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PROJECT

DEPLOYMENT OF WINDOWS SERVER SERVICES FOR OFFICE NETWORK INFRASTRUCTURE

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Class :

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FAKULTAS TEKNIK UNIVERSITAS INDONESIA

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PROJECT ON

DEPLOYMENT OF WINDOWS SERVER SERVICES FOR OFFICE NETWORK INFRASTRUCTURE

DEVELOPED BY

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PROJECT INFORMATION

Project Title	:	Data Management System for Humanitarian Foundation Donations Using Python and SQL Connector Features
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Instructor Name	:	Tri Agus Riyadi, S.Kom., M.T

Names of Developer :

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Date of Submission : Sept 28, 2025

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CERTIFICATE

This is to certify that this paper titled “Data Management System for Humanitarian Foundation Donations Using Python and SQL Connector Features” embodies the original work done Muhammad Ramadhan Ikhlaashul Abda, and Raahil Muhammad Wildan. This Project in partial fulfillment of their course requirement at CCIT.

Coordinator:

Mr. Ivan Firdaus, S.T.

ACKNOWLEDGEMENT

First of all, we want to express our gratitude to God Almighty for its endless giving to us, which has enabled us to attend a university at CCIT-FTUI and be able to carry out and complete this paper without any interruptions.

We also want to express our appreciation to our lecturer Mr. Tri Agus Riyadi, S.Kom., M.T. and our project cordinator Mr. Ivan Firdaus, S.T. as a consultant who helped us to finish this paper by giving suggestions and recommendations, without the lecturer and members of this group, this project would not have been possible.

Our paper discusses the setup of a simple data collection system using Python and MySQL, focusing on donation data for a humanitarian foundation. We implemented CRUD and also included an additional option to print receipts. We hope our project can be beneficial for us or others who want to apply it to their data collection systems.

We realize that the writing of this paper is far from perfect, so that's why we apologize if there is any mistake in our writing, we are very open to receiving suggestions and criticism of this paper. We hope that, aside from the accuracy of the writing, it will not be a problem for a reader to receive the knowledge from our paper.

Depok, 4 March 2025

Authors

BACKGROUND

Managing donations is an important task for organizations that rely on public support, such as foundations and community institutions. However, many still record donations manually, which often leads to inefficiencies, difficulties in tracking donor data, and errors in managing financial and non-financial contributions. These challenges can reduce transparency and create obstacles in reporting to donors or stakeholders.

The goal of the **"Development of Donation Management System with Receipt Generation"** project is to provide a digital solution that makes it easier for administrators to record donor information, manage both monetary and item donations, and automatically generate donation receipts. This system also allows users to search, update, and organize donation records efficiently, ensuring accuracy and better accountability.

By implementing this system, organizations can modernize their processes, minimize errors, and strengthen trust with donors through transparent reporting and official donation receipts. This solution not only improves internal management but also contributes to building stronger relationships with the community.

SYSTEM ANALYSIS

Our goal is to build a simple and reliable system to record donors, accept money or item donations, and print PDF receipts for a humanitarian foundation.

Objectives

- Record donor identity and donation details correctly.
- Support two kinds of donations: money and items.
- Print receipts quickly (PDF, A6) and keep audit trails.
- Search, edit, and delete records safely.
- Protect access with a password gate.

Stakeholders

- Admin – manages donor records, creates receipts, runs reports.
- Data Entry – inputs donations at the front-desk.
- Auditor/Reporting – reads lists and totals for verification.

Functional Requirements (FR)

1. Donor Management
2. Add new donor with name, NIK, base (personal/company), address, and notes.
3. Edit donor data (validate carefully).
4. View all donors (latest first).
5. Search donors by NIK or Name.
6. Delete donor (with confirmation).

Donation Management

1. Record money donation with method (cash/transfer/QR) and amount.
2. Record item donation with item name and quantity.
3. Link donations to a donor.
4. Print PDF receipt immediately or later (select one/all/last).

Security & Access

1. Login with password (stored hashed).
2. Only logged-in users can use the menu.

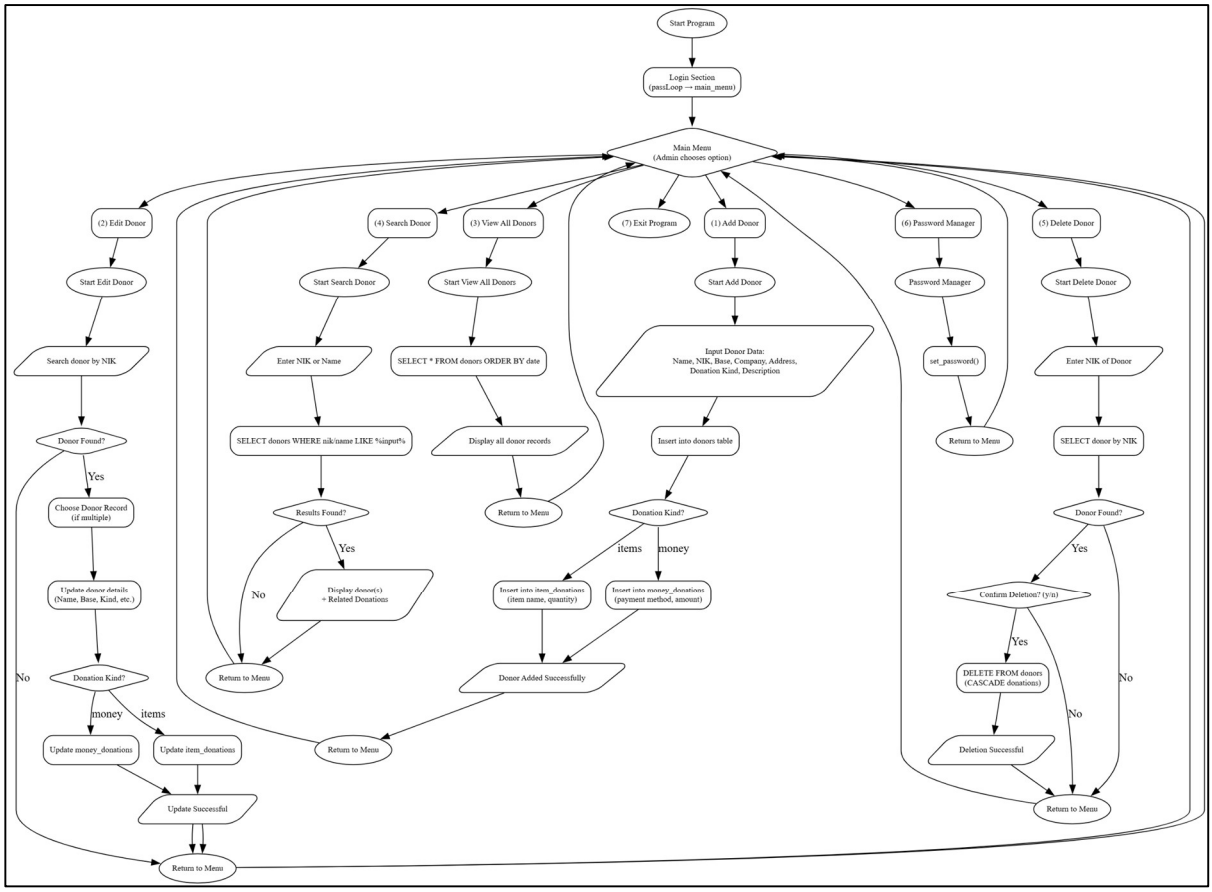
System Components

- User Interface: Command-line menu with validated input.
- Backend Logic: Python functions for CRUD, normalization, formatting.
- Database: MySQL to store donors and donations.
- PDF Generator: ReportLab to create A6 receipts.

The current program already meets basic needs: donor/donation CRUD, PDF receipts, and password guard. With the schema and queries above, the foundation can manage donations safely and report totals clearly.

FLOWCHART

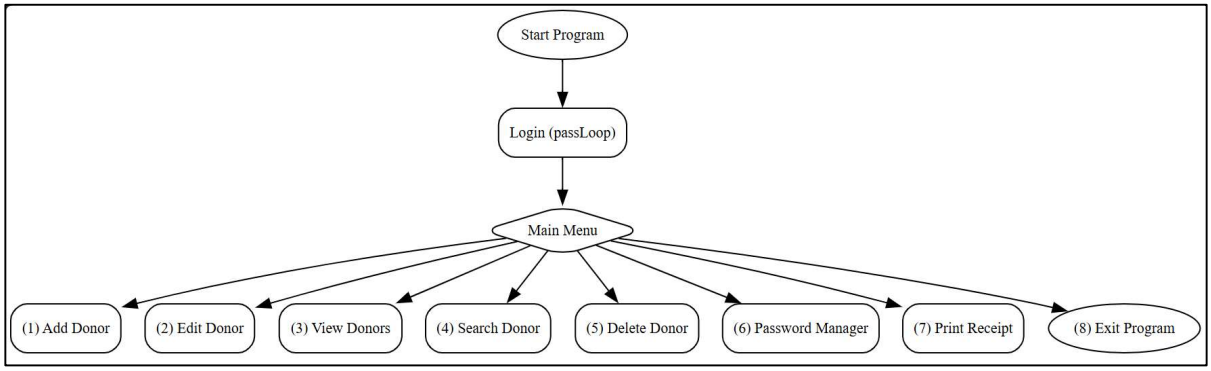
This is the **full version** of the donation management system flowchart. It shows the whole process: starting the program, logging in, and using the main menu. From the menu, the admin can **add, edit, view, search, delete donors, manage password, or exit**.



Because this full chart is detailed, we will also explain it **part by part** in the next sections for easier understanding.

FLOWCHART MAIN MENU

The flowchart above shows the **main structure** of the donation management system. The process begins with **Start Program**, which initializes the application. After starting, the system moves to the **Login Section** where the admin must log in through the passLoop function. This ensures that only authorized users can access the system.



Once logged in, the admin reaches the Main Menu, which acts as the central decision point. From here, the admin can choose one of several options:

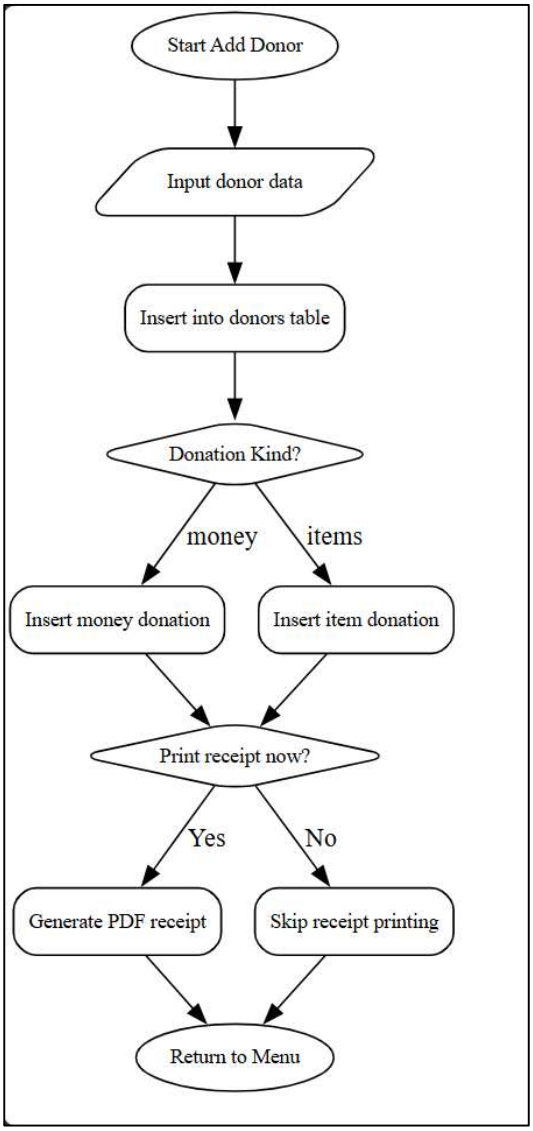
1. **Add Donor** – Register a new donor into the system.
2. **Edit Donor** – Search for an existing donor and update their information.
3. **View Donors** – Display all donors stored in the database.
4. **Search Donor** – Look for a specific donor using NIK or name.
5. **Delete Donor** – Remove a donor's record after confirmation.
6. **Password Manager** – Update or reset the admin password.
7. **Print Receipt** – Generate and print donation receipts in PDF format.
8. **Exit Program** – End the program safely and close the application.

This flowchart provides an overview of the system's navigation. Each menu option leads to its own subflow, which handles the detailed steps for that action (for example, "Add Donor" will include data entry and donation type selection).

FLOWCHART ADD DONOR

The Add Donor flow starts with entering donor details and saving them into the donors table. The system then checks the **donation kind**:

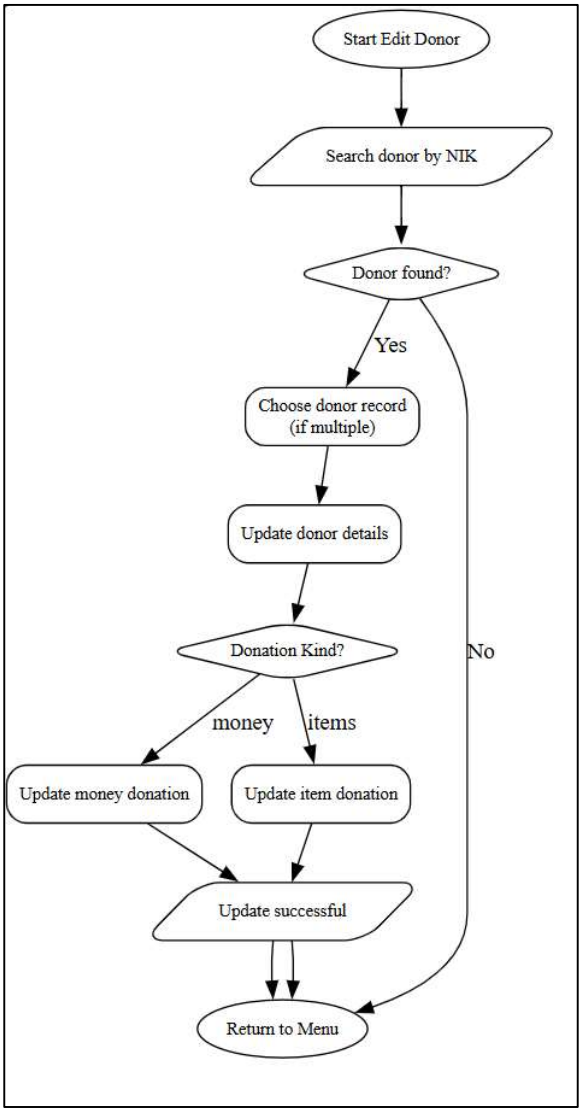
- If it is **money**, the data goes into money_donations.
- If it is **items**, the data goes into item_donations.



After saving, the admin is asked if they want to **print a receipt**. If yes, a PDF is generated; if no, the system skips this step. Finally, the flow returns to the main menu.

FLOWCHART EDIT DONOR

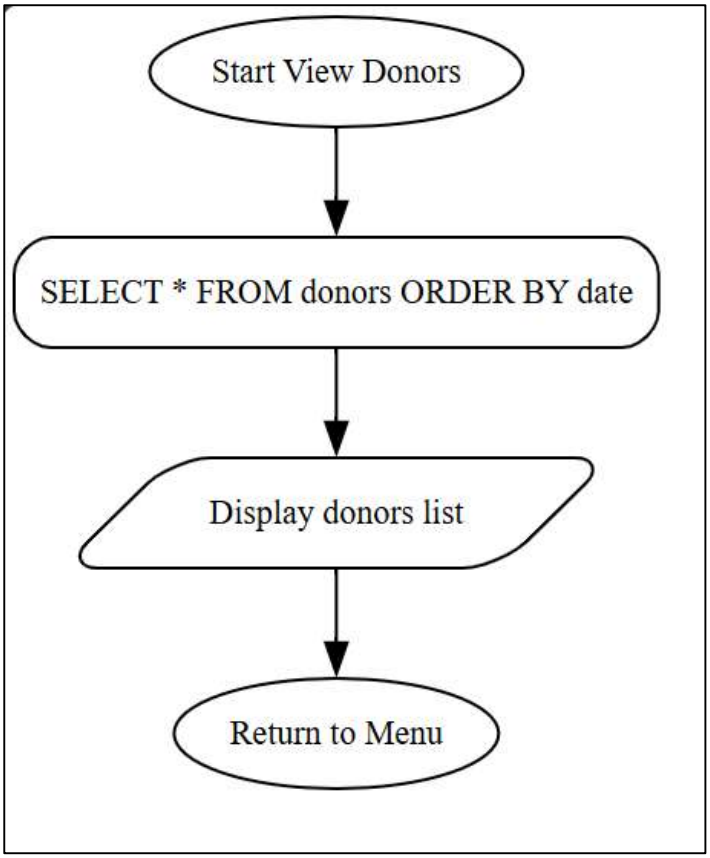
The Edit Donor flow begins when the admin searches for a donor using their NIK. If no donor is found, the process stops. If one or more records are found, the admin selects the correct donor to edit. After that, the donor's information, such as name, address, base (personal or company), kind (money or items), and description, can be updated.



The system then checks the donation kind. If it is **money**, the admin can also update payment method and donation amount in the money_donations table. If it is **items**, the admin updates item name and quantity in the item_donations table. Once all changes are saved successfully, the system confirms the update and returns to the main menu.

FLOWCHART VIEW DONOR

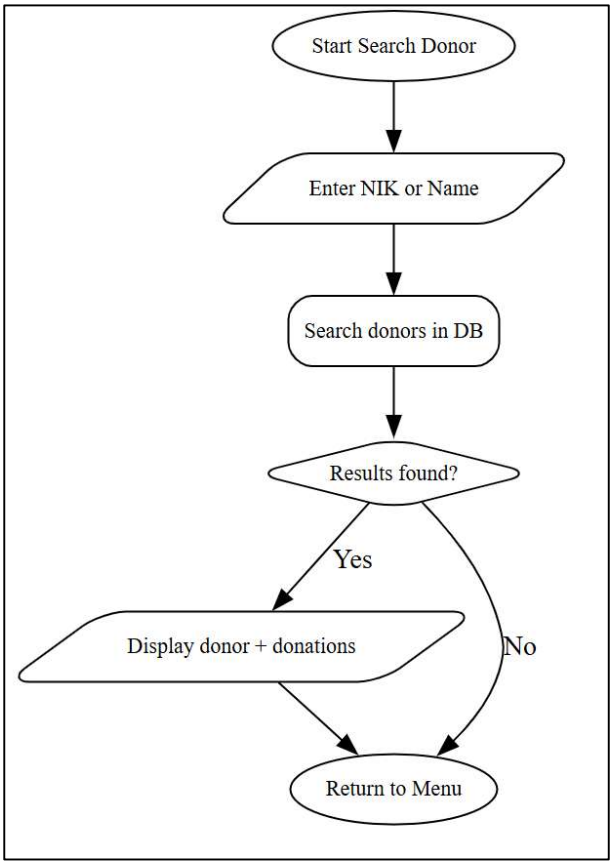
The View Donors flow allows the admin to see all donor records stored in the database. The system retrieves all data from the donors table, ordered by the most recent date. Each record shows details such as donor ID, name, NIK, donation base (personal or company), donation kind (money or items), company name if available, address, and description.



The records are then displayed one by one for review. After listing all donors, the flow ends by returning the admin back to the main menu.

FLOWCHART SEARCH DONOR

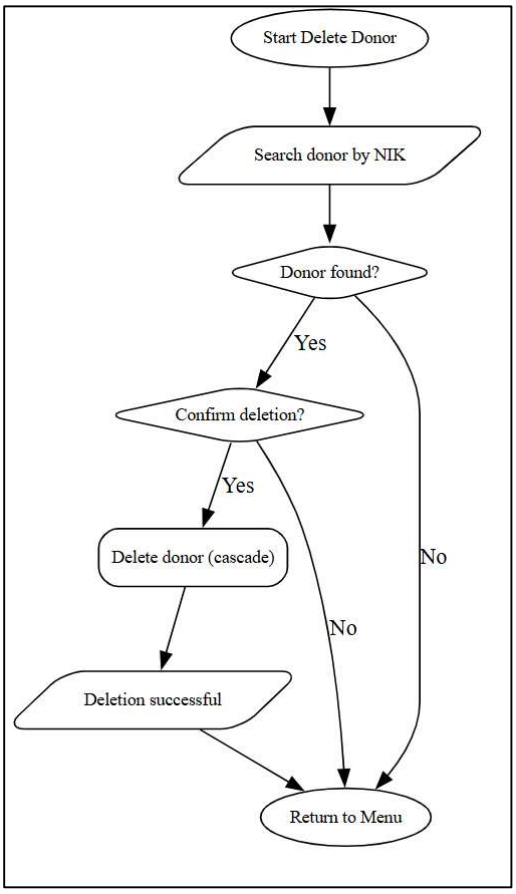
The Search Donor flow lets the admin find a specific donor by entering either a NIK or a name. The system searches the donors table using the given keyword. If no results are found, it shows a “not found” message and returns to the menu.



If results exist, the system displays the donor details along with any related donations. For money donations, it shows transaction ID, payment method, and amount. For item donations, it lists the item name and quantity. After showing the results, the system returns to the main menu.

FLOWCHART DELETE DONOR

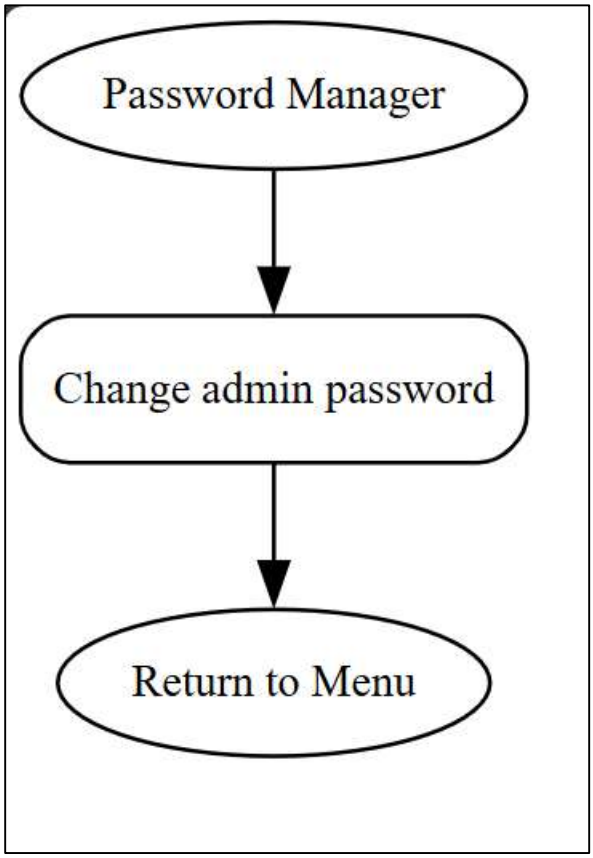
The Delete Donor flow allows the admin to remove a donor from the system. First, the admin enters the donor's NIK. The system searches for the record and, if multiple matches exist, asks the admin to choose one. If no donor is found, the process ends and returns to the menu.



Once a donor is selected, the system asks for confirmation. If confirmed, the donor is deleted along with all related donations (money or items) using cascade delete. After successful deletion, the system notifies the admin and then returns to the main menu.

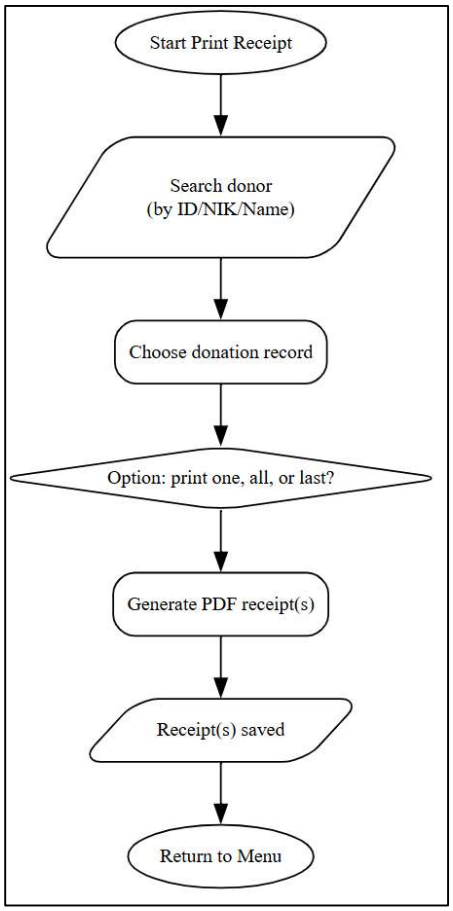
FLOWCHART PASSWORD MANAGER

The Password Manager flow is used to manage admin account security. When chosen, it opens the password management function where the admin can set or update the system password. After the process is done, the flow ends by returning back to the main menu.



FLOWCHART PRINT RECEIPT

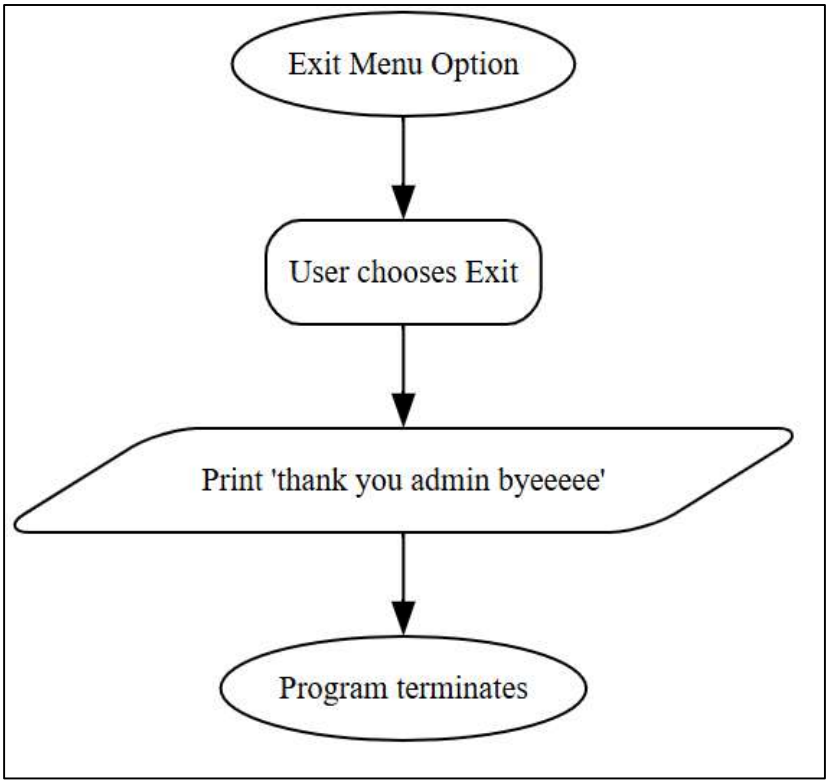
The Print Receipt flow lets the admin generate a PDF receipt for a donor's donation. The admin can search for a donor by ID, NIK, or name. The system then lists all donations made by that donor, both money and items. The admin can choose a specific donation, print all donations, or print only the most recent one.



Once selected, the system creates a receipt in PDF format showing donor details and donation information. The file is saved in the receipts folder. After printing, the system returns to the main menu.

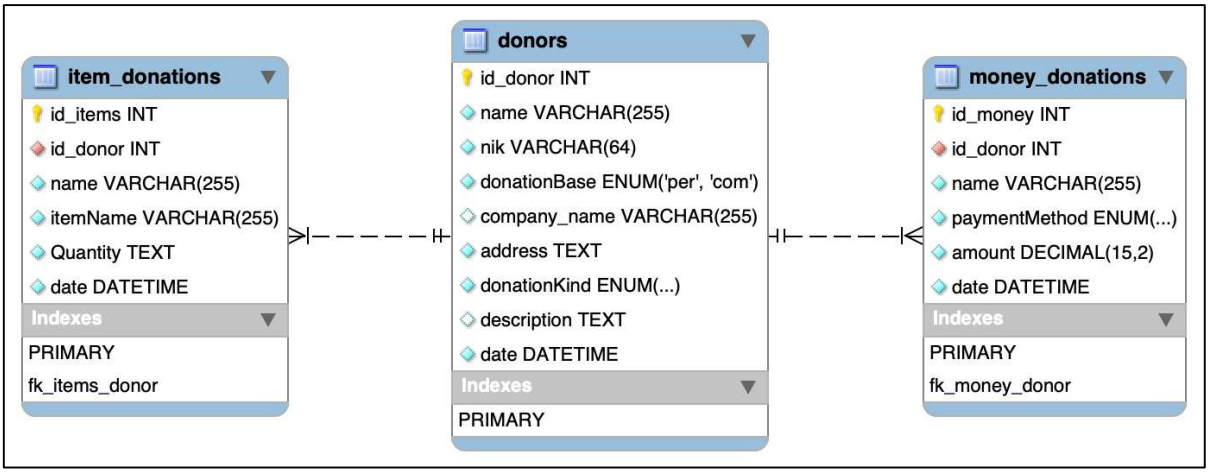
FLOWCHART PRINT RECEIPT

The Exit Program flow ends the donation management system. When the admin selects this option, the system displays a farewell message and then closes the application completely. This marks the end of the program's execution.



ENTITY RELATION DIAGRAM

This ERD describes a simple donation management system. It explains how donors, item donations, and money donations are connected.



1. **Donors**

    - Every donor is stored in the donors table.
    - A donor can be a person or a company.
    - The table keeps details such as donor ID, name, NIK, company name, address, donation type, description, and the date of entry.

2. **Item Donations**

    - This table records donations that come in the form of items.
    - Each record has its own item ID.
    - It connects to the donor through the donor ID, so we know which donor gave the item.
    - The table also stores the item name, quantity, and the donation date.

3. **Donors**

    - Every donor is stored in the donors table.
    - A donor can be a person or a company.
    - The table keeps details such as donor ID, name, NIK, company name, address, donation type, description, and the date of entry.

4. **Item Donations**

    - This table records donations that come in the form of items.
    - Each record has its own item ID.
    - It connects to the donor through the donor ID, so we know which donor gave the item.
    - The table also stores the item name, quantity, and the donation date.

5. **Money Donations**

    - This table records donations that come in the form of money.
    - Each record has its own money ID.
    - It also links to the donor through the donor ID.
    - The table saves information such as payment method, amount of money, and the date of donation.

In short, this ERD shows:

- **Who donates (donors)**
- **What items they donate (item_donations)**
- **What money they donate (money_donations)**

DATABASE

We use a MySQL schema named donationDataSys_db with utf8mb4 charset so names/notes with full Unicode are stored correctly. We also make all tables use InnoDB with foreign keys for referential integrity And ON DELETE CASCADE to keep the database clean when a donor is removed.

Donors

i...	name	nik	donationBase	company_name	address	donationKind	description	date
1	ahmad subarjo	1001	com	PT JIJAJA	depok	money		2025-09-18 13:48:37
2	aisha	2004	com	PT. Rahayu	jakarta	items		2025-09-18 13:52:22
3	Ahmad Fauzi	1005	per	NULL	Jl. Sudirman No.10, Bandung	money	Donasi rutin bulanan	2025-09-18 14:23:23
4	Siti Aisyah	1006	per	NULL	Jl. Merdeka 5, Jakarta	items	Sembako untuk bulan ramadhan	2025-09-18 14:23:23
5	PT Maju Jaya	1007	com	Maju Jaya	Jl. Industri 8, Bekasi	money	CSR program	2025-09-18 14:23:23
6	Bambang Santoso	1008	per	NULL	Jl. Melati 12, Yogyakarta	items	NULL	2025-09-18 14:23:23
7	Nadya Rahma	2005	per	NULL	Jl. Pahlawan 3, Surabaya	money	Donasi untuk pendidikan	2025-09-18 14:23:23
8	CV Sumber Berkah	2006	com	Sumber Berkah	Jl. Gudang 2, Semarang	items	Sumbangan pakaian layak pakai	2025-09-18 14:23:23

Money_Donation

id_money	id_donor	name	paymentMeth...	amount
1	1	ahmad	cash	200000.00
2	3	Ahmad Fauzi	transfer	250000.00
3	5	PT Maju Jaya	transfer	5000000.00
4	7	Nadya Rahma	cash	300000.00

Item_Donation

id_items	id_donor	name	itemName	Quantity
1	2	aisha	beras	200 kg
2	4	Siti Aisyah	Beras	50 kg
3	6	Bambang Santoso	Minyak Goreng	20 liter
4	8	CV Sumber Berkah	Pakaian Bekas	10 karung

Donor_Overview

A convenience VIEW joining donors with both donation tables. It shows each donor with any money/item donations in a single read, making quick checks and simple reporting easier.

id_donor	donor_name	donationBase	company_name	donationKind	itemName	Quantity	paymentMeth...	amount
1	ahmad subarjo	com	PT JIJAJA	money	NULL	NULL	cash	200000.00
2	aisha	com	PT. Rahayu	items	beras	200 kg	NULL	NULL
3	Ahmad Fauzi	per	NULL	money	NULL	NULL	transfer	250000.00
4	Siti Aisyah	per	NULL	items	Beras	50 kg	NULL	NULL
5	PT Maju Jaya	com	Maju Jaya	money	NULL	NULL	transfer	5000000.00
6	Bambang Santoso	per	NULL	items	Minyak Goreng	20 liter	NULL	NULL
7	Nadya Rahma	per	NULL	money	NULL	NULL	cash	300000.00
8	CV Sumber Berkah	com	Sumber Berkah	items	Pakaian Bekas	10 karung	NULL	NULL

PYTHON OUTPUT

Login Section

```
(.venv) muhammadabda@Syaifuls-MacBook-Air PythonProjectCCIT % python donationPDF.py

LOGIN SECTION

password first bro: ????

WRONGGGG. 2 LEFT FOR YOU

password first bro: ???

WRONGGGG. 1 LEFT FOR YOU

password first bro: ?????
GET OUTTTT
```

```
password first bro: ????????
WELCOME ADMIN

 <<< Donation Management >>>
1. Add Donor
2. Edit Donor
3. View All Donors
4. Search Donor
5. Delete Donor
6. Password Manager
7. Print Receipt
8. Exit
choose menu (1-8):
```

In the password input, we use `attempts` for looping on the password input if it doesn't match, There are 3 times opportunities for input and if the last opportunity still fails, the program will stop. And if successful, it will enter the main menu.

Add Donor

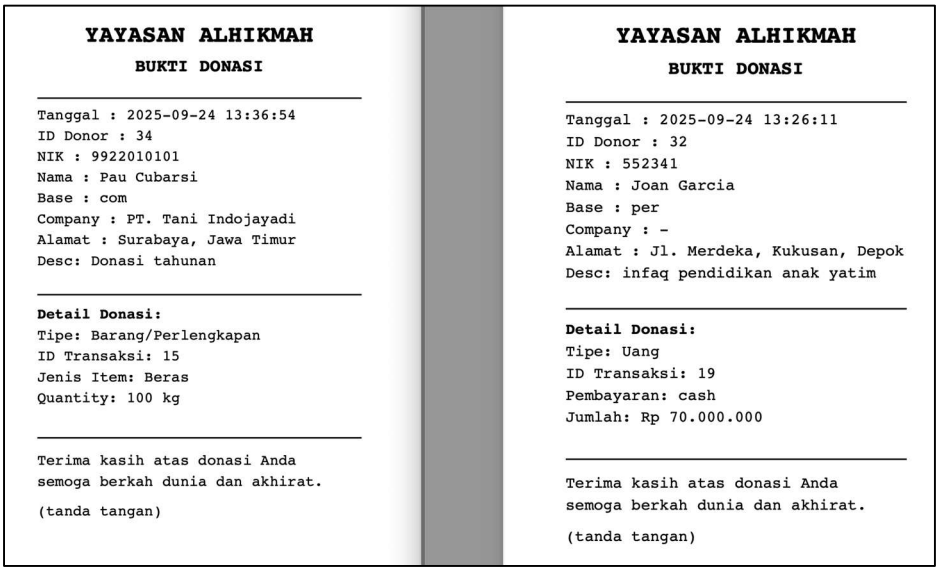
```
Add Donor
 Name: Joan Garcia
 NIK: 552341
Donation base (personal/company): p
Address: Jl. Merdeka, Kukusan, Depok
Kind (money/items): money
Desc (optional): infaq pendidikan anak yatim
Accepted with id 32
Payment (cash/transfer/qr): cash
Amount (rupiah): 70000000
SUBMITTED YEYYY.
Cetak struk sekarang? (y/n): y
receipt saved: receipts/receipt_32_money_19_20250924-132611.pdf
```

We use the example of personal donations in the form of money, initially there will be a general data collection regarding the donor followed by the payment method and amount, after successfully submitted there will be an option to print a receipt which will be automatically printed in PDF format.

PYTHON OUTPUT

```
Add Donor
 Name: Pau Cubarsi
 NIK: 9922010101
Donation base (personal/company): com
Company Name: PT. Tani Indojayadi
Address: Surabaya, Jawa Timur
Kind (money/items): i
Desc (optional): Donasi tahunan
Accepted with id 34
Item Name: Beras
Quantity : 100 kg
ALHAMDULILLAH SUCCESSFUL.
Cetak struk sekarang? (y/n): y
receipt saved: receipts/receipt_34_items_15_20250924-133654.pdf
```

Then the image above is an example of a donation from a company in the form of items, the data collection flow is the same, only the input is the name or type of item and its quantity, and then it can be printed as a PDF. The image below shows the printed receipt results.



YAYASAN ALHIKMAH

BUKTI DONASI

Tanggal : 2025-09-24 13:36:54
ID Donor : 34
NIK : 9922010101
Nama : Pau Cubarsi
Base : com
Company : PT. Tani Indojayadi
Alamat : Surabaya, Jawa Timur
Desc: Donasi tahunan

Detail Donasi:
Tipe: Barang/Perlengkapan
ID Transaksi: 15
Jenis Item: Beras
Quantity: 100 kg

Terima kasih atas donasi Anda
semoga berkah dunia dan akhirat.

(tanda tangan)

YAYASAN ALHIKMAH

BUKTI DONASI

Tanggal : 2025-09-24 13:26:11
ID Donor : 32
NIK : 552341
Nama : Joan Garcia
Base : per
Company : -
Alamat : Jl. Merdeka, Kukusan, Depok
Desc: infaq pendidikan anak yatim

Detail Donasi:
Tipe: Uang
ID Transaksi: 19
Pembayaran: cash
Jumlah: Rp 70.000.000

Terima kasih atas donasi Anda
semoga berkah dunia dan akhirat.

(tanda tangan)

PYTHON OUTPUT

Edit Donor

```
=== Edit Donor ===
NIK of donor that you want to change: 552341
Leave empty what will not be changed.
Name [Joan Garcia]: Joan Garcia Setiawan
NIK [552341]:
Donation base (personal/company) [per]:
Address [Jl. Merdeka, Kukusan, Depok]:
Donation kind (money/items) [money]:
Description [infaq pendidikan anak yatim]:
successfully updated.

=== Edit Money Donation ===
Payment (cash/transfer/qr) [cash]:
Amount [70000000.00]:
SUCCESSFULLY UPDATED.
```

The donor edit submenu is used for replacing if there are mistakes or inaccuracies in the input. For example, if we want to complete the name of a previous donor, we go to edit donor, and then a command will appear asking us to leave it blank or simply press enter on the data that is already correct, and filled in with the data that we want to change.

View All Donors

```
choose menu (1-8): 3

=== All Donor List ===
------------------------------------------------
id: 34 | name: Pau Cubarsi | nik: 9922010101 | base: com | kind: items | date: 2025-09-24 13:36:45
  company: PT. Tani Indojayadi
  address: Surabaya, Jawa Timur
  desc: Donasi tahunan
------------------------------------------------
id: 32 | name: Joan Garcia Setiawan | nik: 552341 | base: per | kind: money | date: 2025-09-24 13:25:35
  address: Jl. Merdeka, Kukusan, Depok
  desc: infaq pendidikan anak yatim
------------------------------------------------
id: 31 | name: hazard | nik: 20000234 | base: per | kind: money | date: 2025-09-24 09:10:12
  address: germany
  desc: hanya untuk anak yatim
------------------------------------------------
id: 30 | name: jamal musiala | nik: 5678567 | base: per | kind: money | date: 2025-09-24 09:07:12
  address: solo
  desc: donasi hari raya
```

Then submenu 3 is for viewing all the donors in the database, so the program will display all the donors with information in order according to the most recently data entry date.

PYTHON OUTPUT

Search Donor

```
=== search Donor ===
enter NIK or Name: jamal
========================================
ID Donor      : 30
NIK           : 5678567
Name          : jamal musiala
kind          : money
Base          : per
company       : -
Address       : solo
Desc          : donasi hari raya
Input Date    : 2025-09-24 09:07:12
-- Money Donation --
   id_money=17 | method=transfer | amount=60000000.00
========================================
```

Next, this feature is used to view donation details. Unlike the previous one which displayed all donors with basic information, this feature focuses only for one specific donor and the output will provide detailed information about the donor along with their donation details.

Delete Donor

```
=== Delete Donor ===
enter NIK donor that will be deleted: 5678567
Are you sure you want to delete the donation with id=30? (type 'y' for confirmation): y
successfully deleted.
```

Used to remove a donor by entering the donor's NIK that you want to delete, then there will be a cancellation option simply by type “n”, and if you really want to delete, just type “y”.

Password Manager

```
6. Password Manager
7. Print Receipt
8. Exit
choose menu (1-8): 6
Masukkan password baru: ********
Ulangi password: ********
Password stored /Users/muhammadabda/PycharmProjects/PythonProjectCCIT/pass.json
```

PYTHON OUTPUT

Then we have the feature for change the password, simply enter that feature and then input the new password you want to use with a total of 2 inputs to avoid typing errors, if successfully accepted, the password will be saved in the file `pass.json` in a hashed form encoded in hexadecimal.

Print Receipt

```
=== Print Receipt ===
Enter NIK or Name or ID Donor: maya
Some record founded (more than one):
  id= 23 | name= Maya Sari | nik= 5005
  id= 16 | name= Maya Sari | nik= 5005
choose id_donor (clear it if you want cancel): 23

Donations:
1. MONEY | id_money=12 | cash | 25000.00 | 2025-09-23 10:32:41

Choose the number you want to print or type 'a' to print all or type 'l' to print the last one
Your Choice: a
Receipts Saved: receipts/receipt_23_money_12_20250924-142541.pdf
```

This feature is intended for those who want to reprint a receipt or for those who have submitted but haven't printed the receipt but want to print it.

Exiting the program

```
 <<< Donation Management >>>
1. Add Donor
2. Edit Donor
3. View All Donors
4. Search Donor
5. Delete Donor
6. Password Manager
7. Print Receipt
8. Exit
choose menu (1-8): 8
thank you admin byeeeee
```

PYTHON CONFIGURATION

Preparation

We use 2 python files, where the first file is used to store the code for data processing, and the second file is for password management.

donationPDF.py

```
1  import mysql.connector, sys, os
2  from decimal import Decimal, InvalidOperation
3  from datetime import datetime
4  from admin_auth import passLoop, set_password
```

admin_auth.py

```
1  import sys, hashlib, hmac, json, secrets, pwinput, getpass
2  from pathlib import Path
```

First, in the `donationPDF.py` file, we use import `mysql.connector` to connect the Python file to the database, so we can run SQL queries and retrieve results from the connected database. Then we import `sys`, where sys is a built-in Python module that provides direct access to objects and functions related to the Python interpreter, in here we use `sys.exit`, which is to terminate the program immediately. `code=0` means normal exit, otherwise it indicates an error. Next, we import `os` for interaction with the operating system.

import `decimal` is used to calculate decimal numbers with high precision and `InvalidOperation` is used for the exception that is thrown if an invalid operation occurs when using Decimal. then import `datetime` to manage dates and times.

Then in the `admin_auth.py` file we use `sys`, `hashlib` which is a cryptographic hash algorithm used for password hashing, `hmac` (hash-based message authentication code) to compare stored hash vs candidate hash without leaking timing, `json` to store the hash results of the password, `secrets` to create random tokens, `pwinput` for masked password input, `getpass` for an option if pwinput fails to run, and `path` for file storage to Python.

PYTHON CONFIGURATION

Database Connection

```
14      DB_CONFIG = {
15          "host": "localhost",
16          "user": "root",
17          "password": "56&abcABC",
18          "database": "donationDataSys_db"
19      }
```

```
33      def get_connection():  6 usages
34          return mysql.connector.connect(**DB_CONFIG)
```

This is to connect the database to the python file. First, we need to installing the connection first with type `pip install mysql.connector` in the terminal, and then we can connect it. Our database is named `donationDataSys_db`.

```
404         conn = get_connection()
405         cur = conn.cursor(dictionary=True)
```

```
428         finally:
429             cur.close()
430             conn.close()
```

So when it has been defined at the start, then in the functions that will be used, it can simply be called within the def to open the connection, and at the end to close the connection.

PYTHON CONFIGURATION

Function Helper

We also include several functions to support the effectiveness of the program.

```python
def safe_input(prompt, default=None, required=False):  31 usages
    while True:
        s = input(prompt).strip()
        if s == "" and default is not None:
            return default
        if required and s == "":
            print("Field must be filled.")
            continue
        return s
```

```python
def normalize_base(s):  2 usages
    if not s:
        return None
    s = s.lower().strip()
    if s in ("personal", "person", "per", "p"):
        return "per"
    if s in ("company", "com", "c"):
        return "com"
    return s
```

```
59      def normalize_kind(s):  2 usages
60          if not s:
61              return None
62          s = s.lower().strip()
63          if s in ("barang", "i", "g"):
64              return "items"
65          if s in ("money", "uang", "m"):
66              return "money"
67          return s
```

`safe_input` is used to make the input neater, so for `required=True`, if not filled in, it will display "Field must be filled." and will loop back until valid input is obtained. Conversely, if `required=False`. Then `normalize` is used to shorten the input, for example in line 52 if we input personal or person or p, the input will automatically become per, as well as in other examples.

CONFIGURATION

Hardware	Dell Inspiron 7490, Intel(R) Core(TM) i5-10210U CPU @ 1.60GHz, 2112 Mhz, 4 Core(s), 8 Logical Processor(s) Macbook Air 2018
Operating System	Windows 11 Home
Software	Microsoft Word, Pycharm, XAMPP, MySQL Workbench