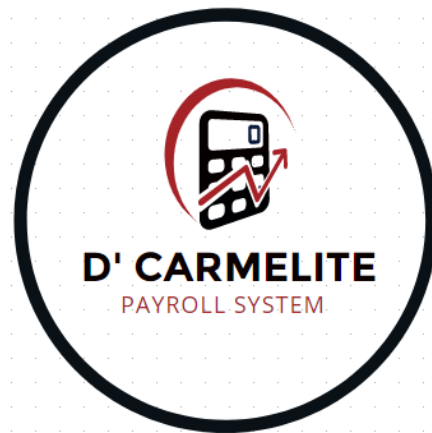




**Asia Pacific College**  
**School of Computing and Information Technologies**  
**System Analysis and Detailed Design**



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## **I. INTRODUCTION**

### **PROJECT CONTEXT**

Payroll System Software has greatly improved the financial and human resource management of companies around the world. Each country uses different payroll system software, depending on the government processes and tax laws. In the Philippines, there have been many start-up companies that offer payroll system services. However, for a payroll system software to work properly in a company there are certain adjustments that has to be made by the developer as each company has their own distinct settings. Having manual payroll can be very difficult and time consuming for the Finance Department and Employee

For this paper, the project manager and developers chose to D'Carmelite School, Inc., as the setting for the Payroll System they developed.

D'Carmelite is a non-profitable educational institution which consists of more than 200 students (Pre-school and Elementary) along with 25 academic staff. The school is owned by Mr. Jorge Factuar and founded on February 20, 1996. The school is located at Blk 2 Lot 10 Phase 1 EP Village, Barangay Pinagsama, 1630 Taguig and the school is open every Monday to Friday, 7 am to 4 pm. The academic staff must accumulate 8 hours of service to obtain the minimum wage.

## **PURPOSE AND DESCRIPTION**

The school manually computes its employees' payroll. Since its founding, transactions are recorded by pen and paper until it all piled up and hard to keep track. The client also admitted that subscribing to payroll service or adopting a payroll system software is the solution to errors in computations and employee's low satisfaction rate due to delays in the release of payroll.

The purpose of the project is to lessen the duration of processing the payroll of the school. This will help the finance office to save time, reduce the manual editing and corrections, and it will reduce the keeping of paper records to save up space. The system will reduce human error. The Payroll system will be convenient and user friendly for different kind of business

## **OBJECTIVES**

The following are the developers' objective on the project:

- To develop an automated system that will keep track and calculate gross pay and deduct all necessary deductions automatically.
- To reduce human errors.
- To reduce the time of processing the payroll and make the finance department go paperless.
- To organize academic staff's data.

- To generate a pay slip that will be sent and viewed via Email
- To generate a payroll report that will be sent and viewed via Email

## **SCOPES AND LIMITATIONS**

The developers will be focusing on creating user-friendly payroll system. The project will concentrate on the finance department of the school. The proposed system will be paperless and will minimize all the errors and make the system simpler.

## **REVIEW OF RELATED LITERATURE/SYSTEMS**

### **Gusto Payroll**

Gusto provides a system with database or storage of employee records and information that can accessed at will. The system displays the employee's information in just a click of a button. The system also allows the admin to Add, Remove, Update an employee's information any time

Gusto Payroll. (n.d)., <https://gusto.com/>

### **Salarium**

On the computation side. Salarium has stored all the algorithms/formulas to calculate gross pay and net pay. This makes the computation more accurate and has less human error. The embedded algorithm feature can be a great tool for quick and accurate calculations of salary.

Salarium. (n.d)., <https://Salarium.com/>

### **Bamboohr**

Bamboohr offers generation of report. It collects within its system to automatically generate a report for the Admin/Manager. Bamboohr has a resemblance our proposed

systems in means of generating and printing of reports where it goes to the administrator/manager Bamboohr. (n.d)., <https://www.bamboohr.com>

### EVENT TABLE

View employee payroll information	Review gross pay and deductions	Payroll System	Display Embedded employee payroll information	Embedded employee payroll information	System Admin
Input Overtime pay and Late/Absent deductions	Computation for net pay	System Admin	Enter Incentives and deductions	Incentives and deductions	Payroll System
Computation for net pay	Disburse salary	Payroll System	Display Computed Net pay	Computed Net pay	System Admin
Develop Pay slip	View Gross pay and net pay computations	Payroll System	Generate Pay slip	pay slip	Payroll System
View Gross pay and net pay computations	Review Computations	Payroll System	Send pay slip to academic staff via email	Pay slip to email	Academic Staff
Develop Payroll Report	Review Academic staff information and net pay distributed	Payroll System	Generate Payroll Report	Payroll report	Payroll System

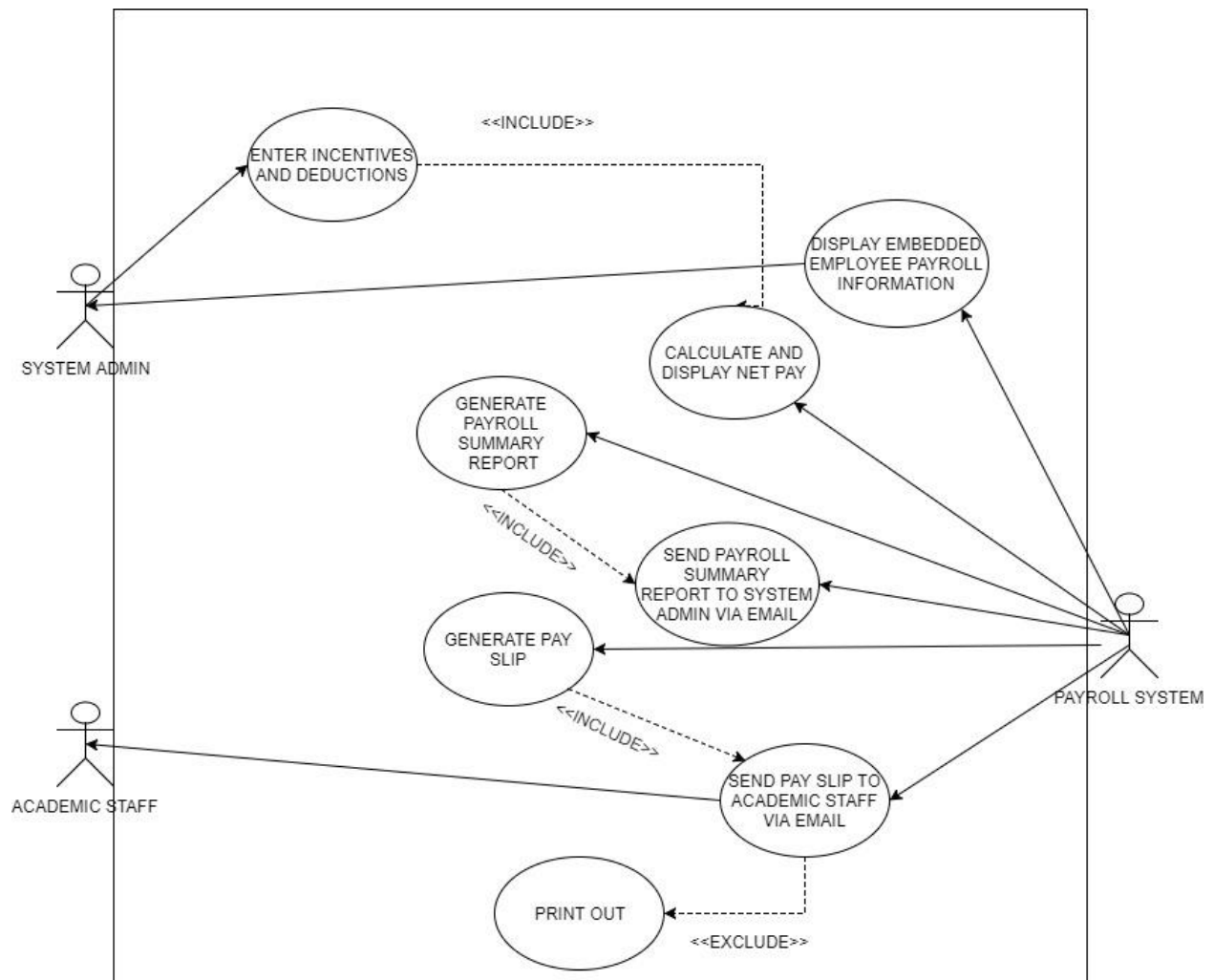
Create Payroll Report	Review detailed breakdown of earnings, taxes and deductions	Payroll System	Send Report to system Finance via email	Payroll Summary report to email	Finance
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EVENT	TRIGGER	SOURCE	USE CASE	RESPONSE	DESTINATION
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## GAP ANALYSIS

USER REQUIREMENTS	CURRENT SYSTEM	PROPOSED CHANGES
Process of payroll for employee	Manual payroll system	Develop a system that will automate all necessary computations for the salary, and for keeping and monitoring employee attendance and also storing of employee information and put all of this in one system
Organize records	Keeping records that is taking too much space	Create a database for the employees' records then connect it to the system
Salary Computation	Manual Computation	Create a feature in the system that has all the formulas for calculations and will calculate all the administrator's input salary
Editing and Corrections	Manual editing and corrections	Add a feature to the system that will let the administrator to edit, update, and delete. Develop a pop-up banner that will notify the administrator if there has been an double entry

## USE CASE DIAGRAM





### USE CASE FULL DESCRIPTION

Use Case Name:	<b>Display Embedded employee payroll information</b>	
Scenario:	<b>Display employee payroll information</b>	
Triggering Event:	<b>Update or view gross pay and deduction</b>	
Brief Description:	<b>System admin wants to view AS's gross pay and tax deductions</b>	
Actors:	<b>System</b>	
Related Use Case:	<b>Calculate and Display Net pay</b>	
Stakeholders:	<b>D'Carmelite</b>	
Preconditions:	<b>Employee payroll information must exist</b>  <b>Employee must exist</b>	
Postconditions:	<b>Records must be updated</b>  <b>Transactions must be created</b>  <b>The transactions must be related to the academic staff</b>	
Flow of Activities:	Actor	System
	<b>1. System admin selects academic staff</b>	<b>1.1 Searches academic staff database</b>  <b>1.2 Displays academic staff's payroll information</b>

Exception Conditions:	<b>Academic staff doesn't exist</b>  <b>Academic staff is not registered</b>  <b>Academic staff no longer part of the establishment</b>  <b>Academic Staff Payroll is incomplete</b>
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Use Case Name:	<b>Enter incentives and deductions</b>	
Scenario:	<b>Enter new payroll transaction</b>	
Triggering Event:	<b>Computation of net pay</b>	
Brief Description:	<b>When system admin creates or update net salary</b>	
Actors:	<b>System Admin</b>	
Related Use Case:	<b>Develop pay slip</b>	
Stakeholders:	<b>D'Carmelite</b>	
Preconditions:	<b>Employee must be registered in the database</b>	
Postconditions:	<b>Additions and deductions must be displayed</b>  <b>Additions and deductions must be reflected in the time acquired and number of absences</b>	
Flow of Activities:	Actor	System
	<ol style="list-style-type: none"> <li><b>1. System admin search for academic staff data</b></li> <li><b>2. System admin enters/inputs incentives and attendances deductions</b></li> </ol>	<ol style="list-style-type: none"> <li><b>1.1 Verifies academic staff</b></li> <li><b>2.1 Computes incentives and deductions</b></li> <li><b>2.2 Displays computed salary</b></li> </ol>
Exception Conditions:	<b>Employee is not registered</b>  <b>Employee is no longer part of the establishment</b>	

Use Case Name:	<b>Calculate and Display Net pay</b>	
Scenario:	<b>Display computed net salary</b>	
Triggering Event:	<b>Disburse of salary</b>	
Brief Description:	<b>Display amount of employee gross pay after deductions and incentives</b>	
Actors:	<b>System</b>	
Related Use Case:	<b>Generate pay slip</b>	
Stakeholders:	<b>D'Carmelite</b>	
Preconditions:	<b>Employee must be registered</b>	
Postconditions:	<b>Computed salary must be displayed</b>	
Flow of Activities:	Actor	System
	<b>1. System admin access system database</b>	<b>1. System Calculates and displays net salary information</b>
Exception Conditions:	<b>Employee doesn't exist</b>	

Use Case Name:	<b>Generate pay slip</b>	
Scenario:	<b>Request copy and salary distribution</b>	
Triggering Event:	<b>View gross pay and net pay</b>	
Brief Description:	<b>When the day of salary distribution or requested by academic staff</b>	
Actors:	<b>Payroll System</b>	
Related Use Case:	<b>Send pay slip to academic staff via email</b>	
Stakeholders:	<b>D’carmelite</b>	
Preconditions:	<b>Records must exist</b>  <b>Employee must exist</b>  <b>Request or salary distribution day</b>	
Postconditions:	<b>System must generate computed salary</b>  <b>Generate pay slip must be related to the academic staff</b>	
Flow of Activities:	Actor	System
	<b>1. SA inputs pay slip information</b>	<b>1.1 Generates pay slip</b>
Exception Conditions:	<b>Employee is not in the record</b>	

Use Case Name:	<b>Send pay slip to academic staff via email</b>	
Scenario:	<b>Academic staff receives pay slip through email</b>	
Triggering Event:	<b>Review computation</b>	
Brief Description:	<b>When the disburse salary want to be review by the academic staff.</b>	
Actors:	<b>Payroll System</b>	
Related Use Case:	<b>Generate pay slip</b>	
Stakeholders:	<b>D’carmelite</b>	
Preconditions:	<b>Employee must have an email address</b> <b>Employee must receive salary</b>	
Postconditions:	<b>System must send a copy of pay slip through email</b>	
Flow of Activities:	Actor	System
	<b>1. System generate pay slip</b>	<b>1.1 Verify employee information</b> <b>1.2 Send pay slip via email</b>
Exception Conditions:	<b>Academic staff has no email address</b>	

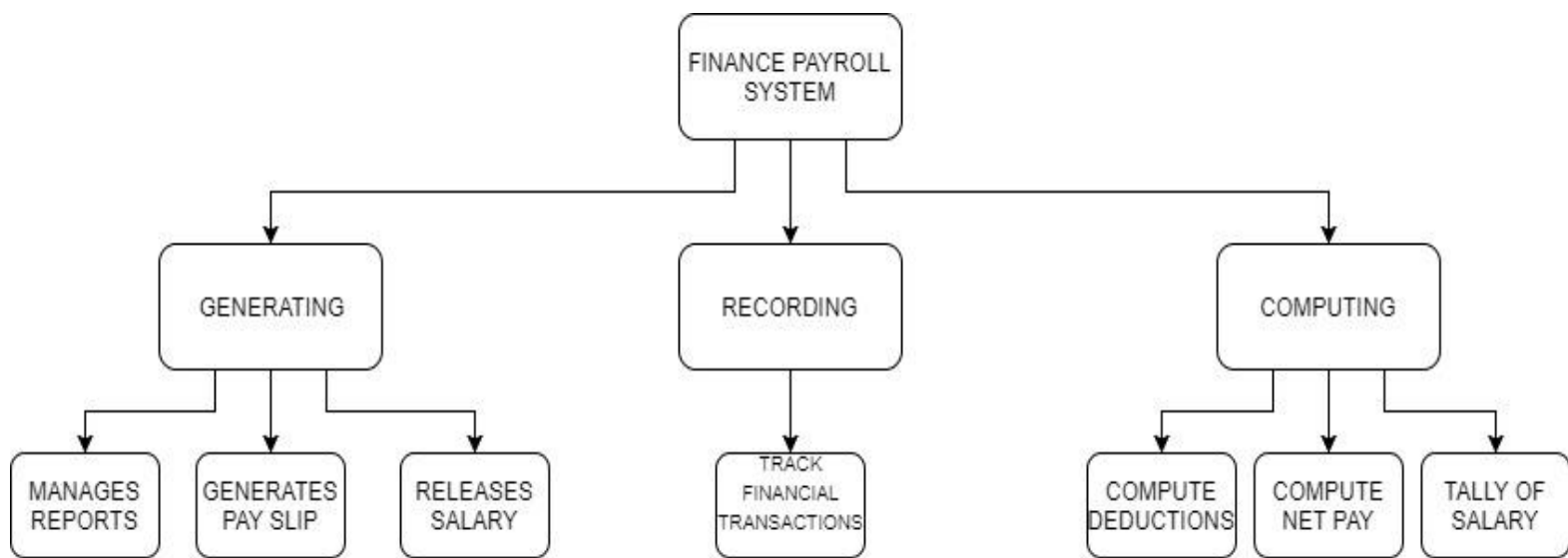
Use Case Name:	<b>Print Out</b>	
Scenario:	<b>Academic staff may request a hard copy of the [ay slip</b>	
Triggering Event:	<b>Review computations</b>	
Brief Description:	<b>When the disburse salary want to be review by the academic staff.</b>	
Actors:	<b>Payroll system and Academic Staff</b>	
Related Use Case:	<b>Develop pay slip</b>	
Stakeholders:	<b>D’carmelite</b>	
Preconditions:	<b>Employee must request for a hard copy</b>  <b>Employee must receive salary</b>	
Postconditions:	<b>System must send a copy of pay slip through mail</b>	
Flow of Activities:	Actor	System
	<b>1. System Admin selects print out</b>	<b>1.1 Verify employee information</b>  <b>1.2 Print a hard copy of the pay slip</b>
Exception Conditions:	<b>Academic staff did not request for a hard copy</b>	

Use Case Name:	<b>Generate Summary report to Finance via email</b>	
Scenario:	<b>System generate report that is to be send to the Finance</b>	
Triggering Event:	<b>Review detailed breakdown of earning, taxes, and deductions</b>	
Brief Description:	<b>When System produce a report of financial transaction for the Admin</b>	
Actors:	<b>Payroll system</b>	
Related Use Case:	<b>Send Payroll summary to Finance via email</b>	
Stakeholders:	<b>D’carmelite</b>	
Preconditions:	<b>A transaction must exist</b>	
Postconditions:	<b>System must produce an accurate copy of the transactions</b>	
Flow of Activities:	Actor	System
	<b>1. SA inputs the transactions in the system</b>	<b>1.1 Produce transaction report</b> <b>1.2 Record the transaction report</b>
Exception Conditions:	<b>No transaction/s has been made</b>	

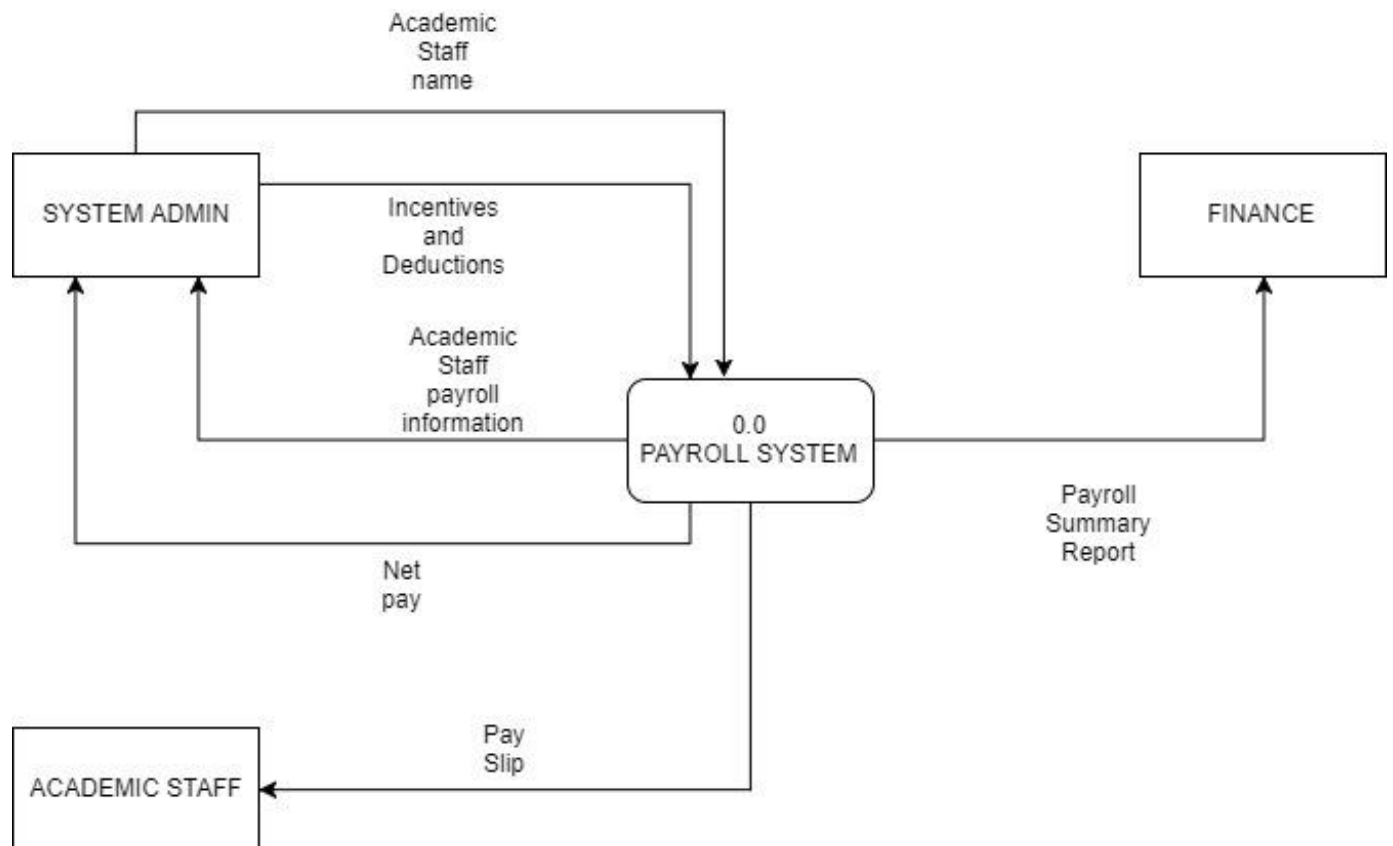
Use Case Name:	<b>Send Payroll Summary report to Finance via email</b>	
Scenario:	<b>System generate report that is to be send to the Finance admin</b>	
Triggering Event:	<b>Review detailed breakdown of earning, taxes, and deductions</b>	
Brief Description:	<b>When System produce a report of financial transaction for the admin</b>	
Actors:	<b>Payroll system</b>	
Related Use Case:		
Stakeholders:	<b>D’carmelite</b>	
Preconditions:	<b>A transaction must exist</b>	
Postconditions:	<b>System must produce an accurate copy of the transactions</b>	
Flow of Activities:	Actor	System
	<b>1. SA inputs the transactions in the system</b>	<b>1.1 Produce transaction report 1.2 Record the transaction report</b>
Exception Conditions:	<b>No transaction/s has been made</b>	



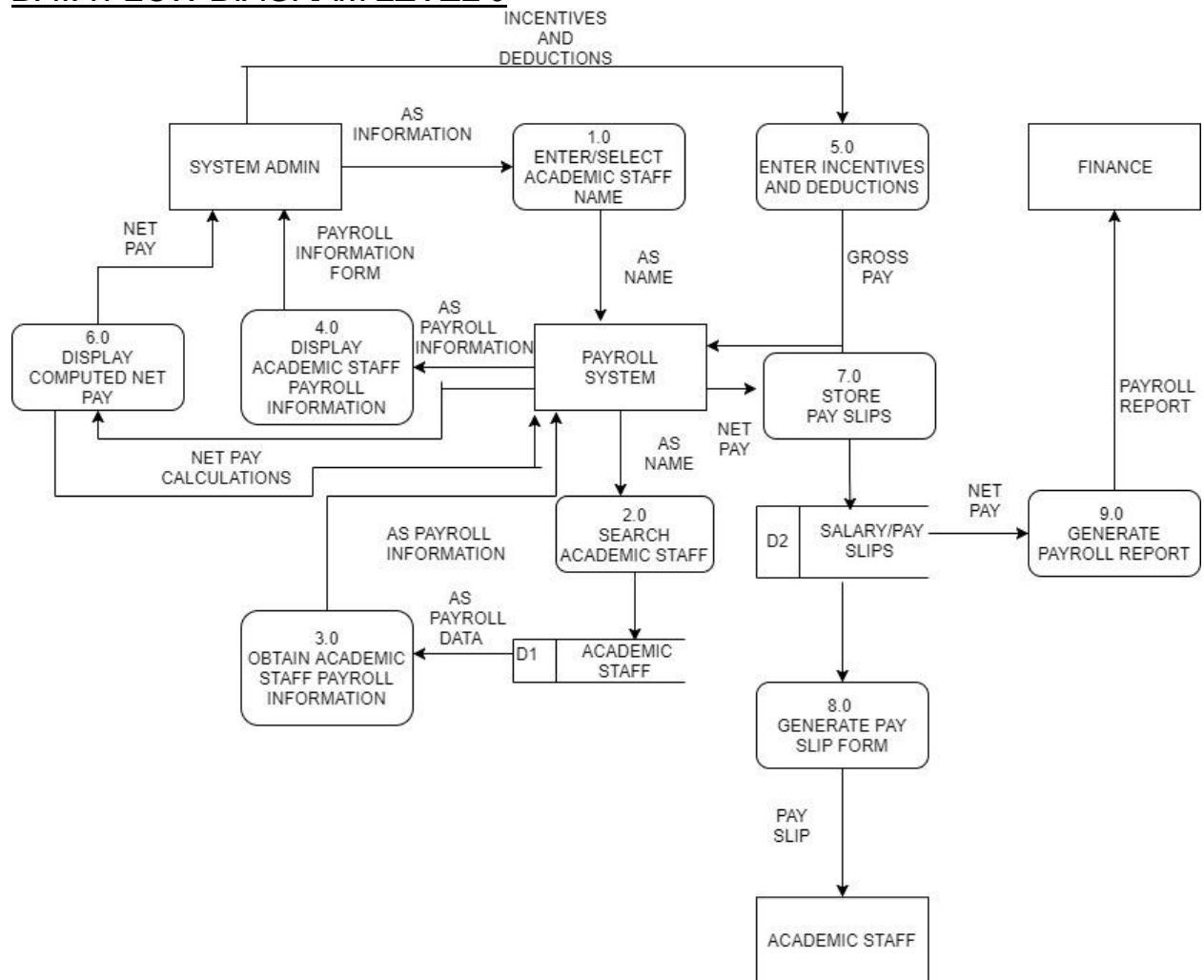
FUNCTIONAL DECOMPOSITION DIAGRAM



## CONTEXT FLOW DIAGRAM



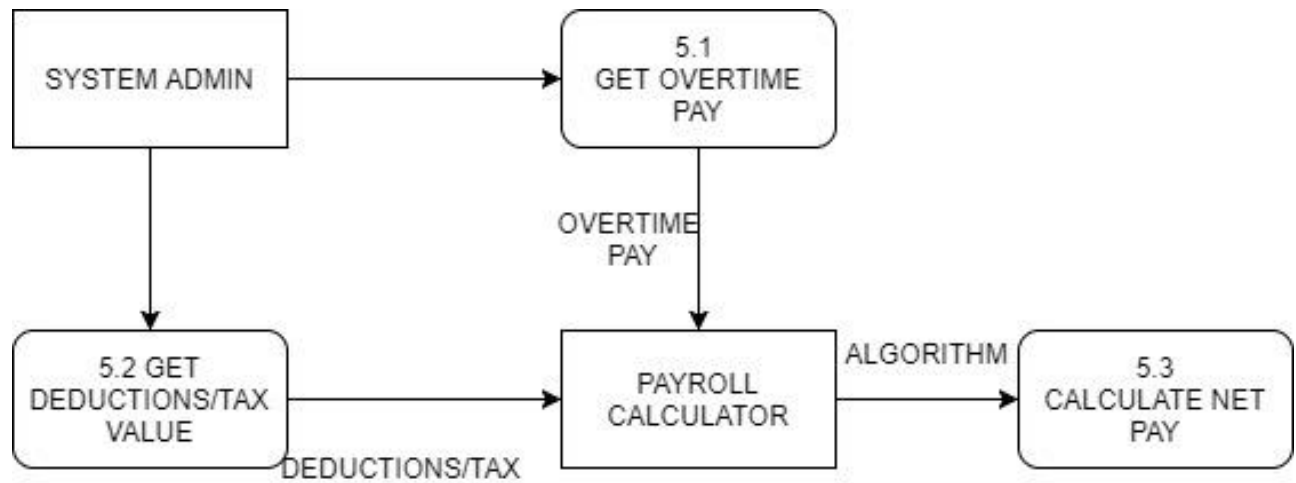
## DATA FLOW DIAGRAM LEVEL 0



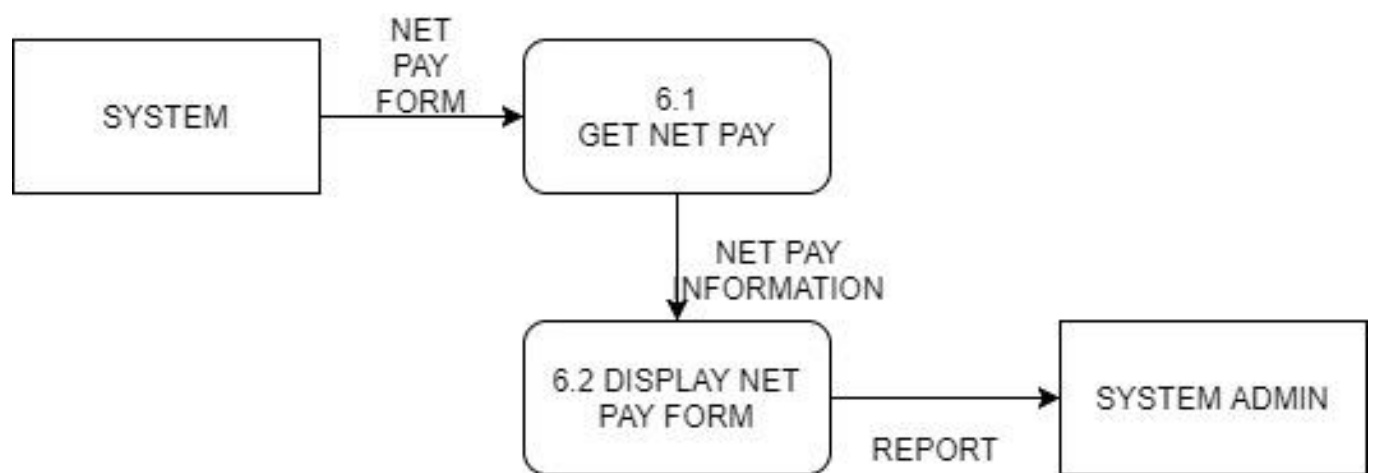


## DATA FLOW DIAGRAM LEVEL 1

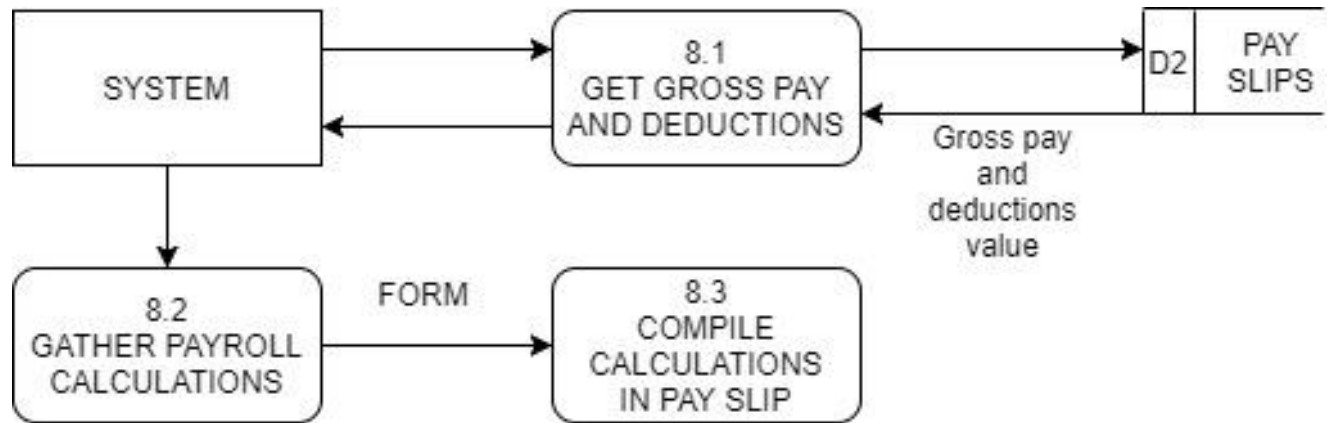
### *ENTER INCENTIVES AND DEDUCTIONS*



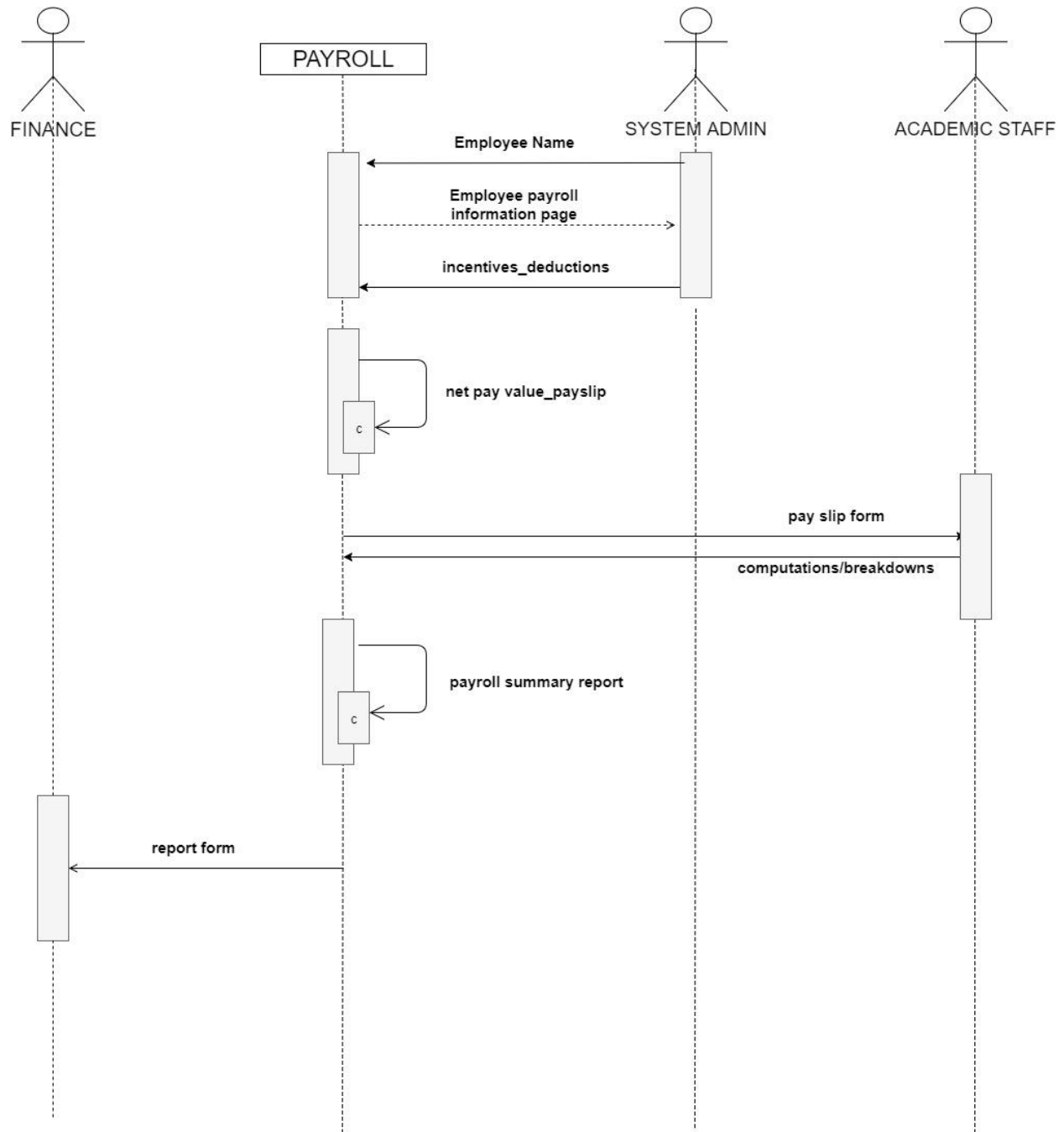
*DISPLAY NET PAY*



# GENERATE PAY SLIP FORM

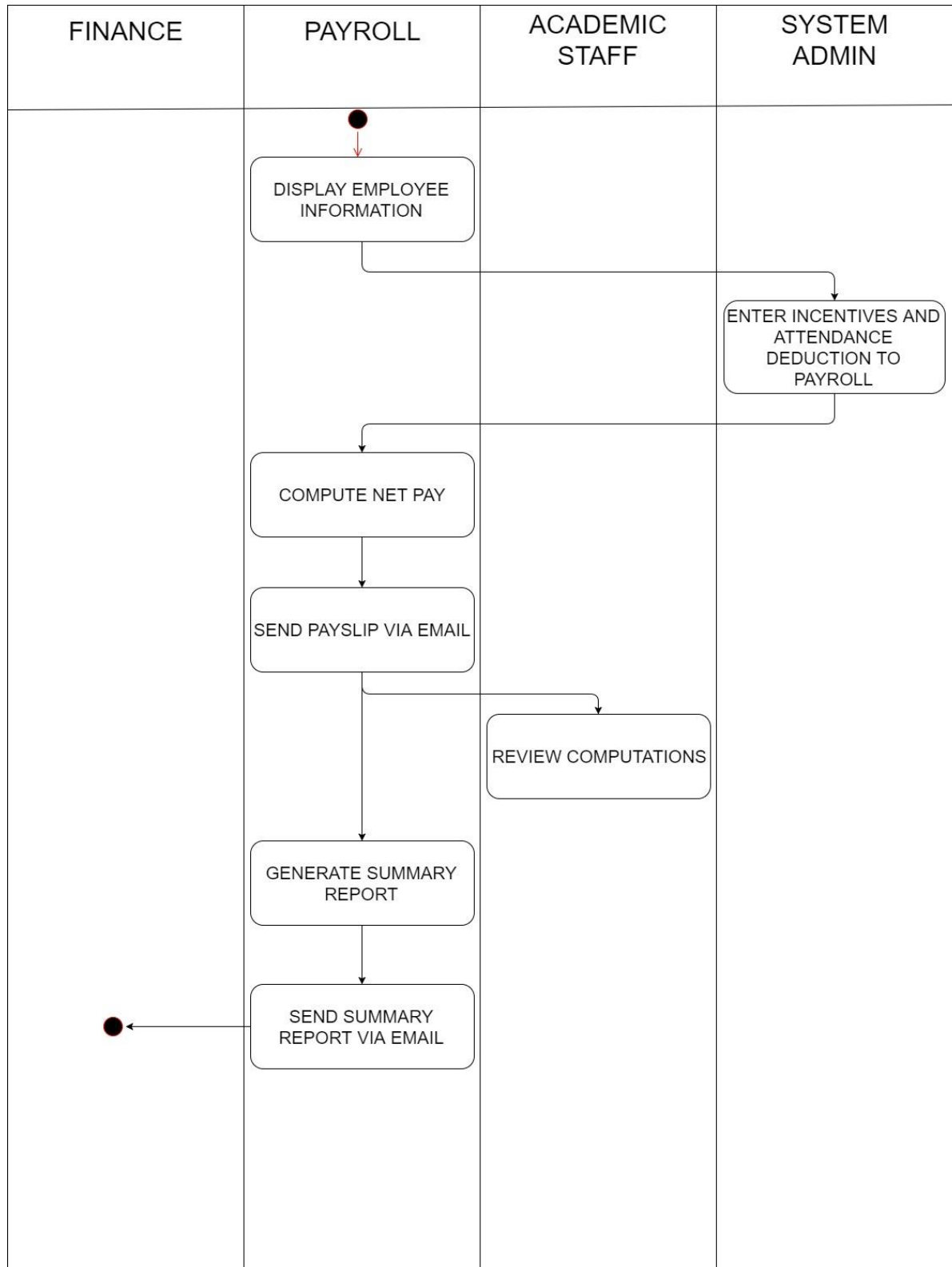


## SEQUENCE DIAGRAM





## ACTIVITY DIAGRAM



ENTITY RELATIONSHIP DIAGRAM



ATTRIBUTES	DATA TYPE	FIELD LENGTH	CONSTRAINT
dc_leave_id	INT	11	PK/NN
no_sick_leave	CHAR	11	NN
no_vacation_leave	CHAR	11	NN
no_maternity_leave	CHAR	11	NN
Study_leave	CHAR	11	NN
Sdate_vl	DATETIME	Mm//dd//yy Hh:mm	NN
Edatevl	DATETIME	Mm//dd//yy Hh:mm	NN
Sdate_sl	DATETIME	Mm//dd//yy Hh:mm	NN
Edate_sl	DATETIME	Mm//dd//yy Hh:mm	NN
Sdate_ml	DATETIME	Mm//dd//yy Hh:mm	NN
Edate_ml	DATETIME	Mm//dd//yy Hh:mm	NN
Sdate_pl	DATETIME	Mm//dd//yy Hh:mm	NN
Mdate_pl	DATETIME	Mm//dd//yy Hh:mm	NN
Sdate_studl	DATETIME	Mm//dd//yy Hh:mm	NN
Edate_studl	DATETIME	Mm//dd//yy Hh:mm	NN
SL_limit	INT	11	NN
VL_limit	INT	11	NN
ML_limit	INT	11	NN
STUDL_limit	INT	11	NN

## EMPLOYEE\_DETAILS

Dc_employee_id	INT	11	PK/NN
Dc_emp_name	VARCHAR	45	NN
Dc_joining_date	DATE	Mm//dd//yy	NN
Dc_termination_date	DATE	Mm//dd//yy	NULL
Dc_employee_department	VARCHAR	45	NN
Dc_employee_address	VARCHAR	300	NN
Dc_employee_contact_no	VARCHAR	50	NN
Dc_employee_email	VARCHAR	100	NN
Dc_basic_salary	DOUBLE	45	PK/NN

**BONUS\_OTHERPAYS**

Pays_id	INT	11	PK/NN
Overtime_pay	DOUBLE	45	NN
Minimum_wage	DOUBLE	45	NN
Premium_pay	DOUBLE	45	NN
Holiday_pay	DOUBLE	45	NN
Service_Incentive_leave	DOUBLE	45	NN

**DEDUCTION**

Dc_deduction_id	INT	11	PK/NN
Tax_id	INT	11	FK/NN
Loan_id	INT	11	FK/NN
Philhealth_contribution_id	INT	11	FK/NN
sss_contribution_id	INT	11	FK/NN
Pagibig_contribution	INT	11	FK/NN

**DC\_TAX**

Dc_tax_id	INT	11	PK/NN
Tax_amount	DOUBLE	45	NN
Basic_pay	DOUBLE	45	NN

**LOAN**

Loan_id	INT	11	PK/NN
Loan_amount	DOUBLE	45	NN
Deduction_date	DATE	Yy//mm//dd	NN
Loan_type	VARCHAR	11	NN
Deduction_amount	DOUBLE	45	NN

**PHILHEALTH\_CONTRIBUTION**

Philhealth_contribution	INT	11	PK/NN
Philhealt_contribution_monthly_amount	DOUBLE	45	NN
Basic_pay	DOUBLE	45	NN
Employees_contribution_amount	DOUBLE	45	NN

**SSS\_CONTRIBUTION**

Sss_contribution_id	INT	11	PK/NN
Sss_contribution_amount_monthly	DOUBLE	45	NN
Basic_pay	DOUBLE	45	NN
Employees_contribution_amount	DOUBLE	45	NN

#### **PAGIBIG\_CONTRIBUTION**

Pagibig_contribution_id	INT	11	PK/NN
Pagibig_contribution_amount_monthly	DOUBLE	45	NN
Basic_pay	DOUBLE	45	NN
Employees_contribution_amount	DOUBLE	45	NN

#### **Payroll Summary Report**

Payroll_register_id	INT	11	PK/NN
Deduction_Register_Deduction_Register_id	INT	11	FK/NN
Employee_details_dc_employee_id	INT	11	FK/NN
Employee_details_dc_basic salary	DOUBLE	45	FK/NN

#### **Pay\_Slip**

Pay_Slip_id	INT	11	PK/NN
Employee_details_dc_basic salary	DOUBLE	11	FK/NN
Employee_details_dc_employee_id	INT	11	FK/NN
Employee_netpay	DOUBLE	11	NULL
dc_deductions	DOUBLE	11	FK/NN