**MIT 263 Project Documentation Format**

**Cover Page**

* DSWD - Social Pension Database System
* Course Name: MIT 263 – Systems Analysis and Database Design
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**1. Introduction**

1.1 **Project Overview** – Briefly describe the chosen problem and its relevance.

The social pension for itinerant senior citizens is a government initiative designed to address the needs of elderly individuals, particularly those in vulnerable sectors. This program focuses on providing financial support to senior citizens who have not had the opportunity to benefit from programs like the Social Security System (SSS) or the Government Service Insurance System (GSIS). It aims to ensure that even the most marginalized and economically disadvantaged seniors, especially those without formal pension coverage, receive the assistance they need to live with dignity and security in their later years.

Meanwhile, the process of disbursing social pensions remains entirely manual, with no technological systems in place to streamline or expedite the procedure. As a result, disbursement officers frequently encounter significant challenges, leading to delays and sometimes the failure to complete disbursements within the designated time frame. One major issue arises during the identity verification process, which often takes longer than expected, particularly when beneficiaries lack the necessary documentation. In some cases, disbursing officers also face difficulties in verifying the legitimacy of individuals attempting to claim benefits despite not being included on the official list. These challenges are inherent in the current manual system and are unlikely to improve without the integration of technology to automate and simplify the process.

In addition to the problems mentioned, grievances are also increasing due to various reasons, such as those who did not receive grants or received but not enough. There are also beneficiaries who receive double which is very worrying for the agency because it greatly affects, not only the overall accomplishment of the agency but also to the thrust of the public to the agency. The disbursing officers will also have difficulty in liquidating the payroll especially since the COA is focusing on program operation.

To solve these problems, the agency needs a centralized database system with strict policies (database contains and roles). through this, the process will be accelerated, the integrity of the data will be protected, and possible problems will be mitigated in the present.

1.2 **Objectives** – State the main goals of the database design.

* To ensure data integrity and accuracy, preventing issues like double payments or errors in beneficiary information.
* Security and privacy are paramount, with strict access controls in place to protect sensitive data in line with data protection regulations.
* To prioritize efficiency and speed, optimizing processes for quicker identity verification and disbursement, reducing delays.
* To accommodate future growth as the program expands, while maintaining auditability and transparency to ensure all transactions are traceable and accountable.

1.3 **Scope and Limitations** – Define the coverage of the database and its constraints.

This database design is only a limited storage of social pension beneficiary data of dswd including payroll management. This system does not cover beneficiaries who are mapped outside of Region XII. This system also does not cover senior citizens who do not belong to the Social Pension for Indigent Senior Citizens (SPISC) program. This system also does not cover the processing of fund sources by the Department of Budget and Management (DBM), only important information such as the Special Allotment Release Order (SARO) and Sub-allotment Advice (SAA).

**2. Problem Statement and Requirements Analysis**

2.1 **Problem Description** – Explain the issue that requires a database solution.

* The manual process of disbursing social pensions leads to delays and inefficiencies in meeting the needs of senior citizens, particularly affecting vulnerable beneficiaries.
* Identity verification challenges, including missing documentation and improper claims, hinder the timely distribution of social pensions to eligible seniors.
* Increasing grievances from beneficiaries, such as insufficient or double payments, undermine the credibility of the social pension program.
* The absence of a technological system for managing pension distribution makes it difficult for disbursing officers to accurately liquidate payrolls and ensure compliance with government regulations.
* Without a centralized database system, maintaining data integrity and preventing errors in pension distribution remains a significant challenge, affecting both beneficiaries and the agency's operations.

2.2 **Business Rules and Assumptions** – Define rules governing data management.

**A. BUSINESS RULES:**

1. **The system administrator can assign appropriate roles and permissions to registered end-users after their accounts are successfully created.**
2. **End-users can only access the system after completing their registration process.**
3. **Beneficiaries will have access to the system via the internet and should be informed about this option.**
4. **The system should automatically filter out incorrect or incomplete entries during data encoding through strict form validation.**
5. **End-users should have the ability to generate necessary reports from the system as per their roles and permissions.**

**ASSUMPTIONS:**

1. **It is assumed that the system administrator has already completed the profiling of all employees and end-users, including their respective roles and responsibilities.**
2. **It is assumed that end-users have the necessary skills and knowledge to access and use the system.**
3. **It is assumed that not all beneficiaries will be able to navigate the system, especially those with physical impairments who may require additional support.**
4. **It is assumed that the system will filter out incomplete or invalid information, but there is a possibility that fraudulent data could still pass through the validation process.**

2.3 **Functional and Non-Functional Requirements** – List required database functionalities.

**3. Conceptual and Logical Database Design**

3.1 **Entity-Relationship Diagram (ERD)** – Include a **screenshot** of the first versions of ERD modeled .  
3.2 **Entities and Attributes Definition** – Describe entities, attributes, and primary keys.  
3.3 **Relationship Mapping** – Explain relationships, cardinality, and constraints.

**4. Normalization Process**

4.1 **Normalization Steps (1NF, 2NF, 3NF)** – Briefly describe changes made to remove redundancies.  
4.2 **Updated ERD** – Present the revised ERD after normalization.

**5. Logical and Relational Model in Oracle SQL Developer Data Modeler**

5.1 **Logical Model**

* **Definition:** The high-level representation of entities, attributes, and relationships.
* **Screenshot of the Logical Model** – Insert a screenshot from Oracle SQL Developer Data Modeler.

5.2 **Relational Model**

* **Definition:** The transformation of the logical model into a structured relational database schema.
* **Screenshot of the Relational Model** – Insert a screenshot showing tables, columns, primary keys, and foreign keys.

**6. Data Dictionary**

6.1 **Table Structures**  
For each table in the database, include:

**Table Name: [Table\_Name]**

| **Column Name** | **Data Type** | **Constraints** | **Description** |
| --- | --- | --- | --- |
| Column\_1 | DataType | PRIMARY KEY / NOT NULL / UNIQUE / CHECK | Description of the attribute |
| Column\_2 | DataType | FOREIGN KEY → Table\_Ref(Column) | Description of the attribute |
| Column\_3 | DataType | DEFAULT Value | Description of the attribute |

**CHECK Constraint (CHK\_BENE\_AGE)**:

* This constraint ensures that the DATE\_OF\_BIRTH value results in an age of at least 60 years. The TRUNC(MONTHS\_BETWEEN(SYSDATE, DATE\_OF\_BIRTH) / 12) calculation finds the number of months between the current date and the birthdate, divides by 12 to convert it to years, and truncates the decimal to get the age.

**UNIQUE Constraint (UNIQUE\_BENE\_NAME\_DOB)**:

* This ensures that there is no duplication of beneficiaries with the same FIRST\_NAME, LASTNAME, and DATE\_OF\_BIRTH. It's a way to prevent data entry errors such as two beneficiaries with identical names and birthdates.

6.2 **Business Rules and Constraints**

* Define any additional constraints such as **CHECK constraints**, **default values**, and **triggers** if applicable.

-- Add CHECK constraint to ensure age is 60 or more ALTER TABLE BENEFICIARY ADD CONSTRAINT CHK\_BENE\_AGE CHECK ( TRUNC(MONTHS\_BETWEEN(SYSDATE, DATE\_OF\_BIRTH) / 12) >= 60 );

-- Add UNIQUE constraint on FIRST\_NAME, LASTNAME, and DATE\_OF\_BIRTH ALTER TABLE BENEFICIARY ADD CONSTRAINT UNIQUE\_BENE\_NAME\_DOB UNIQUE (FIRST\_NAME, LASTNAME, DATE\_OF\_BIRTH);

| DATE\_OF\_BIRTH | DATE | NOT NULL, Check (CHK\_BENE\_AGE), Unique (UNIQUE\_BENE\_NAME\_DOB) | Beneficiary's date of birth. Age should be 60 or more. |
| --- | --- | --- | --- |

**7. DDL Statements (Generated from Oracle SQL Developer Data Modeler)**

7.1 **Generated SQL Statements**

* Provide the **CREATE TABLE** statements generated by Oracle SQL Developer Data Modeler.
* Include constraints such as PRIMARY KEY, FOREIGN KEY, and UNIQUE constraints.

**Example DDL Statement:**

CREATE TABLE Customer ( CustomerID NUMBER PRIMARY KEY, CustomerName VARCHAR2(100) NOT NULL, Email VARCHAR2(255) UNIQUE, PhoneNumber VARCHAR2(20), Address VARCHAR2(255) ); CREATE TABLE Orders ( OrderID NUMBER PRIMARY KEY, OrderDate DATE NOT NULL, CustomerID NUMBER, FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID) );

*(Include all tables and relationships.)*

7.2 **Screenshot of Successful Execution in Oracle APEX**

* Provide a **screenshot** showing the successful execution of the DDL file in Oracle APEX.
* The output should confirm that tables and constraints were created successfully.

**8. Conclusion and Recommendations**

8.1 **Summary of Database Design** – Highlight key aspects of the final design.  
8.2 **Potential Enhancements** – Suggest future improvements or scalability options.

**9. References *(if applicable)***

* List any sources, including Oracle documentation and academic references, in **APA format**.