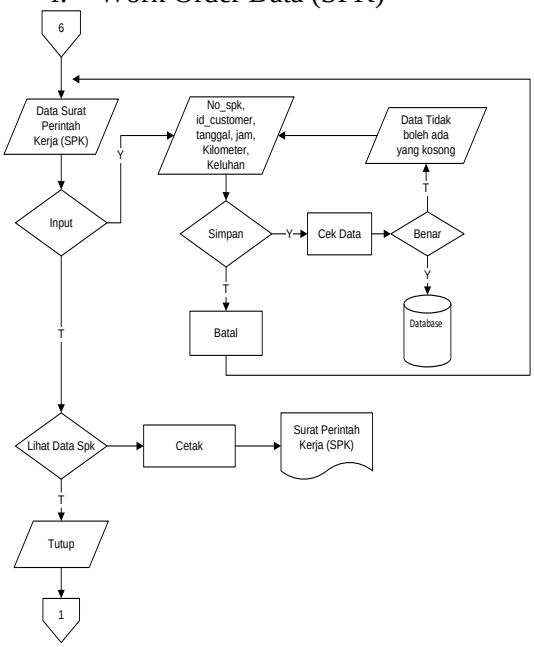


Diagram 11
Flowchart Work Order (SPK)

g. Part Exit Transactions

h. Service Usage Transactions

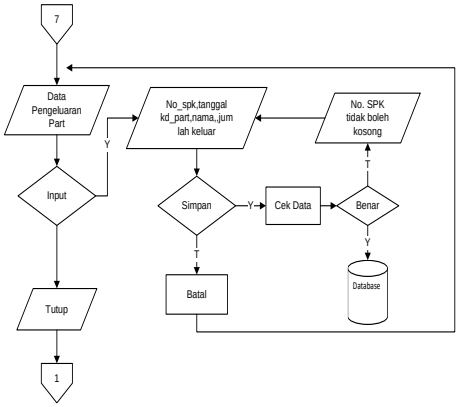


Diagram 12
Flowchart Part Exit Transactions

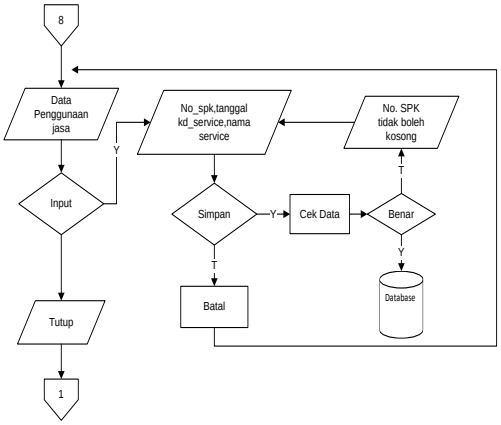


Diagram 13
Flowchart Service Usage Transactions

i. Invoice

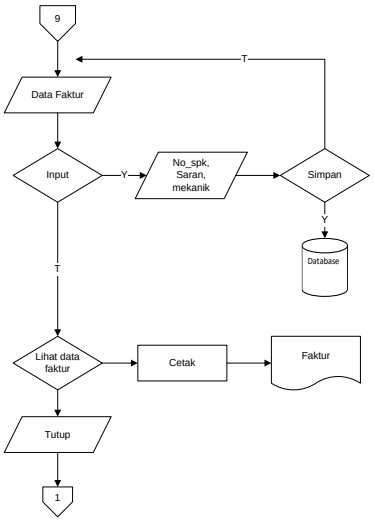


Diagram 14
Flowchart Invoice

j. Report

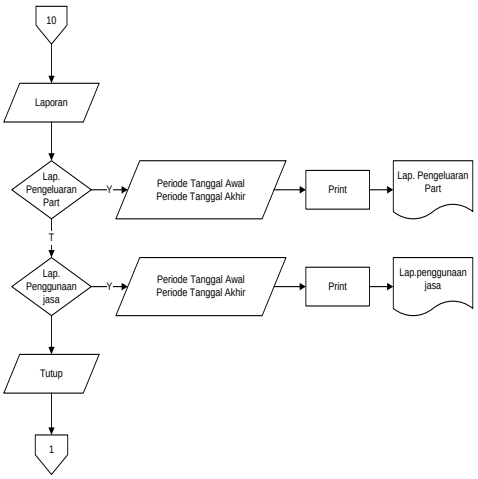


Diagram 15
Flowchart Report

1. Program Display Design

Login

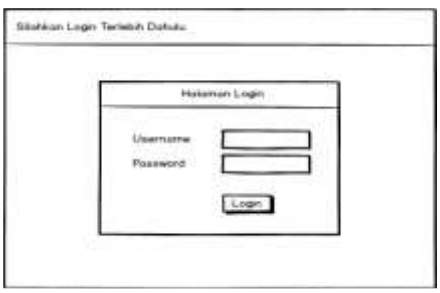


Figure 1
Login View Design

Main Menu

Figure 2
Main Menu View Design

Master Data Customer

Master of Mechanical Data

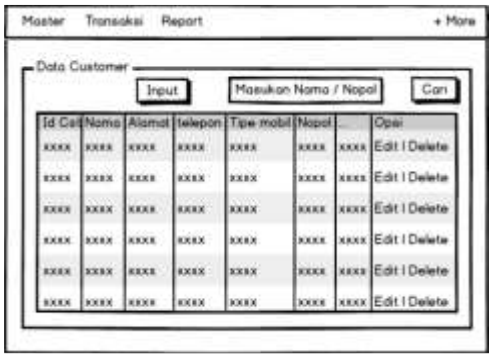


Figure 3 Master View Design of Customer Data

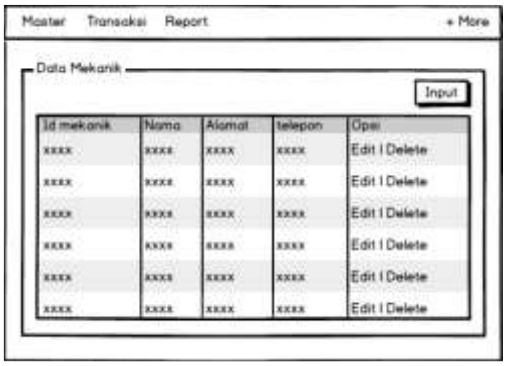


Figure 4 Mechanical Data Master View Design

Master data service

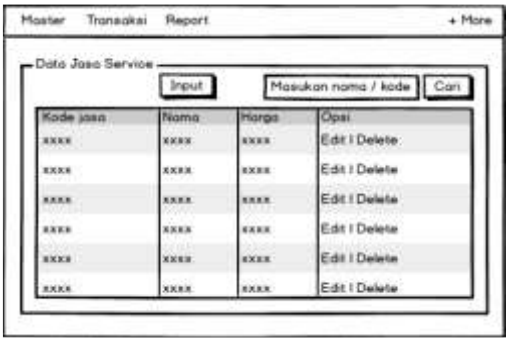


Figure 5
Design of Service Data Master Display

Master Data Sparepart

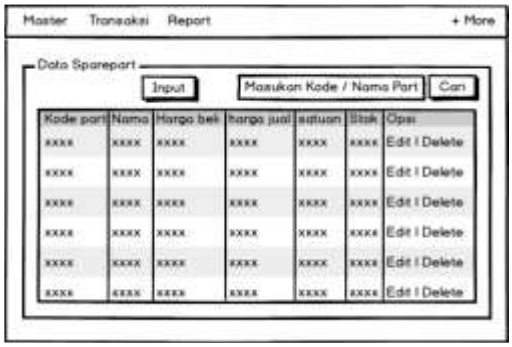


Figure 6
Master View Design of Sparepart Data

Work Order (SPK)

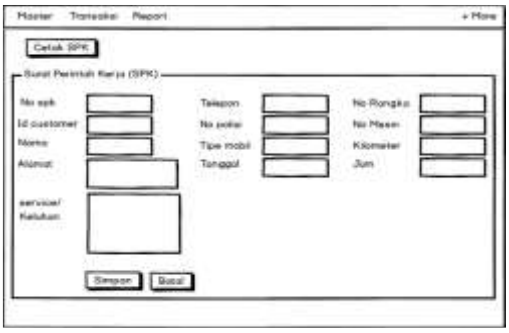


Figure 7
Work Order Display Design (SPK)

Sparepart Expenditure Transaction

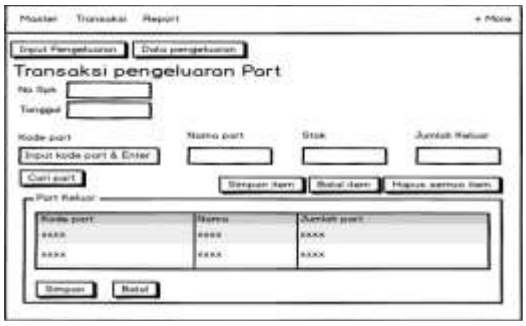


Figure 8
Design of Sparepart Expenditure Transaction Display

Service Processing Transactions

Input Data Faktur

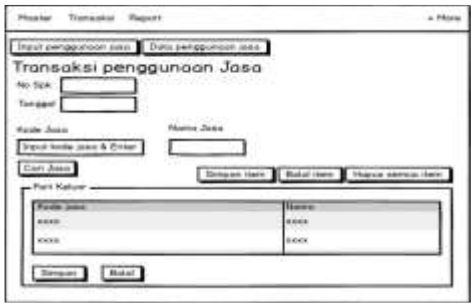


Figure 9
Spare Parts Expenditure Transaction Display Design

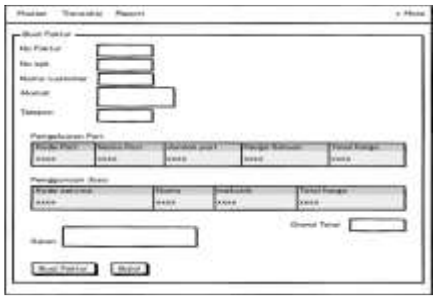


Figure 10
Invoice Data Input Display Design

Laporan Pengeluaran Sparepart

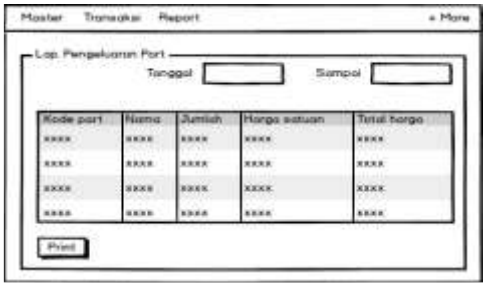


Figure 11
Spare Parts Expenditure Report Display Design

Laporan Penggunaan Jasa

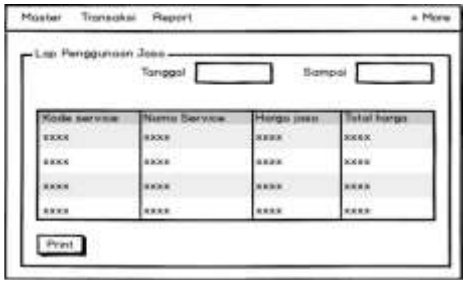
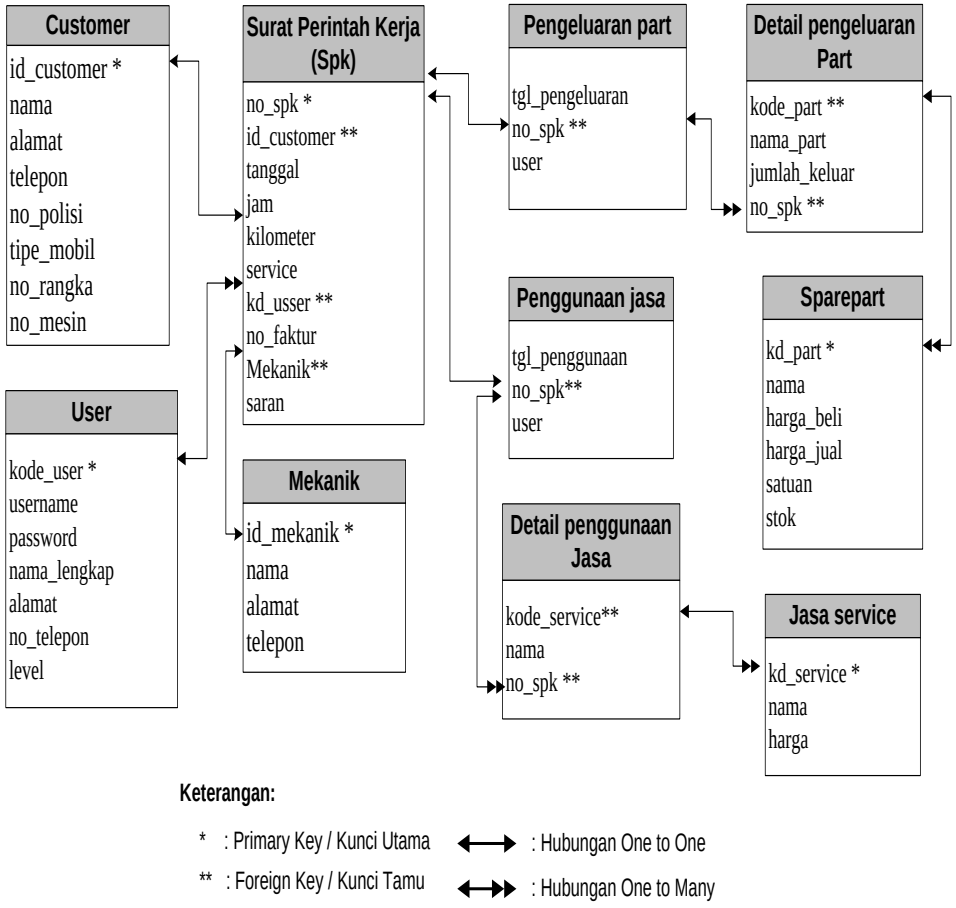


Figure 12
Spare Parts Expenditure Report Display Design

A. Implementation

1. Relationships Between Tables

Diagram 16
Relationships Between Tables



2. Database Structure

a. Customer Table

Table 1
Customer Table

Column	Type	Null	Default
id_customer	varchar(20)	No	
Name	varchar(40)	No	
Address	varchar(50)	No	
Phone	varchar(40)	No	
no_polisi	varchar(15)	No	
tipe_mobil	varchar(40)	No	
no_rangka	varchar(20)	No	
no_mesin	varchar(20)	No	

b. Work Order Table (SPK)

Table 2
Work Order Table (SPK)

Column	Type	Null	Default
no_spk	varchar(20)	No	

id_customer	varchar(20)	No
Date	date	No
hours	time(6)	No
Kilometers	varchar(6)	No
service	varchar(100)	No
id_petugas	varchar(20)	No
no_faktur	varchar(20)	No
Advice	text	No

c. Mechanical Table

Table 3
Mechanical Table

Column	Type	Null	Default
id_ Mechanical	varchar(20)	No	
Name	varchar(40)	No	
Address	varchar(50)	No	
Phone	varchar(40)	No	

d. User Tabel

Table 4
User Table

Column	Type	Null	Default
kode_user	int(11)	No	
username	varchar(40)	No	
password	varchar(40)	No	
Name	varchar(30)	No	
Gender	enum('Laki-laki', 'Perempuan')	No	
Address	longtext	No	
no_telepon	varchar(15)	No	
Level	enum('admin', 'kasir')	No	

e. Sparepart Table

Table 5
Sparepart Table

Column	Type	Null	Default
kd_part	varchar(20)	No	
Name	varchar(40)	No	
harga_beli	int(20)	No	
harga_jual	int(20)	No	
Unit	varchar(10)	No	
Stock	int(5)	No	

f. Sparepart Expenditure Table

Table 6
Sparepart Expenditure Table

Column	Type	Null	Default
date of expenses	varchar(15)	No	
no_spk	varchar(20)	No	
user	varchar(20)	No	

g. Sparepart Expenditure Details Table

Table 7
Sparepart Expenditure Details Table

Column	Type	Null	Default
kode_part	varchar(30)	No	
name_part	varchar(50)	No	
Amount _ Out	int(11)	No	
no_spk	varchar(20)	No	

h. Service Table

Table 8
Service Table

Column	Type	Null	Default
kd_service	varchar(9)	No	
Name	varchar(40)	No	
Price	int(20)	No	

i. Service Usage Table

Table 9
Service Usage Table

Column	Type	Null	Default
Date_Use	varchar(15)	No	
no_spk	varchar(20)	No	
Mechanical	varchar(10)	No	
User			

j. Service Usage Details Table

Table 10
Service Usage Details Table

Column	Type	Null	Default
kode_Service	varchar(30)	No	
name	varchar(40)	No	
no_spk	varchar(20)	No	

3. Main Menu View, Program Input and Output

a. Login view

Figure 13
Login view

b. Main Menu View

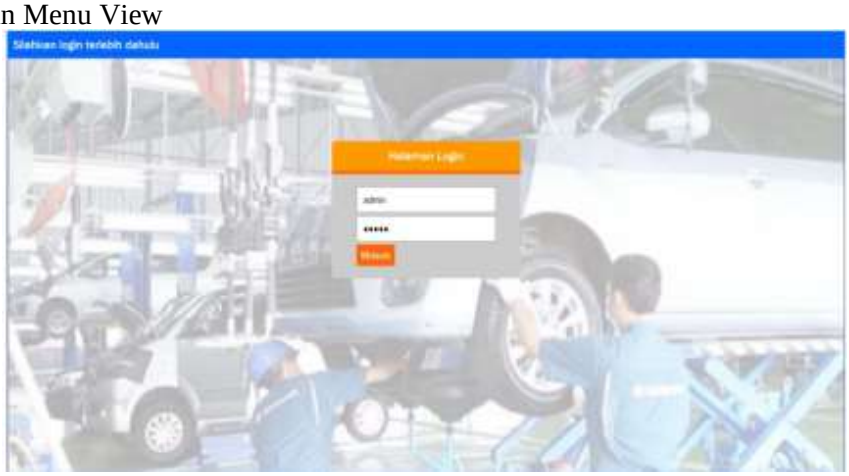


Figure 14
Main Menu View

c. Customer Data View

Figure 15
Customer Data View

d. Customer data input view

Figure 16
Tampilan Input Data Customer

e. Tampilan Data Mekanik

Figure 17
Mechanical Data Display

f. Service Data Display

Figure 18
Service Data Display

g. Sparepart Data View

Figure 19
Sparepart Data View

h. Work Order Data Input View (SPK)

Figure 20
Work Order Data Input View (SPK)

i. Work Order Print View (SPK)

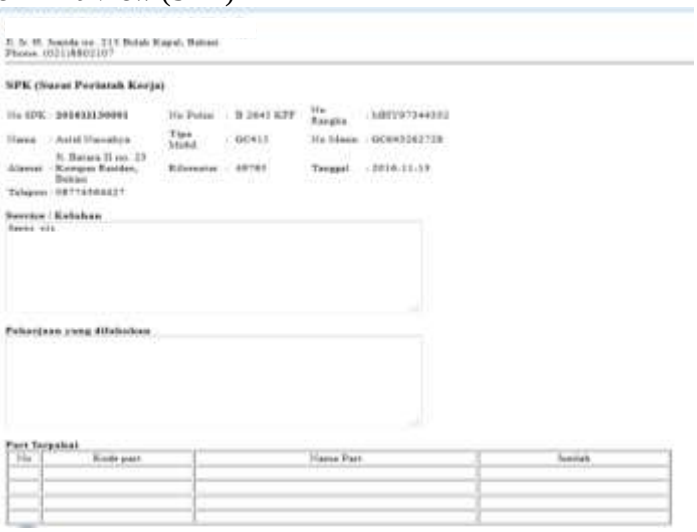


Figure 21
Work Order Print View (SPK)

j. Data Input View of Sparepart Expenditure Transactions

Figure 22
Data Input View of Sparepart Expenditure Transactions

k. Service Usage Transaction Input Display

Figure 23
Data Input View of Service Usage Transactions

l. Invoice Data Input View

Figure 24
Invoice Data Input View

m. Print Invoice View

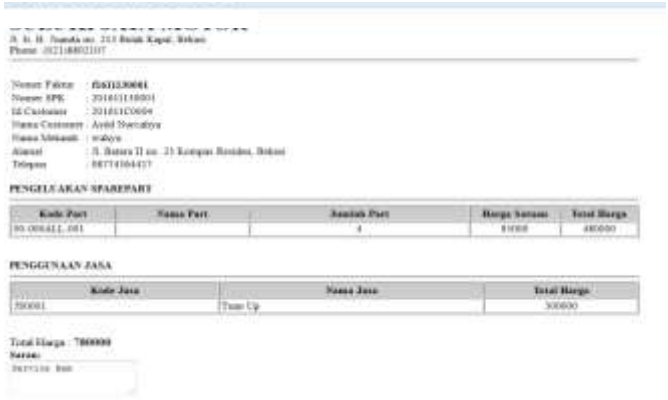


Figure 25
Print Invoice View

n. Report View

1) Sparepart Expense Report View

Figure 26
Work Order Data Input View (SPK)

2) Print Print Report on Sparepart Expenses

Jl. Ir. H. Juanda no. 213 Bulak Kapal, Bekasi
Phone. (021)8802107

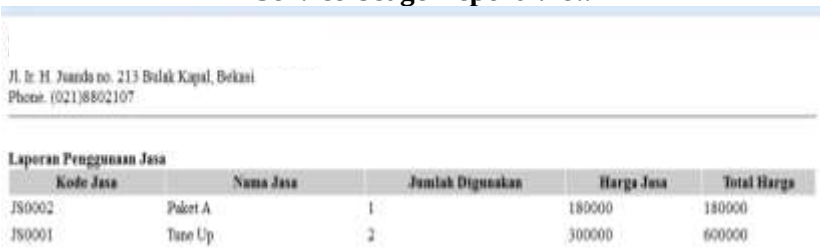
Laporan Penggunaan Sparepart

Kode Part	Nama Part	Jumlah Terpakai	Satuan	Harga Satuan	Total Harga
00-RS415-001	Busi	4	Pcs	25000	100000
00-000ALL-001	Oli SGO 5W30	4	Liter	95000	380000

Figure 27
Print Report Exit Part view

3) Service Usage Report View

Figure 28
Service Usage Report View



Jl. Ir. H. Juanda no. 213 Bulak Kapal, Bekasi
Phone. (021)8802107

Laporan Penggunaan Jasa

Kode Jasa	Nama Jasa	Jumlah Digunakan	Harga Jasa	Total Harga
JS0002	Paket A	1	180000	180000
JS0001	Tune Up	2	300000	600000

Figure 29
PrintEd View of Service Usage Report

4. Compile Program / Program End Result

a. Set up the ExeOutPut For PHP tools and the PHP files you want to turn into . Exe
b. Run exeoutput tools for PHP, after the initial display appears from ExeOutPut For PHP, select New Application
c. Step 1 on the Welcome view click Next
d. Step 2 of the Source Folder Path view determines the location of the PHP project you want to turn into a. EXE (C:\xampp\htdocs\servicemobil), and then click Next.
e. Step 3 of the Index Page view, specify the index file of the project that has been created (index.php), then click Next
f. Step 4 of Output File view, specify the output location of the . EXE of the created project. (Desktop\X. EXE)**.**
g. Step 5 of The Output File view, give the application title of the project created earlier in application tille. (X), then click Finish
h. If our PHP file is using a MySql database, configure it in the PHP Settings menu then select PHP Extensions, then change the settings by right-clicking on the php_mysql.dll and php_pdo_mysql.dll then select Compile into the EXE
i. If you want to change the skin window, choose Application Settings menu then select Skin Properties on selected skin look for the skin that suits your wishes. For example: Ubuntu_Ext.skn
j. When you're done with some configurations, click Compile Your Application. Wait until the process is complete in compile.
k. Done (Application we just run)

Conclusion

With the Development of Vehicle Service Application Program on CV Suzuki Jaya Motor in Bekasi, it can be concluded as follows:

At this time, the creation of work orders is still manual (handwriting), so it is still often an error in the service and customer data. Often the wrong number of spare parts causes the repair process of the car is constrained. Can provide output in the form of Work Orders (SPK), Invoices and Reports.

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