

# CAPSTONE PROJECT.

Local Web-Based Disbursement Voucher  
Management Information System with Optical  
Character Recognition (OCR) for City Treasurer's  
Office in Science City of Muñoz

# Team.



**Fernando Jose A. Lopez**



**Jerrymih Jade U. Mercado**



**Ivan Wendell E. Magtalas**

# Chapter I.

## INTRODUCTION

Local Government Unit (LGU) are reflections of public sector performance which in turn creates an impression on how a particular government office performs. Transparency and the concepts of good governance and desirable work ethics have been seen as essential practices within organizations. Studies have found that transparency is often a part of these practices (Gabriel, 2020).

Disbursements are any written or another form of payment made. Usually, they are cash or check payments or other ways of paying.

Optical character recognition (OCR) is the process of identifying the characters on a printed page without having to look at them. Optical character recognition has grown to be one of the most powerful tools for processing textual documents.

# Chapter I.

## PROBLEM STATEMENT

Unorganized disbursement vouchers since all of them are found in physical space.

Organization and modification of disbursement vouchers can be difficult and time consuming.

Having no means to easily generate reports and analysis regarding the disbursement vouchers.

It is difficult to know the current status of the disbursement since they have to manually check the physical copies or multiple excel files.

Multiple excel files for different offices that are manually inserted which is difficult to sort and prone to redundancy.

It is hard to know if the voucher is already paid or not.

# Chapter I.

## OBJECTIVE OF THE STUDY

Manage disbursement vouchers handling in digital format.

Organize and sort disbursement vouchers by providing different filters and sorting functionalities.

Generate reports regarding the disbursement vouchers based on lists, searches, and filters with analysis in the form of lists.

Manage the records status such as voucher number, payee, particulars, amount, and so on.

Insert data from the voucher automatically with the use of optical character recognition.

Send an email notification to various offices about vouchers given, so that they know the voucher was already disbursed.

# **Chapter I.**

## **SCOPE AND LIMITATION**

The system will contain the following modules: sorting, voucher catalog, import/export, basic analysis and report generation. The system will also contain CRUD, search and filter for every record or data, department voucher management, as well as an Optical Character Recognition (OCR)and email notification.

## **Chapter II.**

# **REVIEW OF RELATED LITERATURE AND EXISTING ALTERNATIVES**



**In the Philippines, there are three main classifications for government spending:**



**Personal Services**

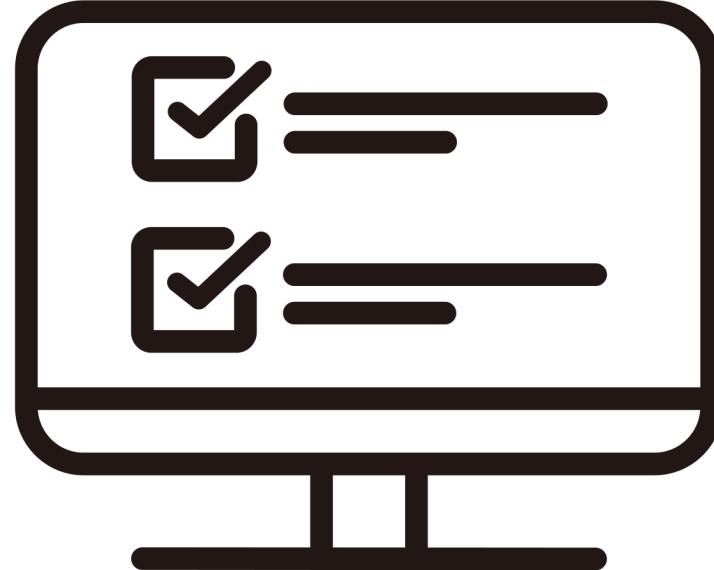


**Operating Expenses**



**Capital outlays**





# SYNTHESIS

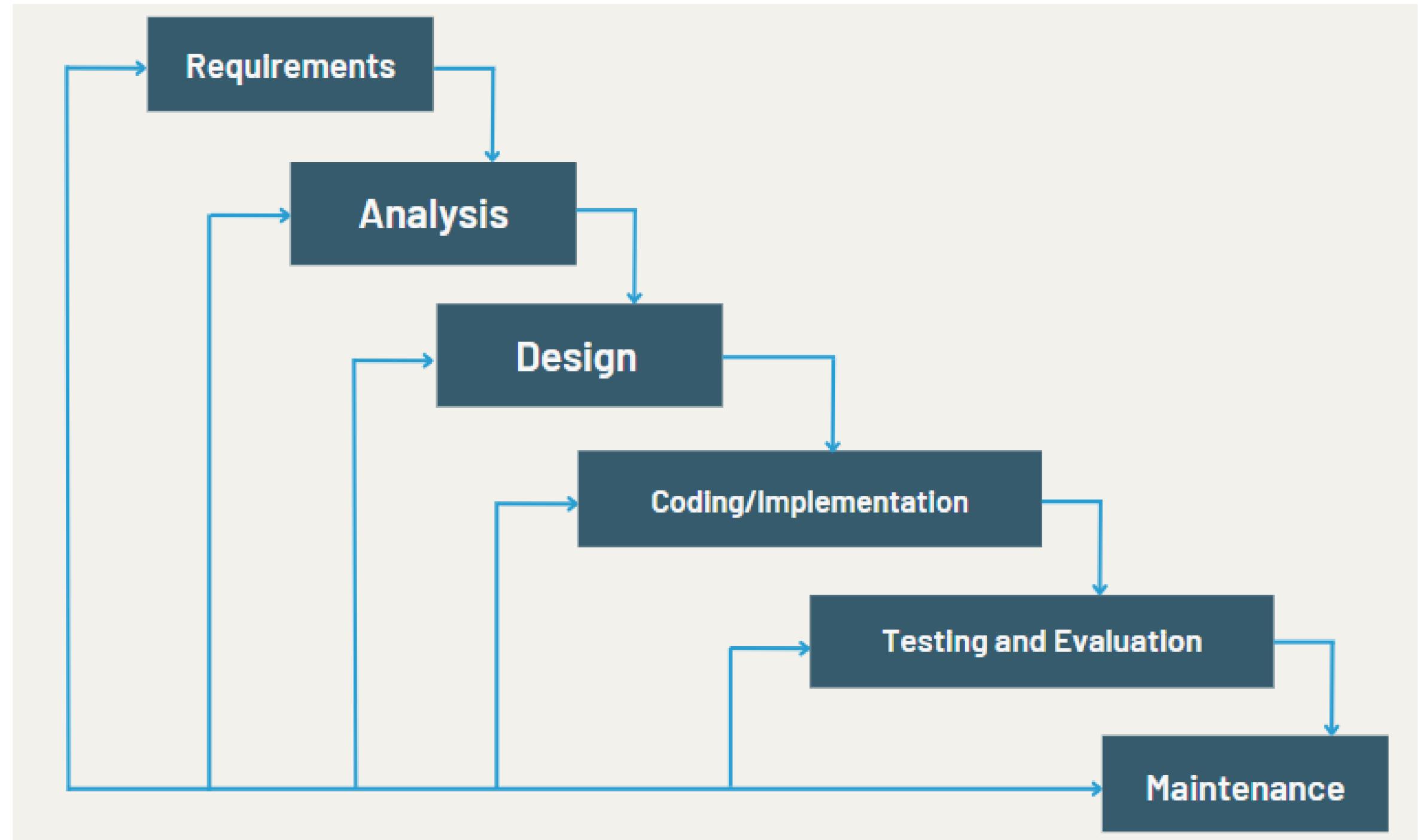


The similarities of the proposed system and two (eMDS and TUP system) alternatives is about managing information of a specific product to purchased and record the data of the disbursement voucher form while the difference between these two alternatives are not using the optical character recognition function to record their data into system that our proposed system have this functionality and other such as sorting, search and filter, CRUD function, etc.

Online Optical Character Recognition alternatives and proposed system similarities is these two are using OCR to convert image into text but this alternative is also displaying the scan image text and displaying the scan text randomly, the functionality is only conversion.

The system has a search and filter function for more efficient finding of information. Also, the use of the OCR function on the system will be a great help in terms of scanning the documents since it is faster than typing them manually. Because the OCR function was not perfect, the team limited the amount of manual typing in the system to simply reviewing the scanned documents and some of the data needed to be typed manually.

# **CHAPTER III & IV.**



## Software Development Life Cycle (SDLC) Modified Waterfall Model

# **Requirement Phase.**

# Data Gathering

## List of Questions



What is the step-by-step process of a disbursement voucher?



They have rules about the process of voucher form?



How is the procedure of other departments to submit their voucher to the destination? and what office receives the voucher form first?



What information is needed before submitting the voucher?



They have a specific time to submit the voucher form?



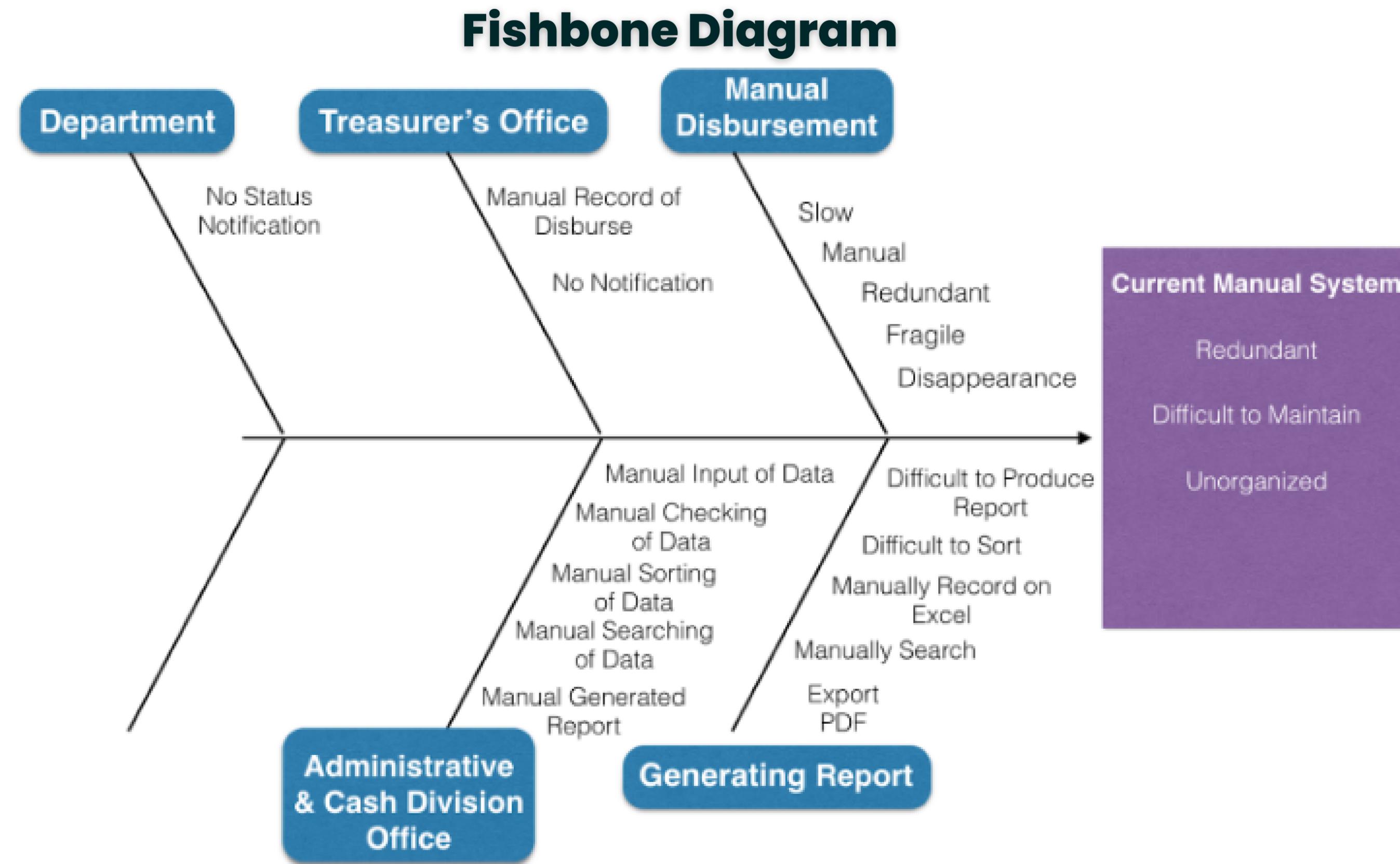
The data from the voucher where do you store it?



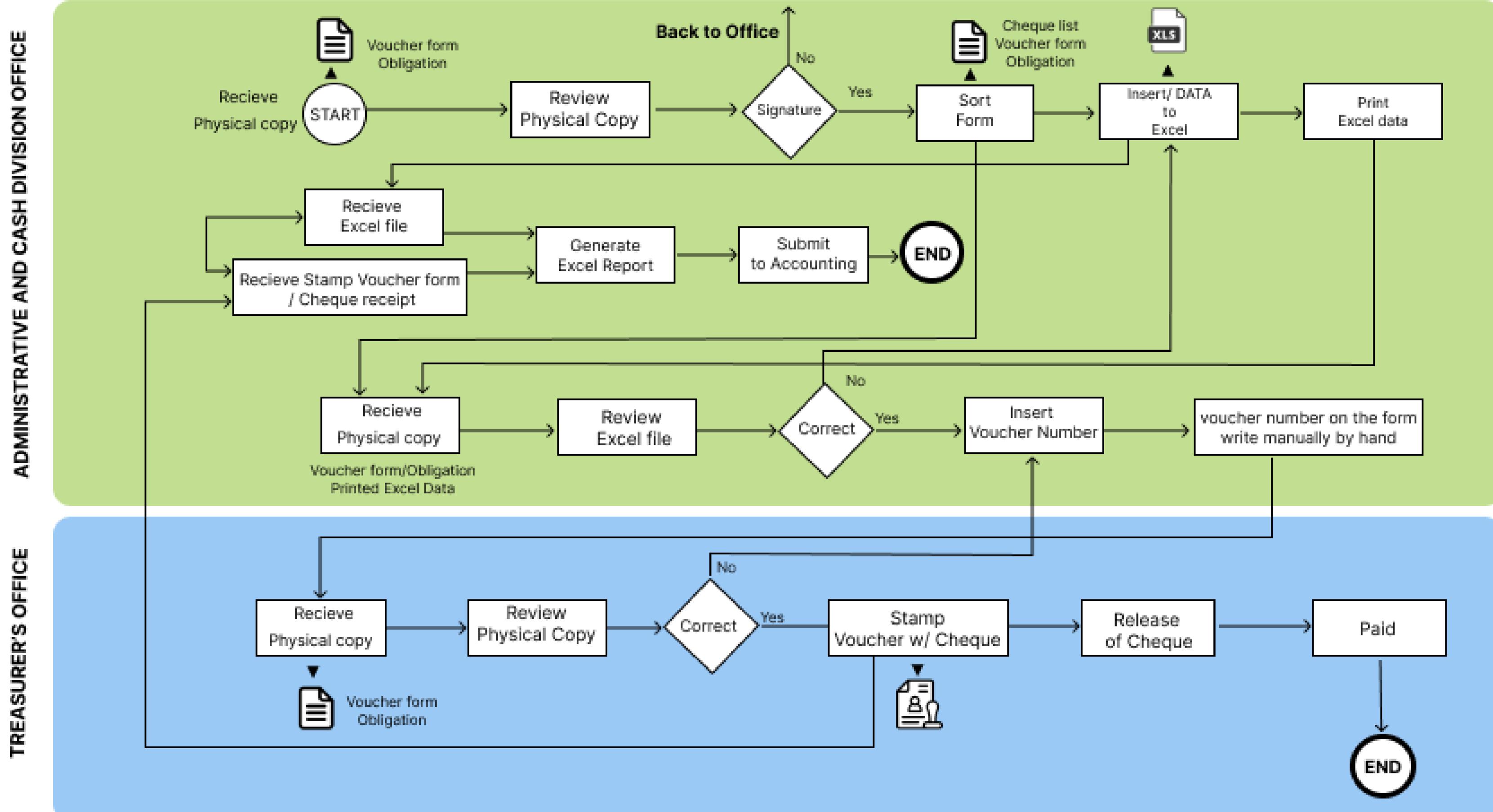
What part of storing data is mostly the problem?



# To visualize, the team will also come up with the following diagrams:

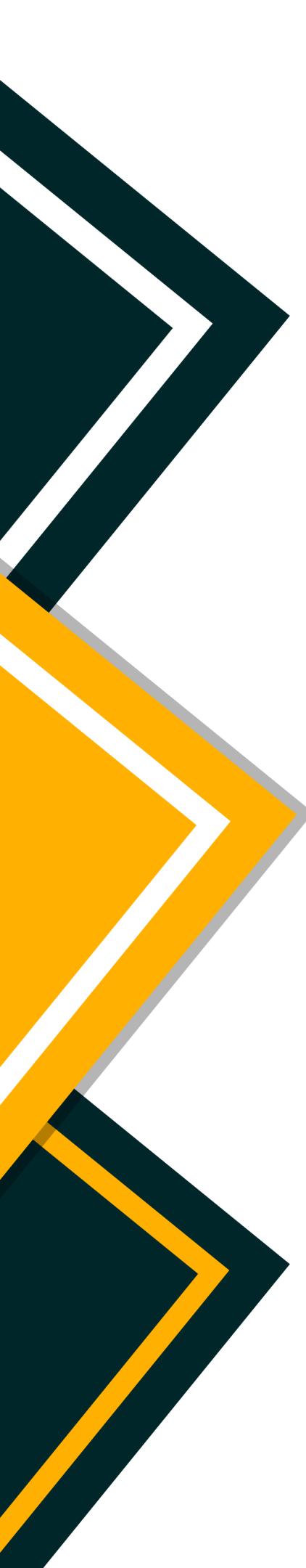


# Current Business Process Diagram



# **Analysis Phase.**

# **Feasibility Study**



**Economic Feasibility**

**Schedule Feasibility**

**Technical Feasibility**

**Operational Feasibility**

# Economic Feasibility

Item	Quantity	Amount
<b>Dell PowerEdge T40 Tower Server (set)</b>	<b>1 unit</b>	<b>₱57,500</b>
<b>Printer with scanner</b>	<b>1 unit</b>	<b>₱4,900</b>
<b>OCR API services</b>	<b>1 unit</b>	<b>₱0</b>
		<b>Total = 62,400</b>

Cost of the Project

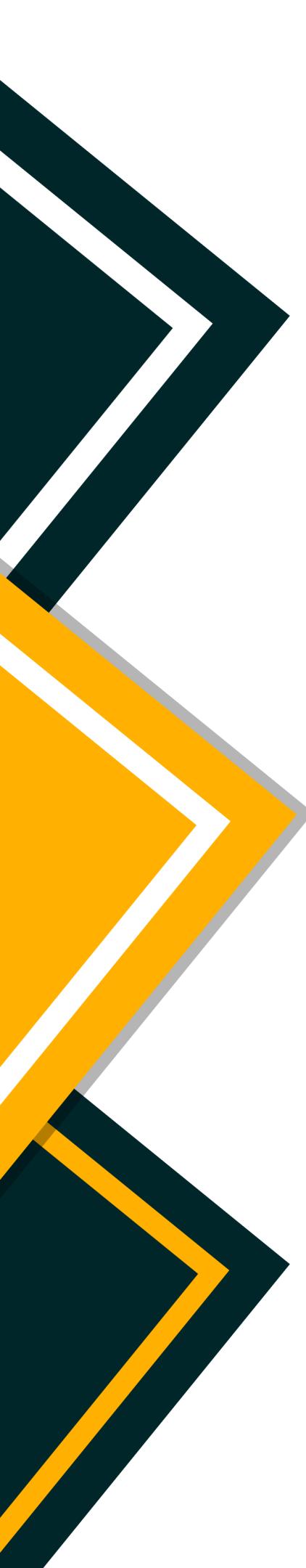
# Schedule Feasibility

# Gantt Chart

# Technical Feasibility

Cost Items	Hardware(minimum)	Recommended
PC (server) CPU CPU Architecture RAM Hard Disk	2.0 GHz 64-bit 6 GB 40 GB	3.0 GHz or higher 64-bit 8 GB or higher 64 GB or higher
PC (Desktop) Operating System CPU RAM Hard Disk	Windows 7 1.4GHz 4 GB 16 GB	Windows 10 2.0 GHz or higher 6 GB 32 GB or higher

System Requirements



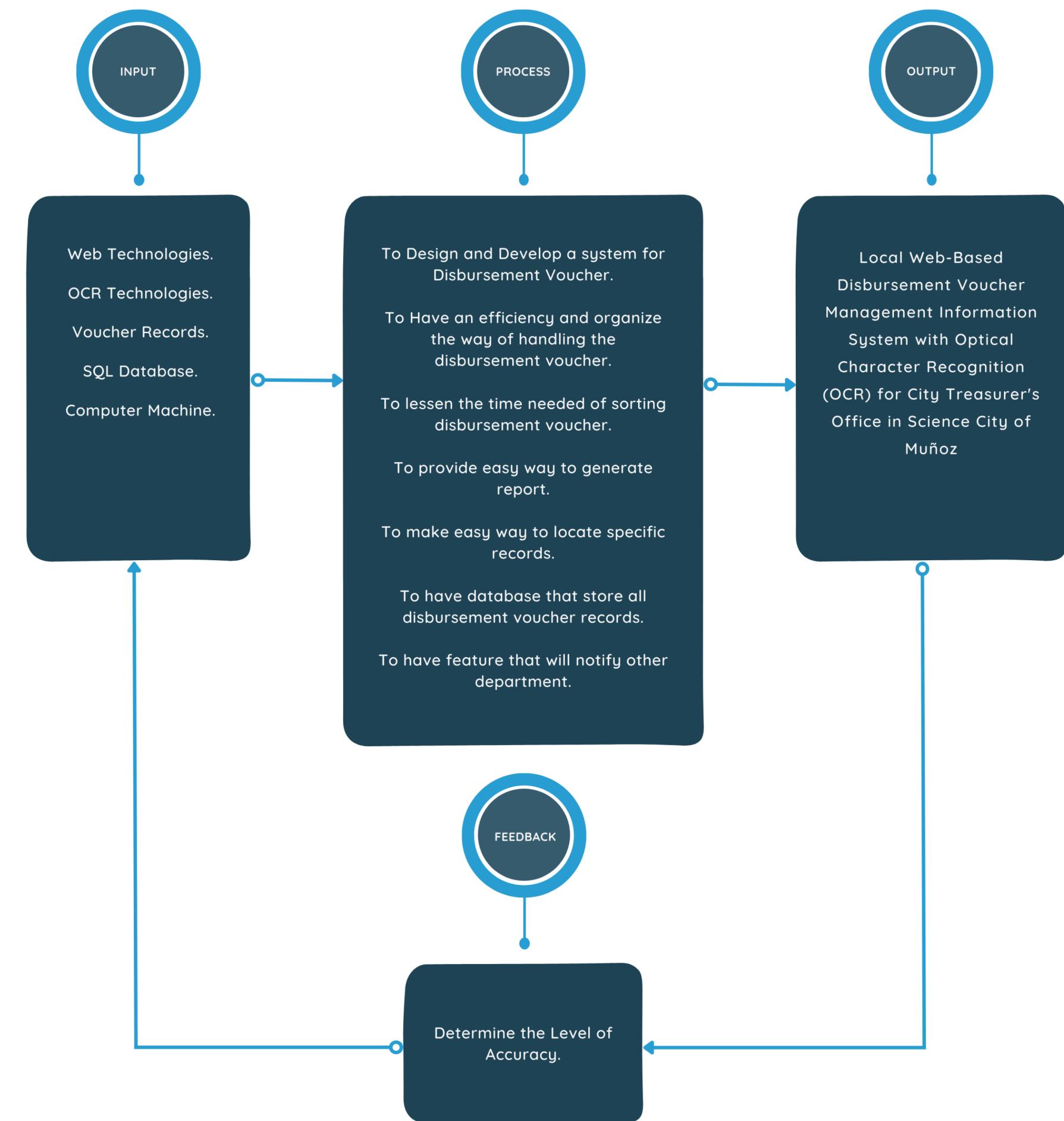
# **Operational Feasibility**

Administrative and Cash Division Staff.

Assistant Staff.

Head of City Treasurer's.

# Input-Process-Output (IPO) Diagram

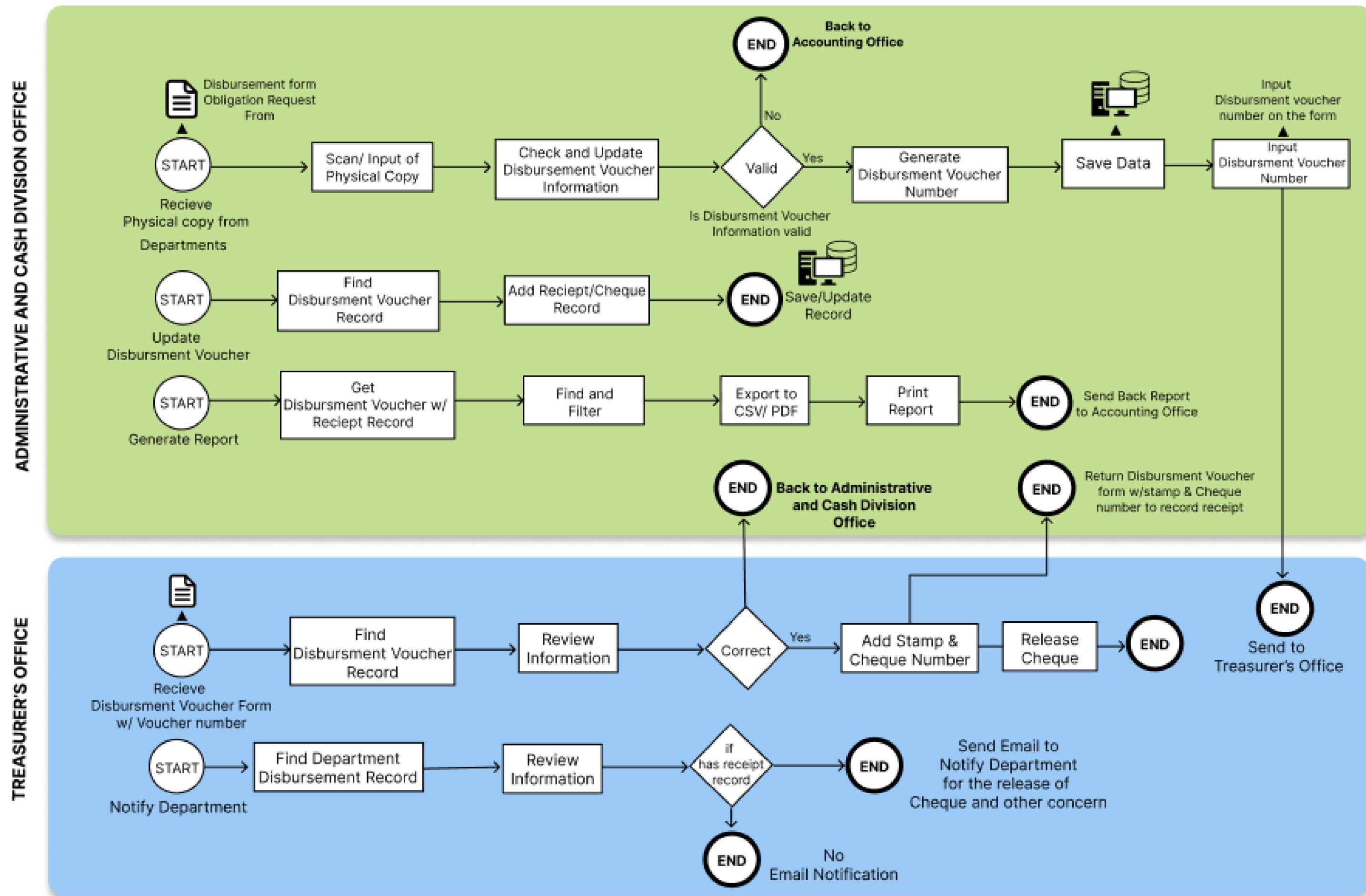




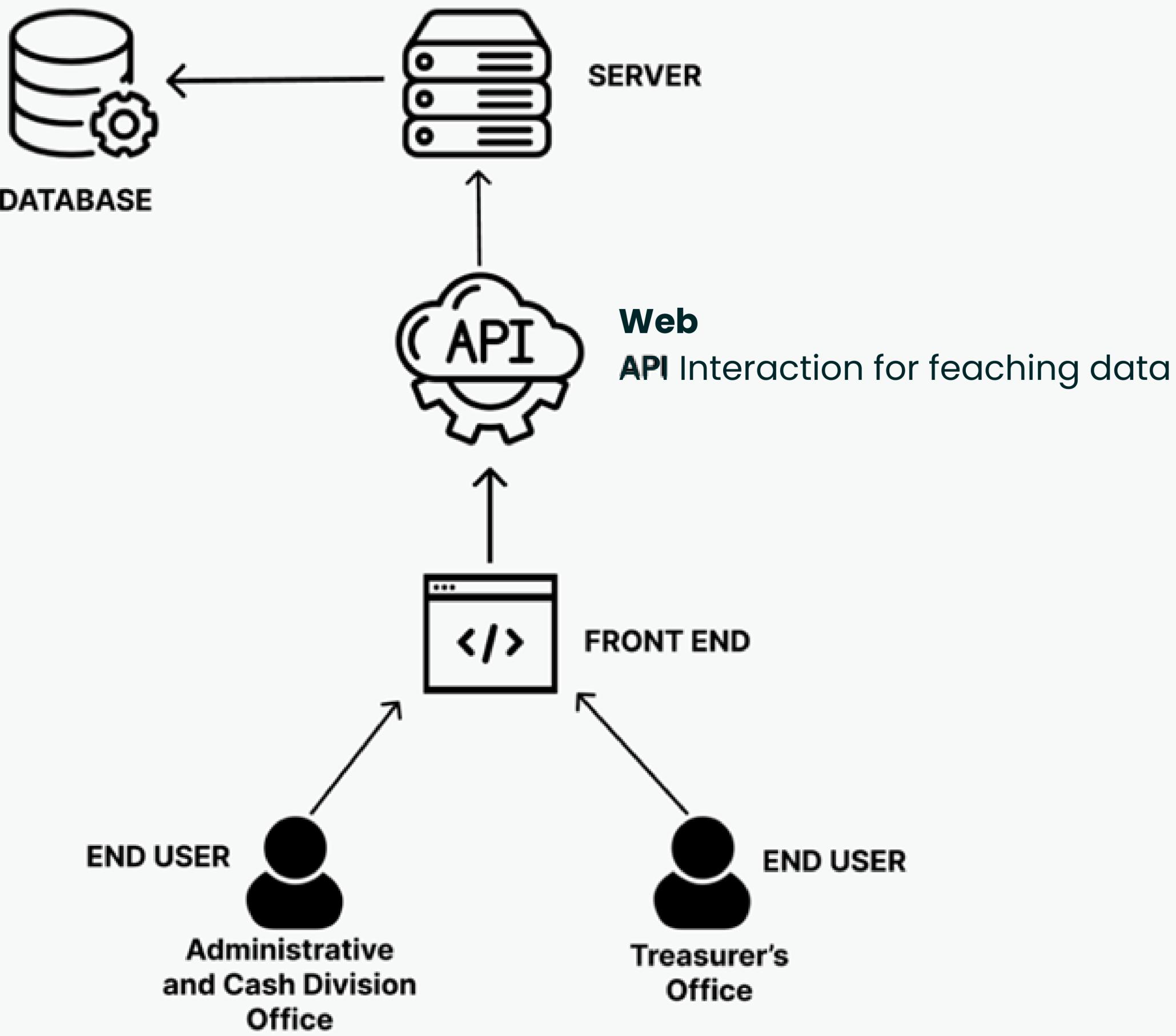
# Design Phase.

# Process Models.

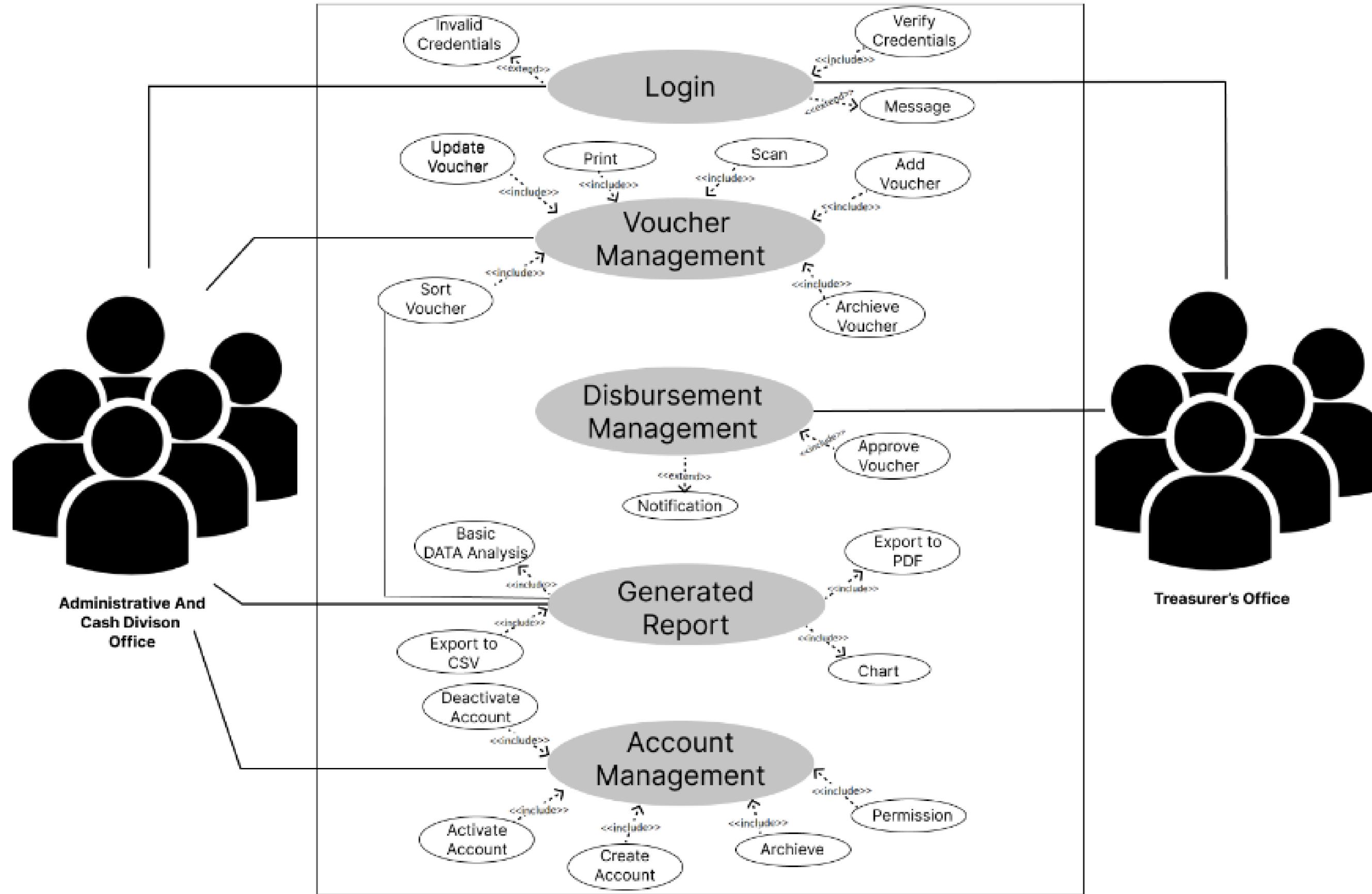
# Project Business Process Diagram



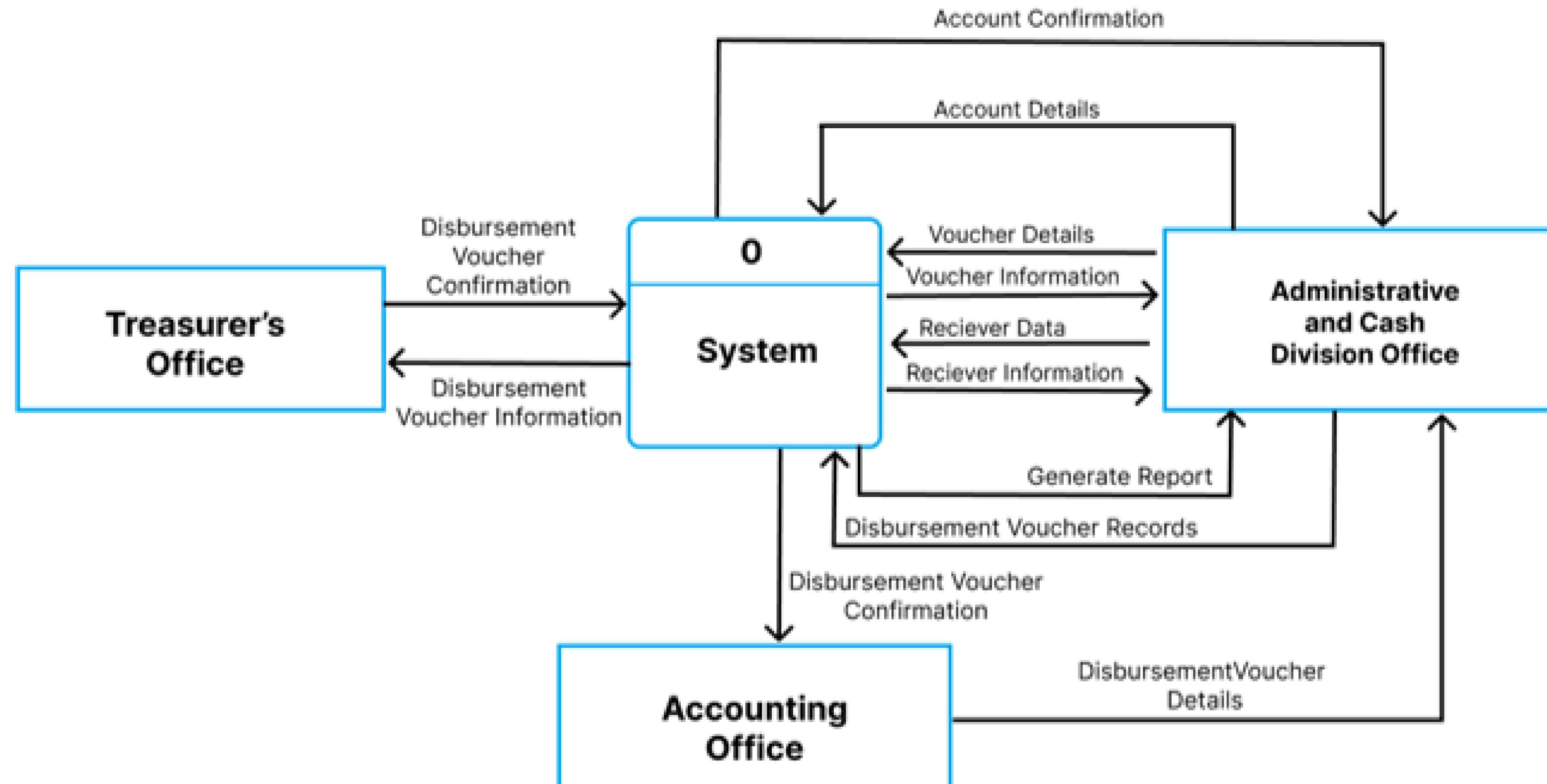
# System Architecture Design



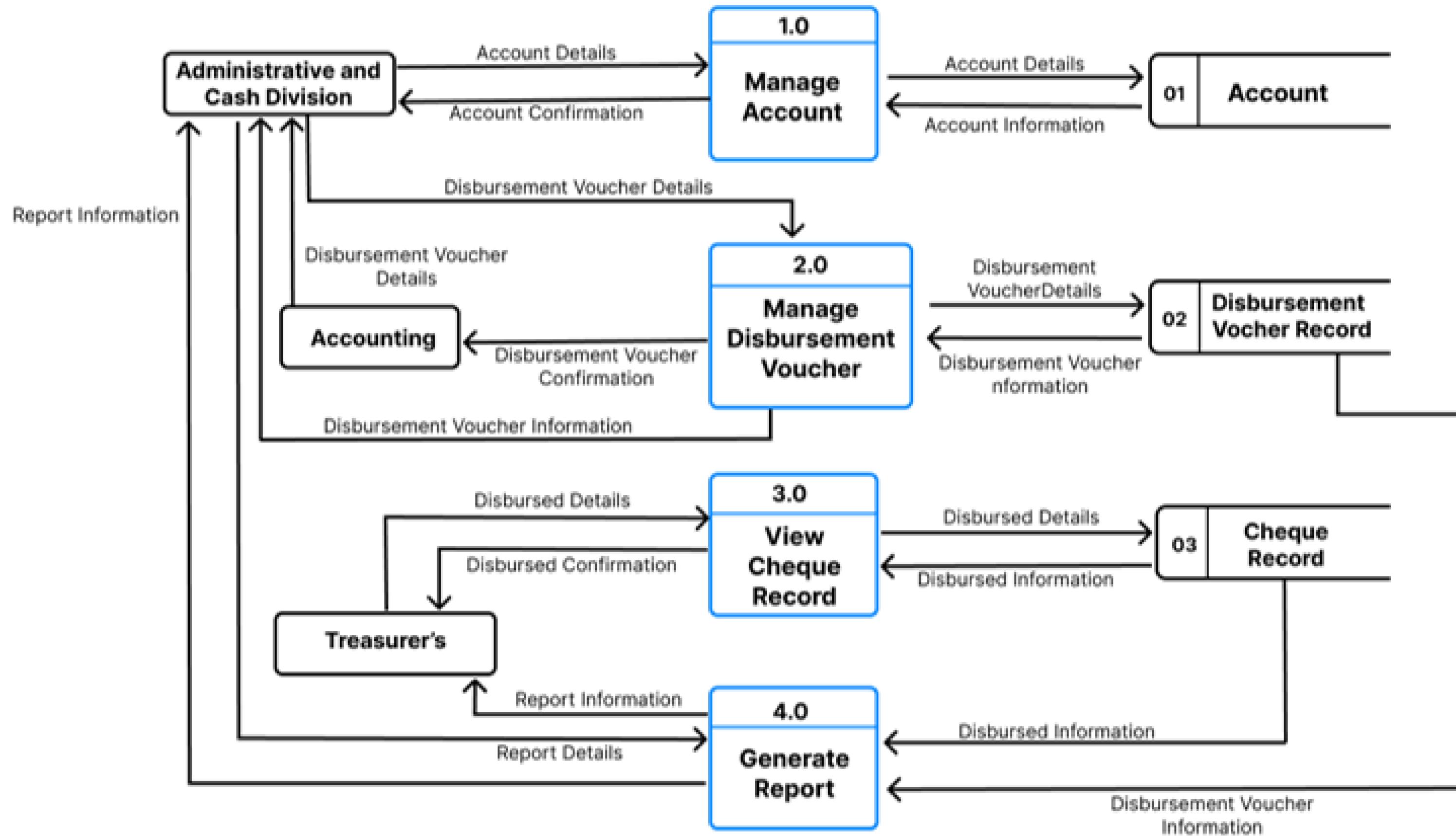
# Use Case Diagram



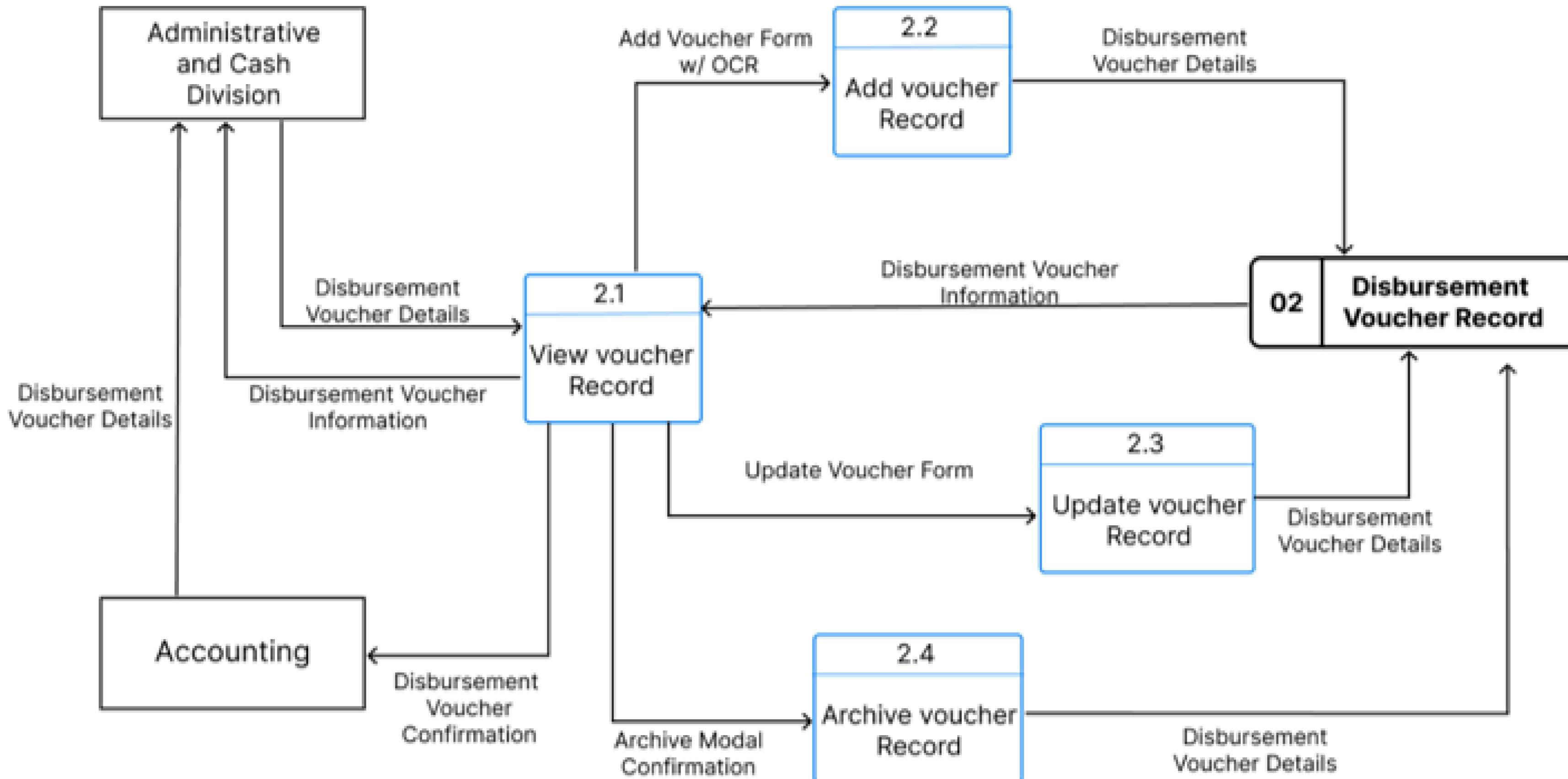
# Context Level Diagram



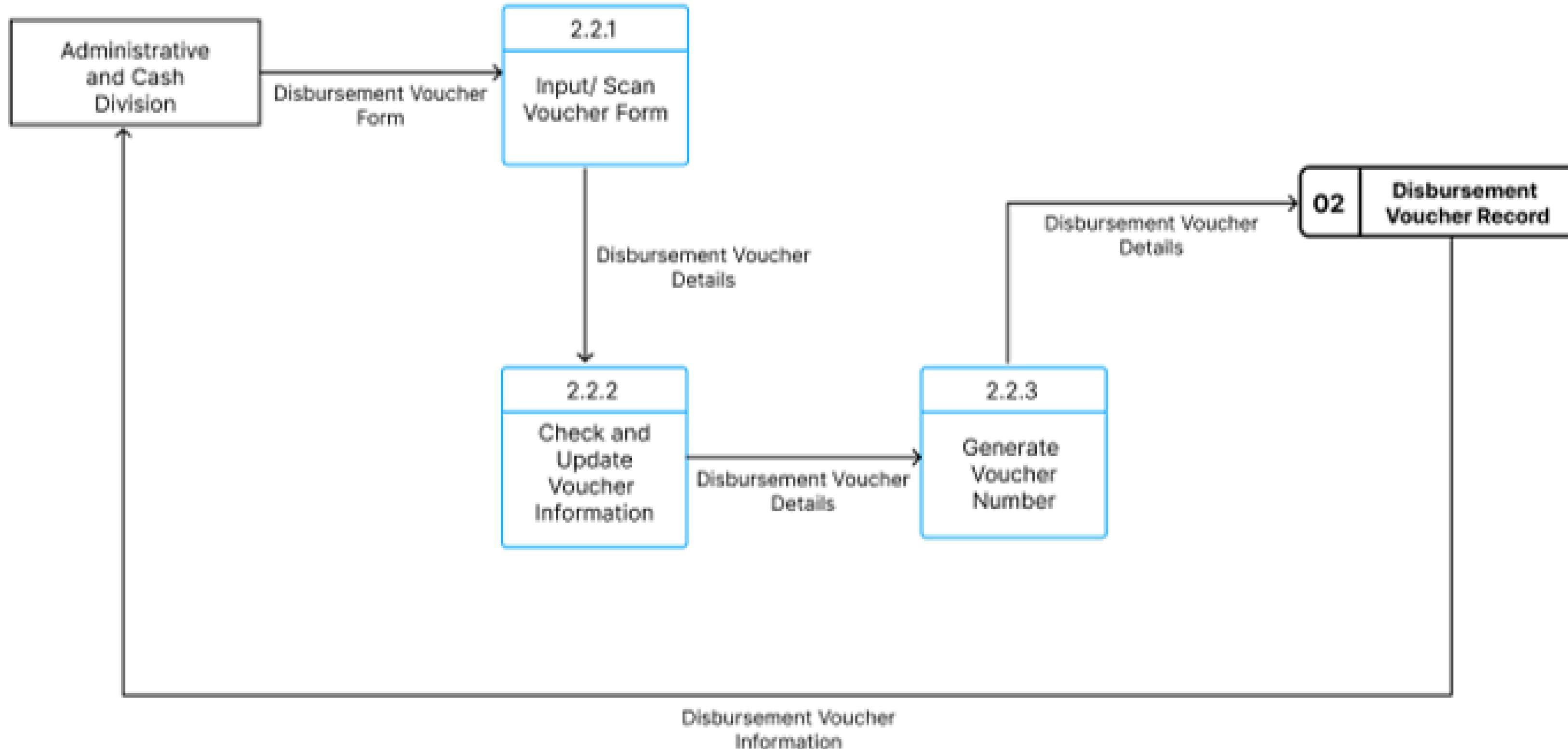
# Data Flow Diagram



# Data Flow Diagram (Exploded 2.0)

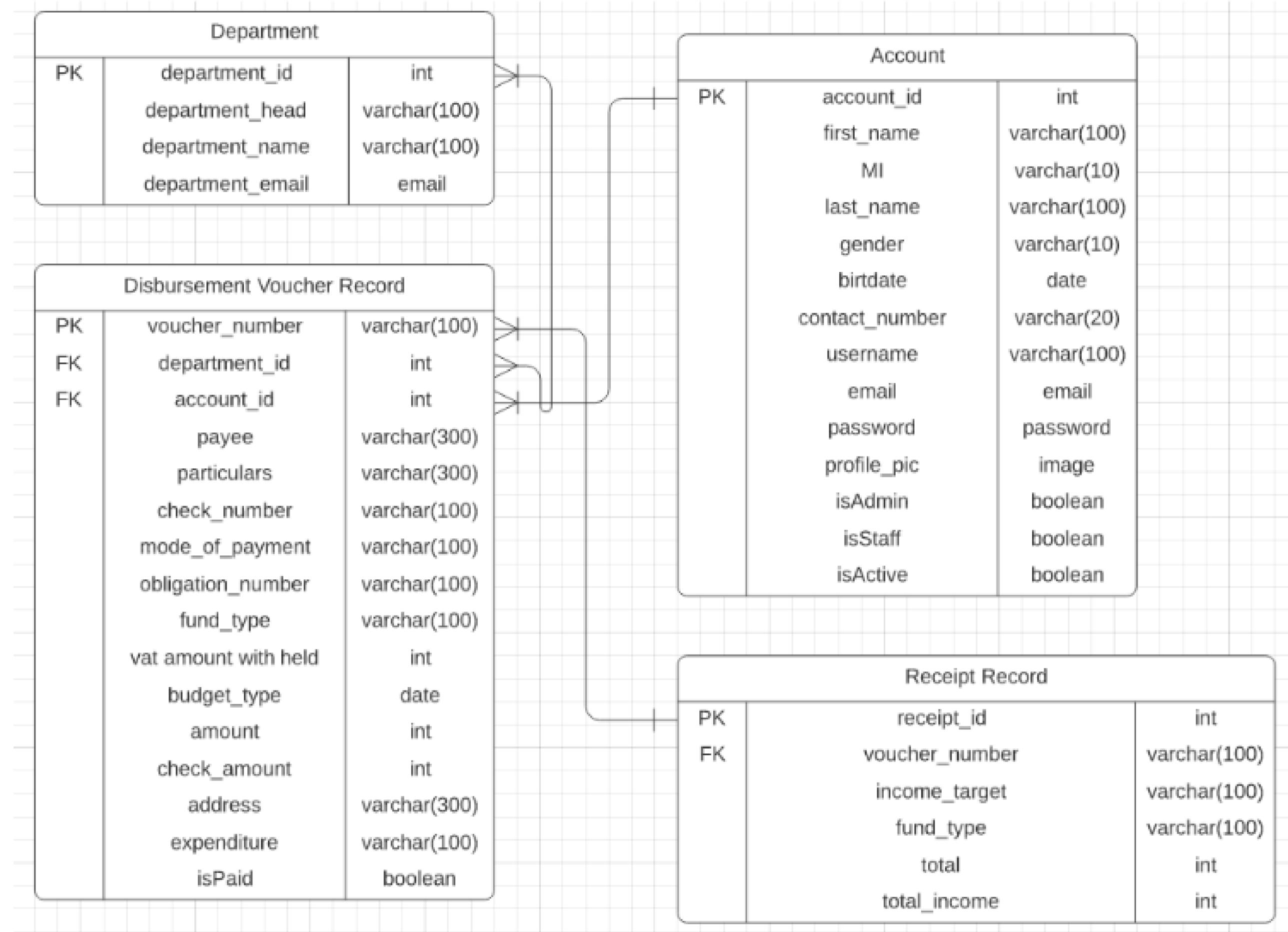


# Data Flow Diagram (Exploded 2.2.1)

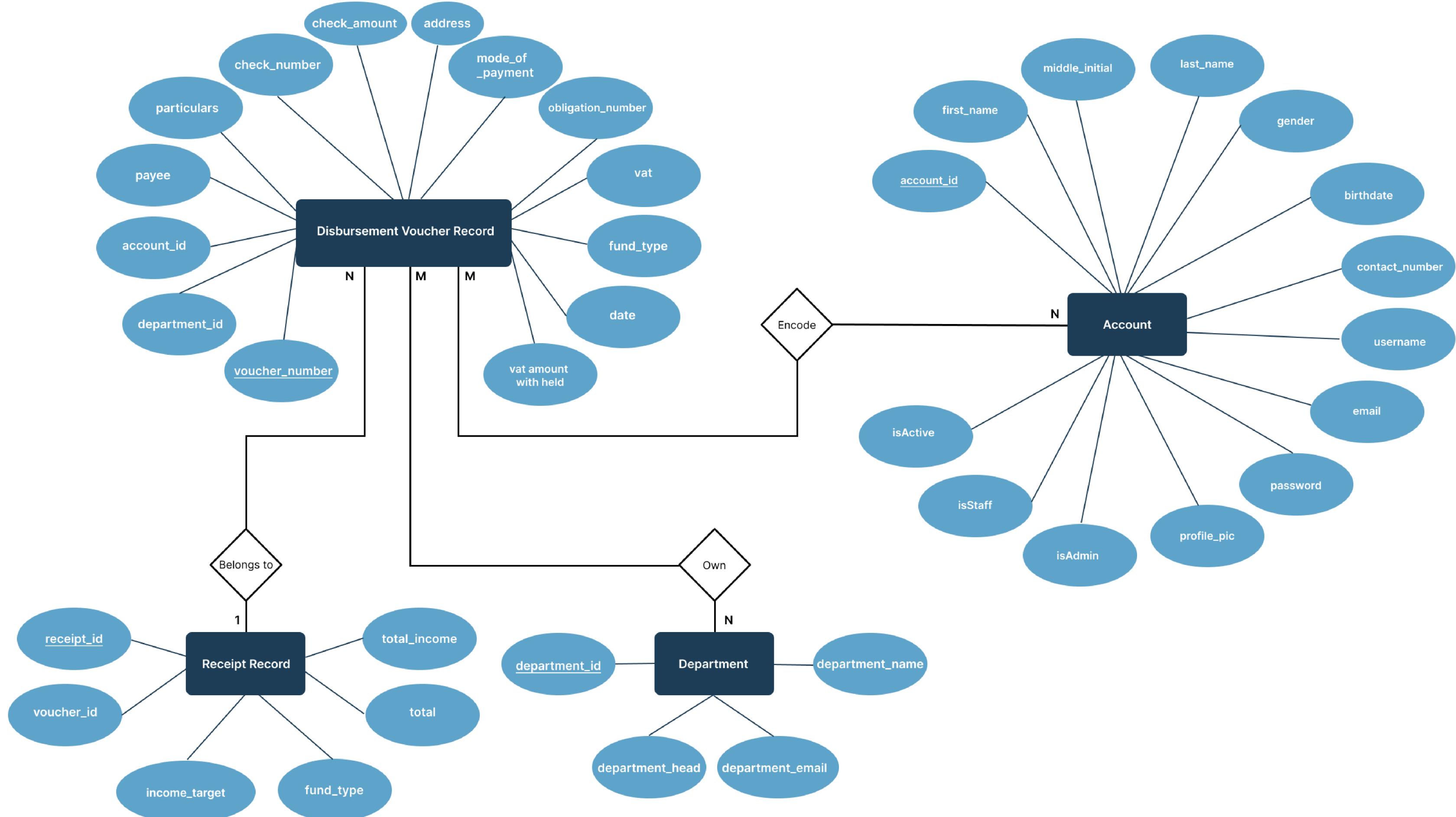


# Data Models.

# Relational Diagram



# Entity Relationship Diagram



## D. CODING / IMPLEMENTATION

# Coding / Development

## Coding Phase

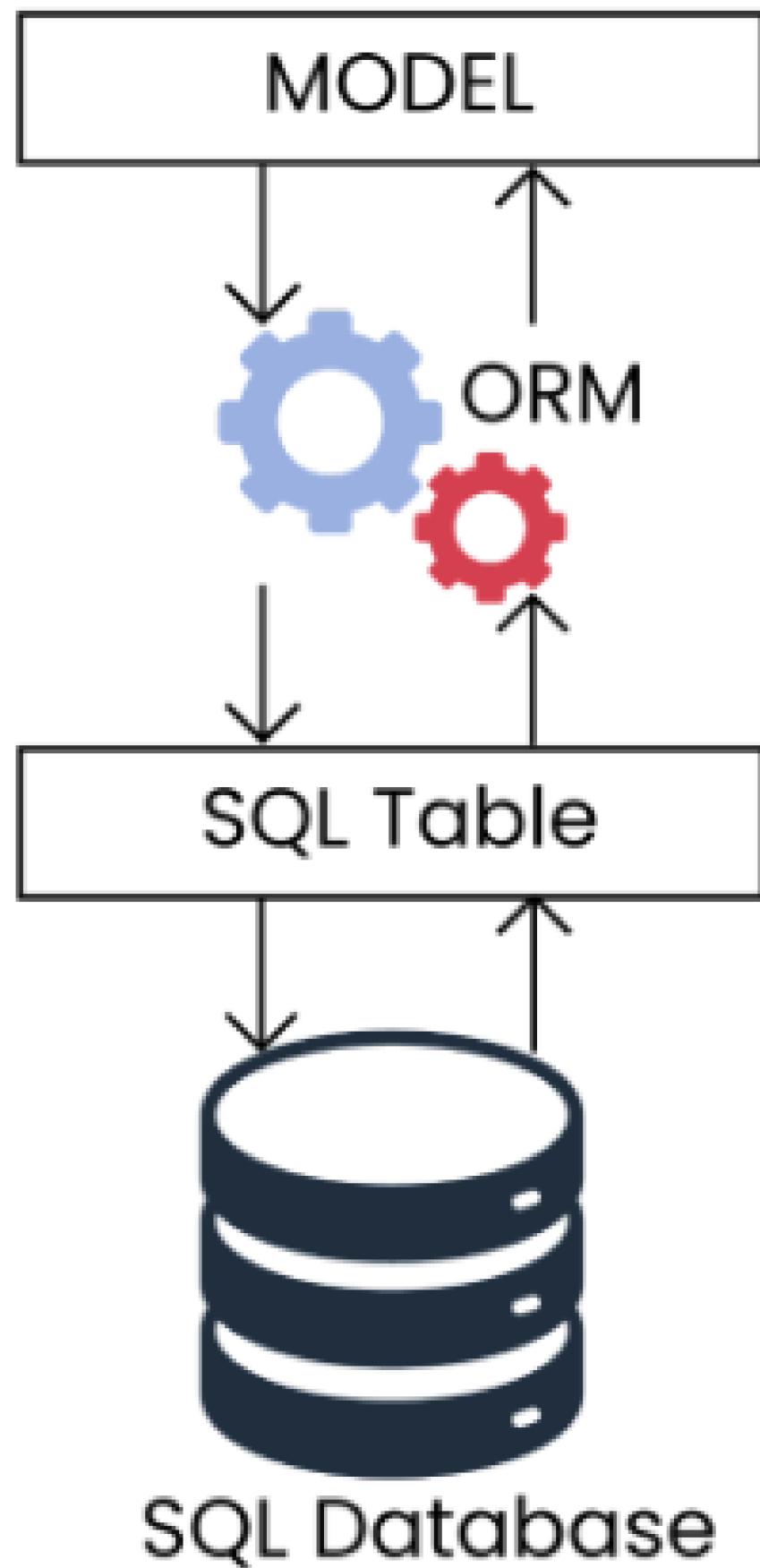
**DataBase.**

**Back end.**

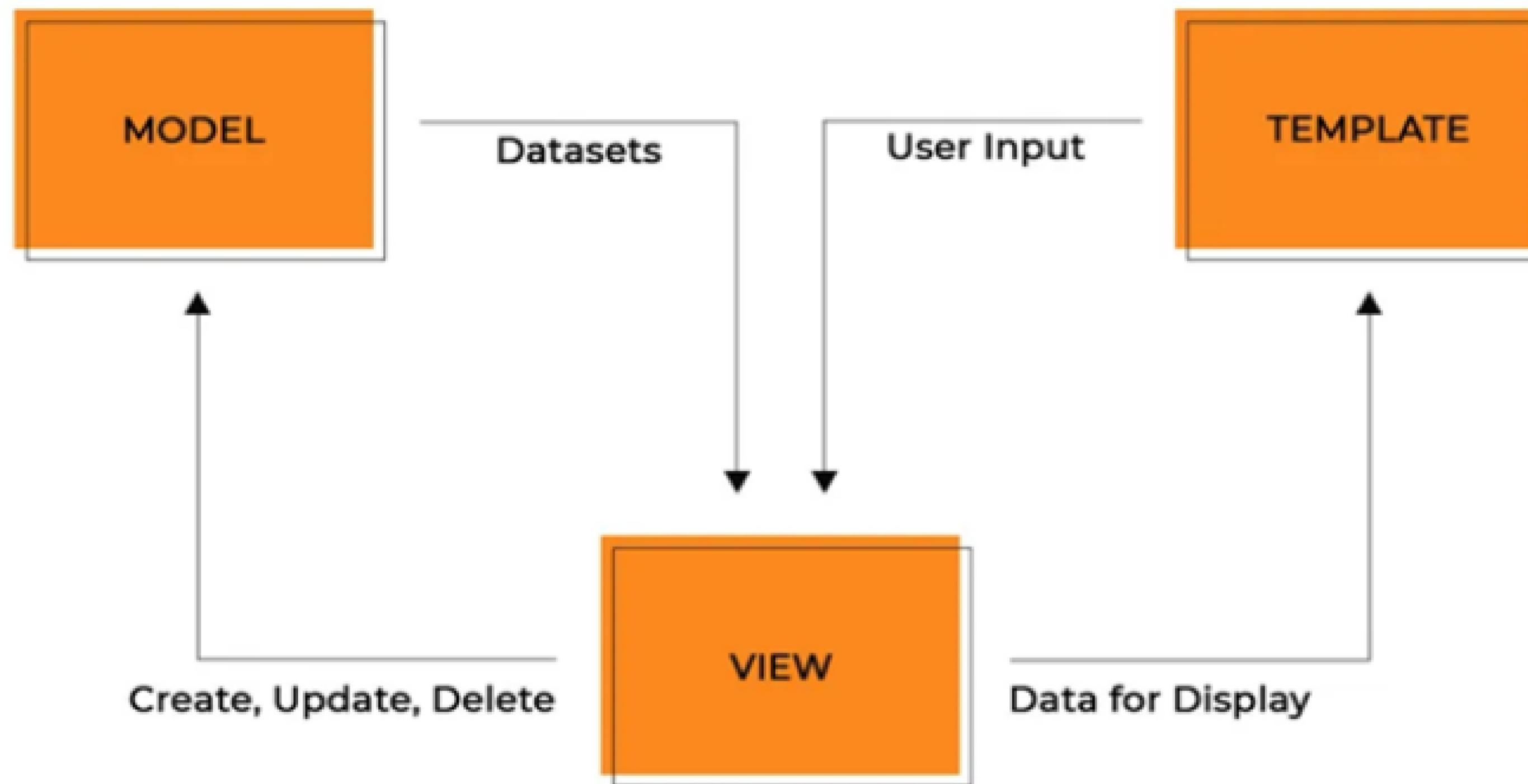
**Application Programming Interface (API).**

**Front end.**

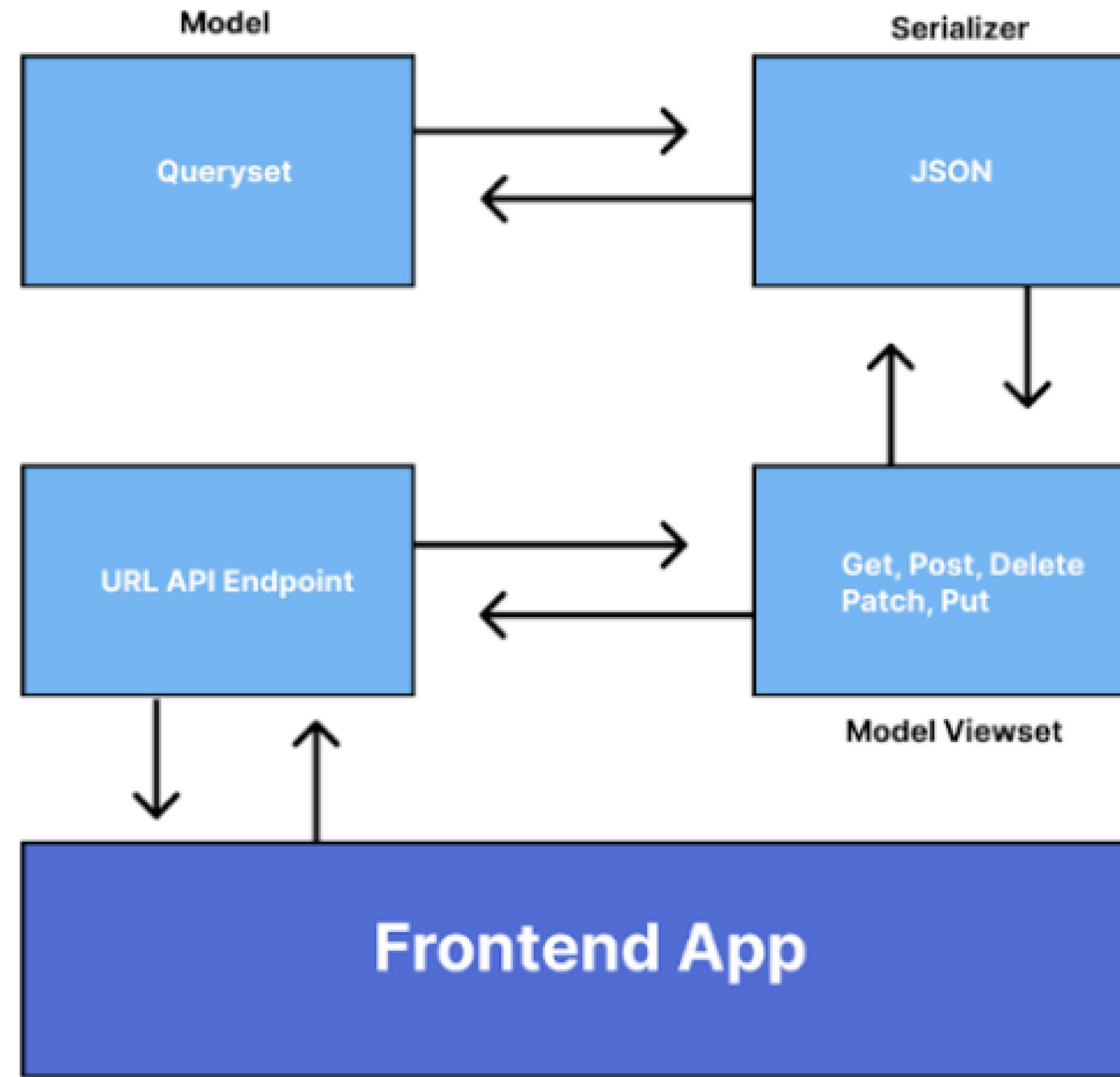
# Database Development



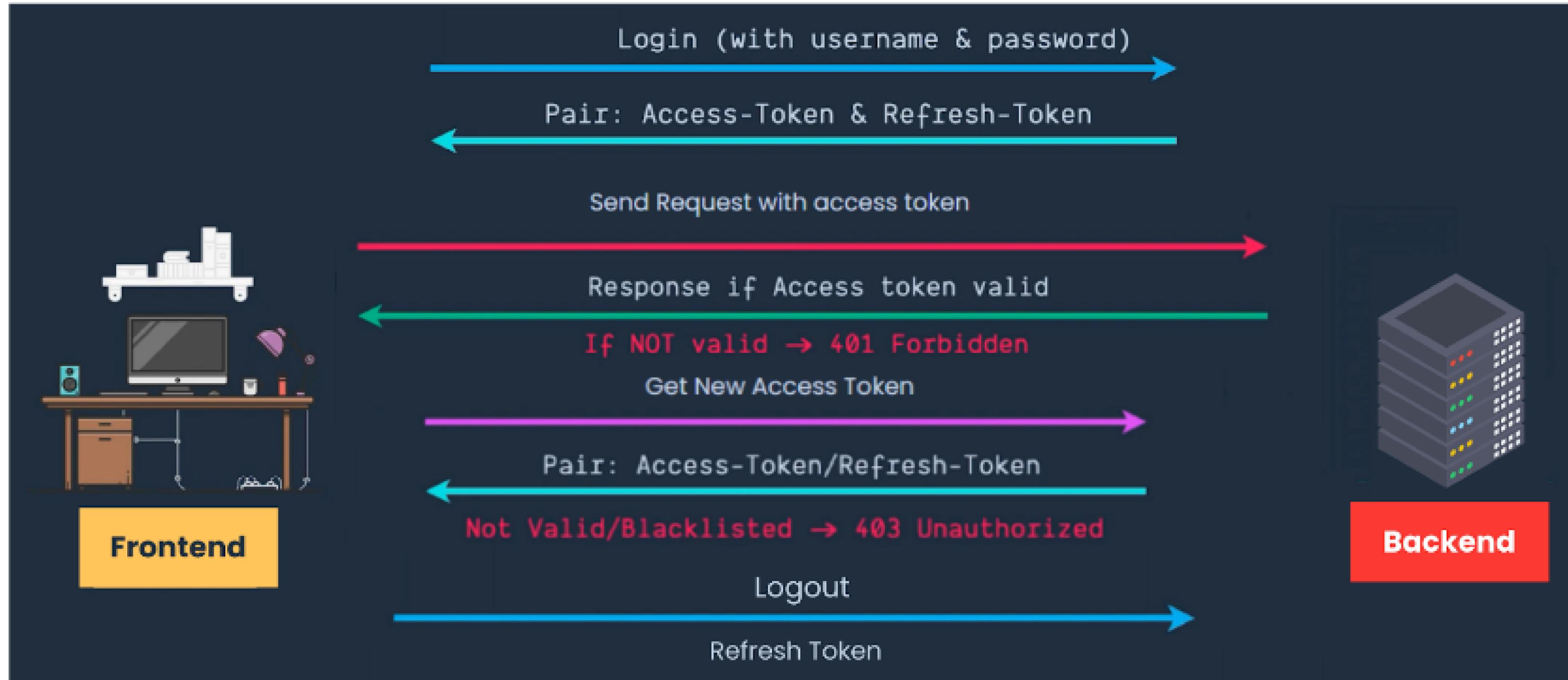
# Backend Development



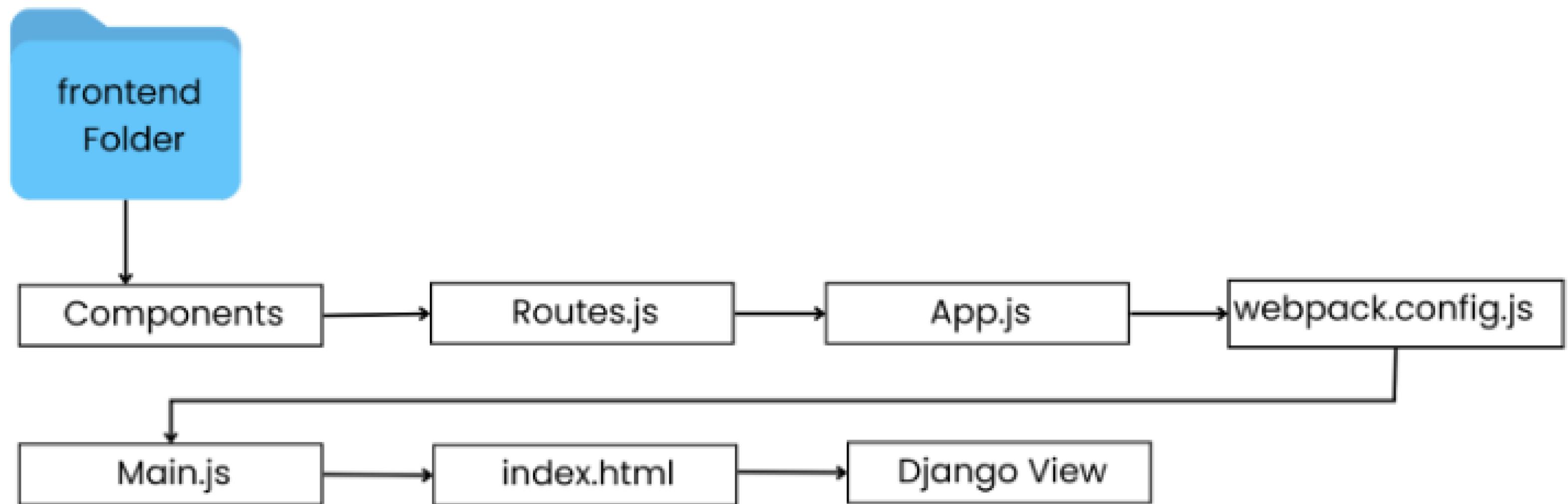
# Application Programming Interface (API)



# Data Security



# Frontend Development



## E. TESTING AND EVALUATION

### **ALPHA TESTING**

The team themselves will evaluate the system based on different criteria such as functionality, usability, performance, etc. There will also be specific guidelines they will follow in order to ensure that the outcomes are not biased.

### **INITIAL TESTING**

The team will go to the municipality of Science City of Munoz to have the actual end users try the system for testing purposes. A guideline will also be given to them to be followed and to ensure that the ratings are all accurate.

# Implementation

**The system implemented in a local server and local network. The user inside the department have access in system.**

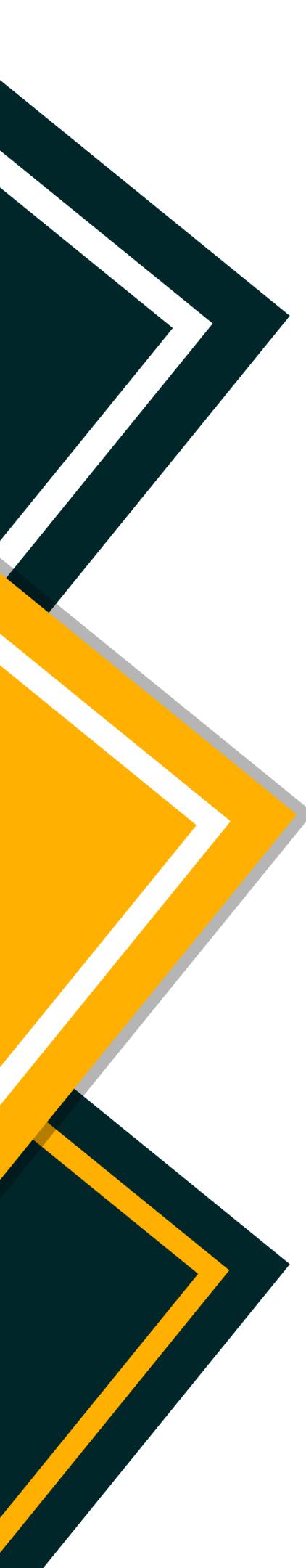
**The team will provide user manuals or perform a tutorial to assist the users to navigate in the system.**

## F. MAINTENANCE

**The team will turn over the whole system to the Treasurer's Office in the municipality of Science City of Munoz. Therefore, they will be the one responsible for the maintenance. The system maintenance is conducted to ensure that the system is working perfectly fine, and is preferably done for at least 2–3 times a year. and also, they have system backup for all data automatically.**

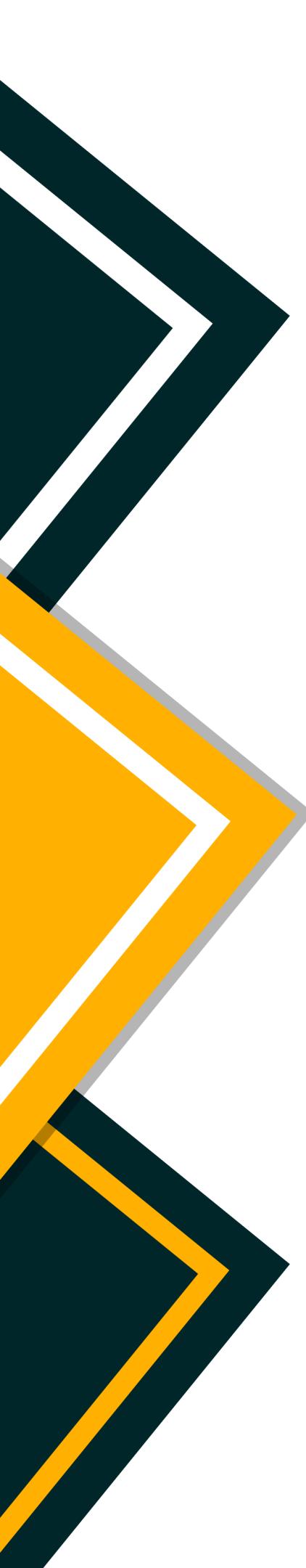
# CHAPTER V.





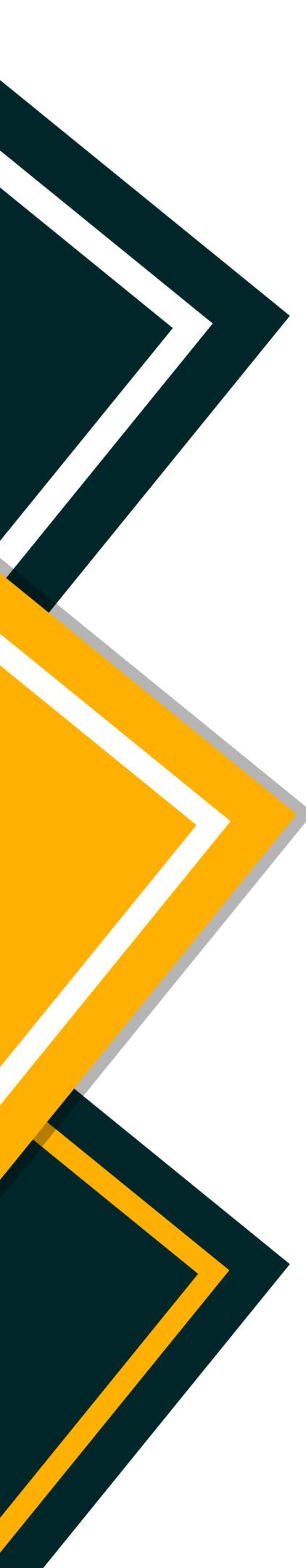
## Summary

The web application that was developed and put into use by the team for the Treasurer's Office of the Science City of Muñoz is the subject of this study. According to the data that the team collected through in-person interviews with the high positions in the treasurer's office and some of the people working inside the treasurer's office, the treasurer's office continues to use a manual system rather than a computerized management system. Therefore, creating a web-based system to manage the disbursement vouchers and implementing OCR makes their operation simpler.



# Conclusion

As the team assessed, evaluated, and demonstrated the system to the client, the treasurer's office, it was acknowledged that the disbursement voucher management system using OCR was innovative in Science City of Muñoz Treasurer's office and that it was successful because it provided more interactive and functional features that would reduce the manual process that recent processes have.



## RECOMMENDATIONS

- Find or create more precise OCR functionality to improve the system's quality.
- Enhance the system's capacity to perform more precise functionality.
- Create a mobile version of the system for more accessibility.
- Merge the proposed system to different departments existing systems or offices to widen the system's capability.

# APPENDICES



# DASHBOARD LAYOUT.

LOGOUT

## Dashboard

-   
Disbursement Voucher.  
Total Summary of **Disbursement Voucher** Records.  
11
-   
Payable.  
Total Summary of Disbursement Voucher **Payable** Records.  
4
-   
Disbursed.  
Total Summary of Disbursement Voucher **Disbursed** Records.  
7

Year  
2022

Month  
November

Type:  
Disbursement Voucher

Graph:  
Line

DOWNLOAD

### Disbursement\_Voucher For 2022

Disbursement\_Voucher



# TABLE RECORDS FOR DISBURSEMENT VOUCHER.

## Disbursement Voucher Record

[+ ADD NEW RECORD](#) Search

Page Size

5

[FILTER](#)[PDF DOWNLOAD](#)[X DOWNLOAD](#)

Voucher No.	Number	Payee	Expenditure Amount	Obligation Number	Vat Amount with Held	Obligation Amount	Check Number	Date Issued	Check Amount	View
1.	1000-2210-4	PACIFIC OFFICE MACHINES INC .	P.S <b>2800.23</b>	2012-09-546	<b>200.1</b>	3000.33	<b>2012-09-546</b>	2022-09- 27	<b>2000.2</b>	<a href="#">DETAILS</a>
2.	1000-2210-3	GAS	P.S <b>2910.34</b>	2810-2022	<b>90</b>	3000.34	<b>2810-22-145-</b> A	2022-10-16	<b>1000.23</b>	<a href="#">DETAILS</a>
3.	1000-2210-0	PLDT INC.	P.S <b>94480.92</b>	1000-22-10-697	<b>6298.94</b>	100779.86	<b>1000-2210-</b> 697	2022-10-19	<b>1002.12</b>	<a href="#">DETAILS</a>

previous 1 next

# DISBURSEMENT VOUCHER FORM.

< Disbursement Voucher Form

No file chosen

## Department

Department	Sub-department	Amount	Remove
			

## Payee

Enter payee

## Mode Of Payment

Check

## Fund Type

Select Fund Type

## Obligation Number

## Obligation Amount

0

## Vat Amount with held

Enter Vat Amount

## Amount

Enter Amount

## Address

Enter Address

## Expendeture

Please Select Expendeture

## Check Number

Enter check number

## Date Issued

dd/mm/yyyy

## Check Amount

0

## Particulars

Enter particulars

# SAMPLE GENERATE REPORT.

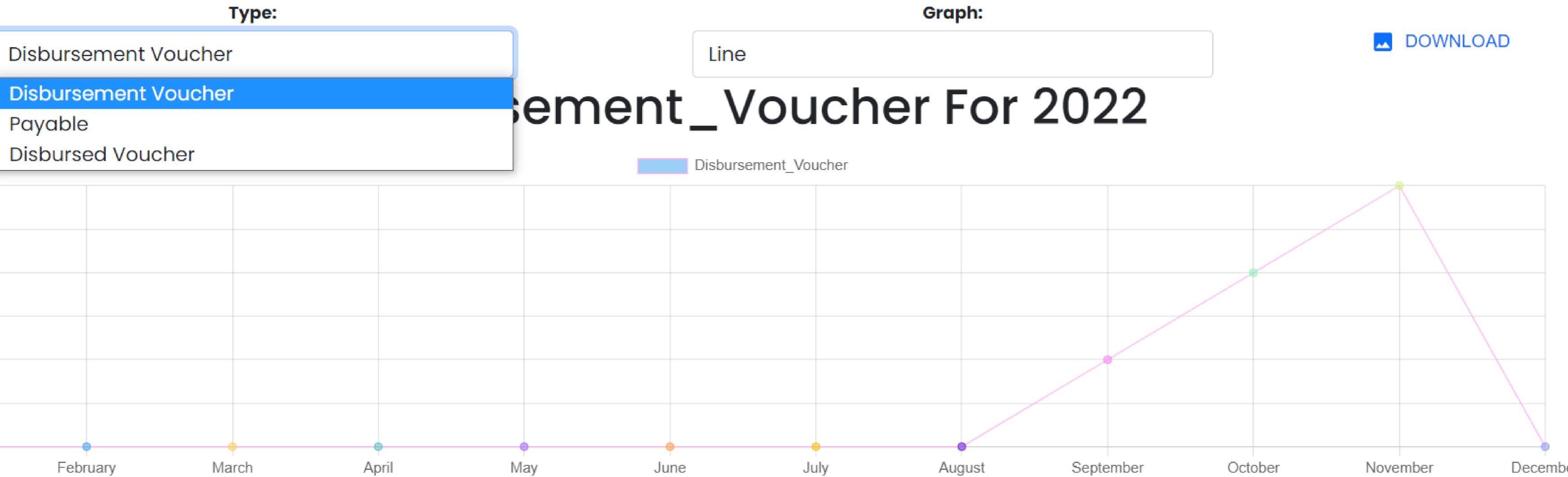
☰ Disbursement\_Report (29).pdf

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No.	Voucher number	Payee	Expenditure	Amount	Obligation number	Vat	Obligation amount	Check number	Date issued	Check amount
1	3000-2211-17	NAP GAS STATION	M.O.O.E	2000	1000-2203-0415 - A	3000	5000			0
2	1000-2211-15	NAP GAS STATION	P.S	800.23	1000-2203-0415 - A	200	1000.23			0
3	1000-2211-14	Sample Payee	C.O	20000	1000-110-1	500	20500	1000-1101-2	2022-11-02	2000
4	1000-2211-13	New Payee Name	P.S	1600	1000-11-22	400	2000		2022-11-09	0
5	1000-2211-12	House and Lot	P.S	2799.01	1000-2211-09	200.99	3000			0
6	1000-2211-11	NAP GAS STATION	P.S	800	10-22-04-1044	200	1000			0
7	3000-2211-10	PACIFIC OFFICE MACHINES INC .	P.S	4700.9	2012-09-546	300.21	5001.11	2012-09-546	2022-11-01	40500
8	1000-2211-9	Nap Gas Station2	P.S	1900	1000-212	100	2000			0
9	1000-2211-8	PLDT INC .	P.S	1959.29	1000- 22-09-254	41	2000.29			0
10	1000-2211-7	Hallowen party	P.S	100	1000-1101-001	100	200			0
11	1000-2210-6	NAP GAS STATION	C.O	4999.88	10-22-04-1044	2000.12	7000			0
12	1000-2210-4	PACIFIC OFFICE MACHINES INC	P.S	2800.23	2012-09-546	200.1	3000.33	2012-09-546	2022-09-27	2000.2
13	1000-2210-3	GAS	P.S	2910.34	2810-2022	90	3000.34	2810-22-145-A	2022-10-16	1000.23
14	1000-2210-0	PLDT INC.	M.O.O.E	94480.92	1000-22-10-697	6298.94	100779.86	1000-2210-697	2022-10-19	1002.12
Total: 141850.80							Total: 155482.16			Total: 46502.55

**TOTAL DISBURSEMENT VOUCHER RECORD FOR  
SPECIFIC YEAR.**



# SYSTEM DEMO





**AND THAT IS ALL OF OUR  
PRESENTATION THANK YOU!**