

GROUP PROJECT

SSE3305 SECOND SEMESTER 2022-23

Deadlines:
23 JUNE 2023

Reminder:

This is a group assignment of **FOUR** (4) students. Every student must be active in the development of the test documentation. Use all the knowledge you have learned to complete the project.

Deliverables:

Submit your Test Documentation that consists of the Test Basis, Test Plan, Test Design Specification, Test Case Specification, Test Procedure Specification, and Test Report.

Please be reminded to attach your Group Activity Log as an appendix.

Test Report Submission: 23 June 2023 (Week 14)

Peer Review:

Every student **MUST** fill in the peer review form and submit it individually to me. Fail to do so, and you will get a 0 mark for the participation mark.

Introduction

The pension scheme in Malaysia also benefits while still in the Government service or after retirement. The pensionable officer who retires or asked to retire from Government service is eligible for the following pension benefits:

- Service Pension (monthly payment);
- Service Gratuity (lump sum payment); and
- Cash Award in lieu of Leave, when applicable (lump sum payment).

The aim of the assignment is to assess your understanding of the basic concepts and techniques of software testing. You are going to test a simple system based on both black-box and white-box testing techniques. You are given a Java code (i.e. `pensionCalc.java`), the requirements, and the design as the test basis. The given code is re-developed based on the Optional Retirement of Pension Calculator and the derivative pension is not taken into consideration. The original code can be accessed from the following URL (http://www.jpapencen.gov.my/english/optional_retirement.html). The original code is developed for an optional retirement scheme. The objective of the code is to help a pensionable officer to calculate his/her pension benefits prior to retirement such as monthly pension, gratuity, and cash award in lieu of leave.

What you have to do:

1. Analyze the given test basis.
2. Design test cases based on the techniques that you have learned.
3. Prepare a test script.
4. Execute the tests either manually or using a tool.
5. Assess the quality of the test cases that you have designed.
6. Prepare Test Documentation based on IEEE Standard 829-2008 that consists of:
 - a. Test Plan
 - b. Test Design Specification
 - c. Test Case Specification
 - d. Test Procedure
7. If using a tool, please include the test class in your report (i.e. in the format of the JUnit test class)
8. Coverage information (i.e. print screen code under test and the percentage coverage. This can be obtained after you execute your JUnit coverage)
9. Concluding remarks,
 - a. Justify why your solution (i.e. in terms of strategy and techniques) is the most effective in testing the given system.
 - b. Justify the readiness of the system for deployment.

Test Basis:

1. System's requirements
2. System's design
3. Source code, `pensionCalc.java`

SYSTEM REQUIREMENT

Optional Retirement Under Section 12A Act 227/239

A pensionable personnel upon attaining 40 years of age may apply for optional retirement. A period of reckonable service of not less than 10 years is required to enable pension benefits to be paid to the personnel. Payment for service gratuity is made on the date of retirement while pension would be paid when attaining the eligible age as stipulated in the Pension Laws.

The rate of gratuity and pension to be paid depends on the period of reckonable service and the last drawn salary (substantive) by the officer. The actual calculation is as follows:

- **Gratuity**

7.5% x number of months of reckonable service x corresponding last drawn salary.

- **Pension**

1/600 x number of months of reckonable service x corresponding last drawn salary.

Subject to a maximum pension of three fifth (3/5) of the last drawn salary (after a service of 30 years of 360 months of reckonable service)

For public service officers, Pension Regulations 1980 is read together with Service Circular No 4 of 1993, which provides for Cash Award in lieu of Leave (GCR), which is leave not utilized due to exigency of the service and is accumulated in accordance with the terms for accumulation under pension regulations and the above circular. Its calculation is:

1/30 x [basic salary + fixed allowances] x no. of leave accumulated up to 150 days.

This Cash Award in lieu of Leave is paid by the Federal Government (through Pension Division) for the federal officer and the State Government for the state officer. Statutory Bodies and Local Authorities which adopt Service Circular No. 4 of 1993 will pay Cash in lieu of Leave to their employees.

The system's interfaces are as follows:

Software Testing Group Assignment

Estimate Computation of Pension, Gratuity, and GCR Payments for Optional Retirement

Birth Date:			<input type="text"/>	/	<input type="text"/>	/	<input type="text"/>
Service Commencement Date:			<input type="text"/>	/	<input type="text"/>	/	<input type="text"/>
Last Drawn Salary (Substantive) Upon Optional Retirement Date:			<input type="text"/>				
*Fixed Allowances:			<input type="text"/>				
Cash Award In Lieu of Leave (Maximum 150 Days):			<input type="text"/>	Days			
Unpaid Leave:			Year	<input type="text"/>	Month	<input type="text"/>	Day
			<input type="text"/>		<input type="text"/>		<input type="text"/>
Gender:			<input type="radio"/> Male <input type="radio"/> Female				
Are you a male officer under these categories: (i) Fire Officer (Grade KB11/KB10) or (ii) Police Officer (from Grades Y14 till Y7) or (iii) Prison Officer (from Grades KX12 till KX6) or (iv) Mental Hospital Nurse			<input type="radio"/> Yes <input type="radio"/> No				
Optional Retirement Date: :			<input type="text"/>	/	<input type="text"/>	/	<input type="text"/>

Calculate
Reset
Read Me

Pension Date:	<input type="text"/>	Monthly Pension:	RM	<input type="text"/>
Retirement Age:	<input type="text"/> Years <input type="text"/> Months	Gratuity:	RM	<input type="text"/>
Reckonable Period of Service:	<input type="text"/> Month	Cash Award in lieu of Leave:	RM	<input type="text"/>

This amount is subjected to debts owing to the Government/employer, if any

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PENSION SCHEME :: PENSION BENEFIT

Pension scheme in Malaysia also extends pension benefits to a deceased pensioner's dependants who passed away either while still in the Government service or after retirement. This benefit is known as Derivative Gratuity and Derivative Pension.

Types of Pension Benefits

Pensionable officer who retires or asked to retire from Government service is eligible for the following pension benefits:

- Service Pension (monthly payment);
- Service Gratuity (lump sum payment); and
- Cash Award in lieu of Leave, when applicable (lump sum payment).

The rate of gratuity and pension to be paid depends on the period of reckonable service and the last drawn salary (substantive) by the officer. The actual calculation is as follows:

Gratuity

- **7.5% x number of months of reckonable service x corresponding last drawn salary.**

Pension

- **1/600 x number of months of reckonable service x corresponding last drawn salary.**
- **subject to a maximum pension of three fifth (3/5) of the last drawn salary (after a service of 30 years or 360 months of reckonable service)**

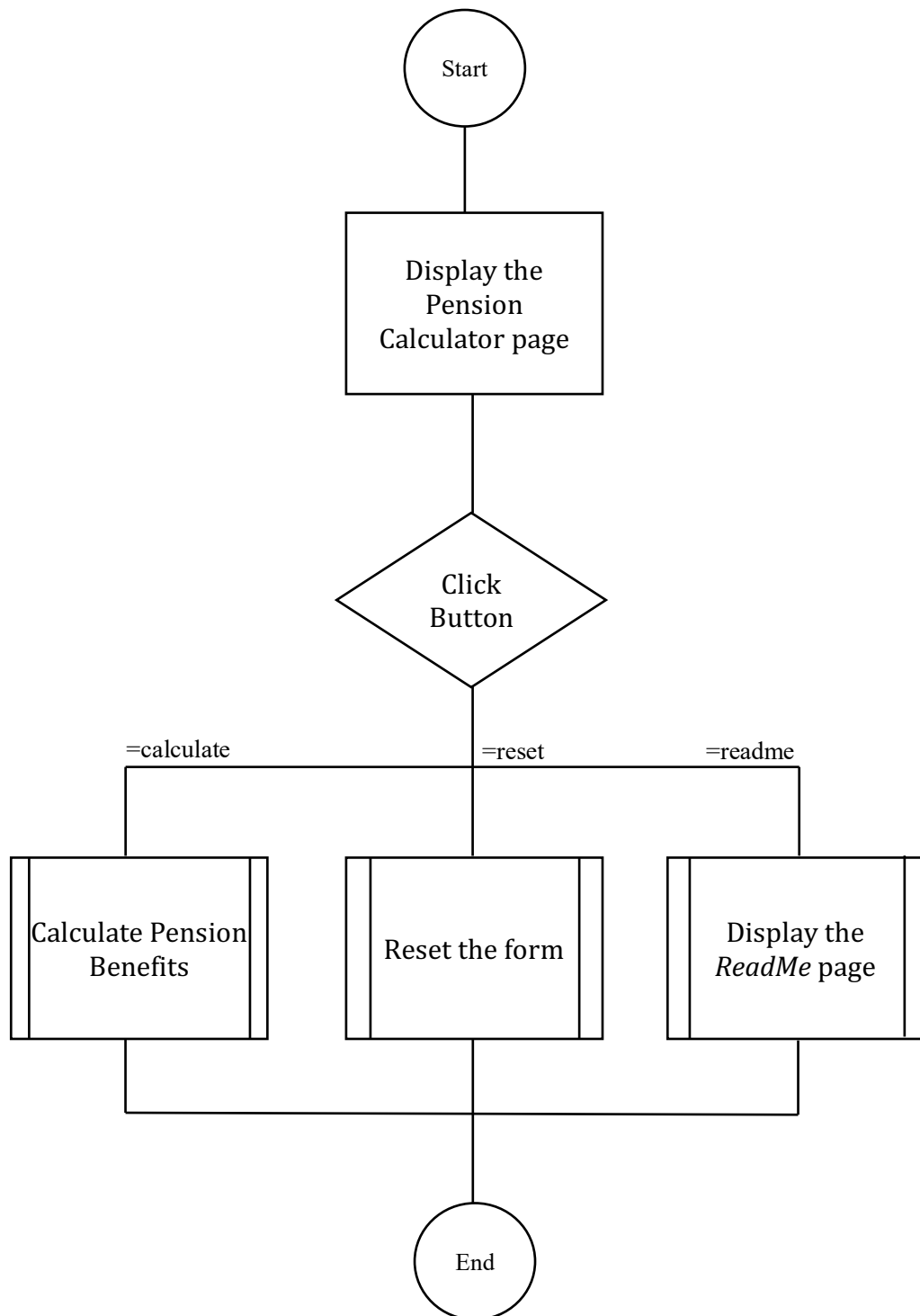
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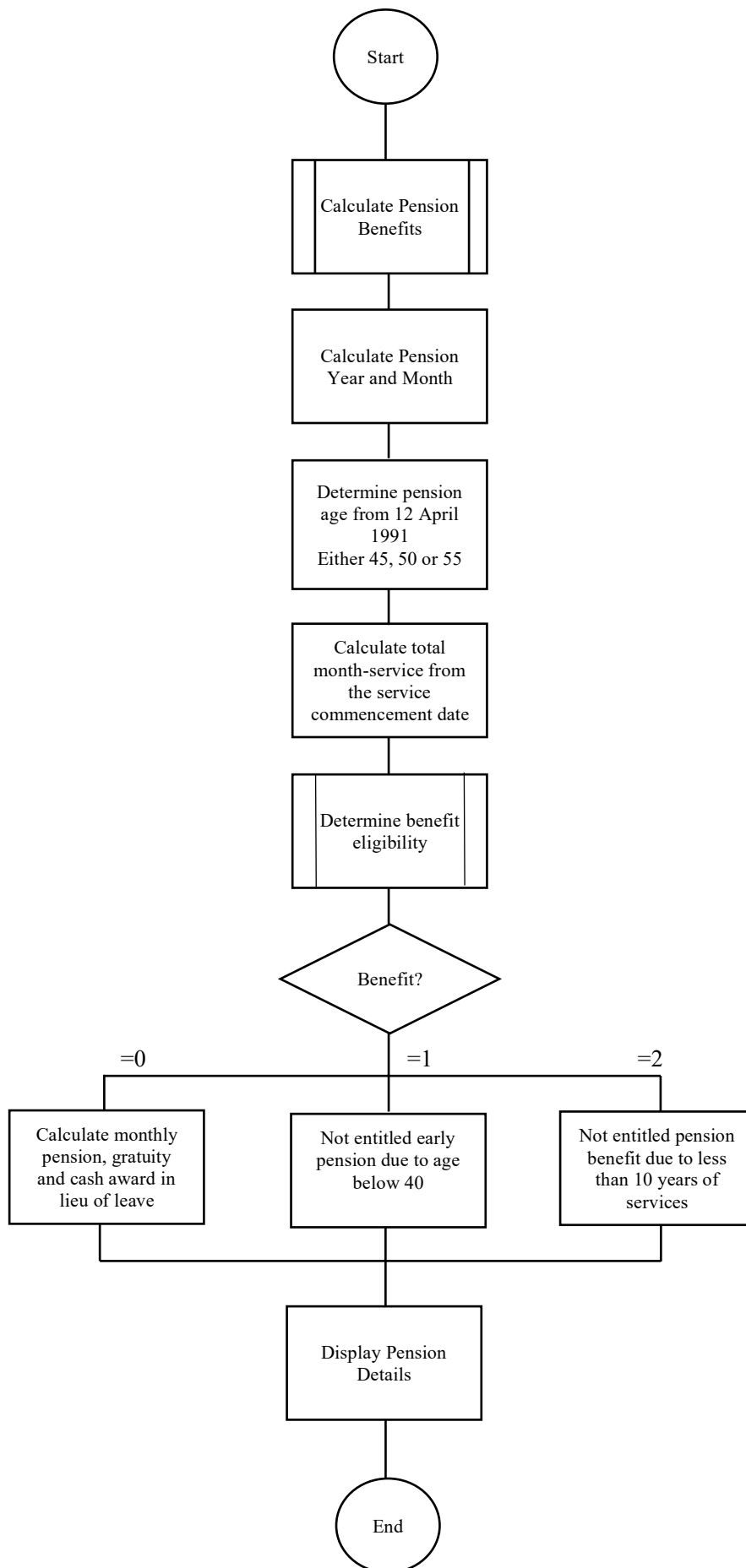
1/30 x [basic salary + fixed allowances] x no. of leave accumulated up to 120 days.

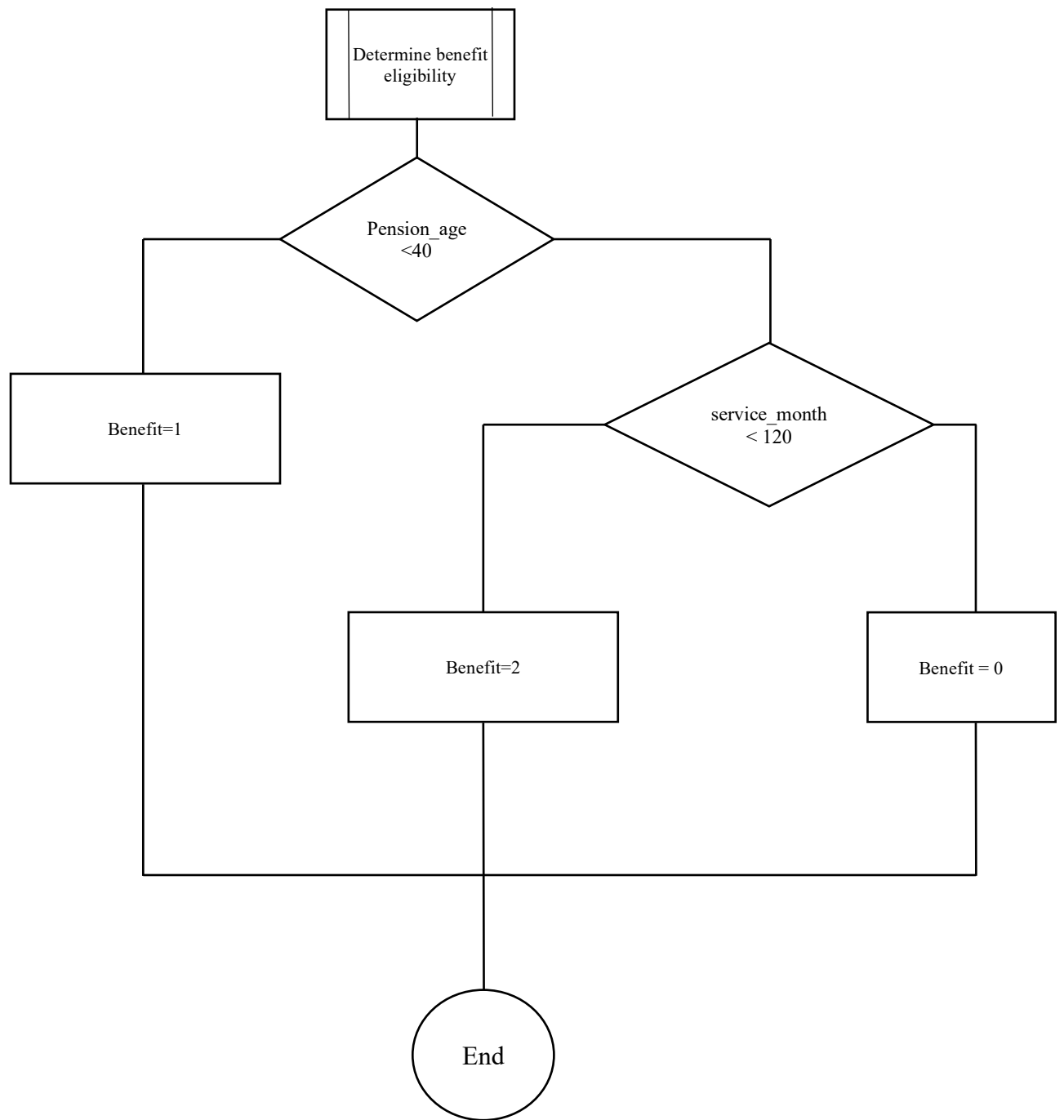
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Flow Chart of the Pension Calculator







Decision Table

Benefit Eligibility

Condition	1	2	3	4
Age \geq 40	Y	Y	N	N
Service > 120 month	Y	N	Y	N
Calculate Pension	X			
Calculate Gratuity	X			
Calculate Cash Award	X			
Not Eligible		X	X	X

Pension Age

Condition	1	2	3	4	5	6	7	8
Service Commencement date before 1 April 1991	Y	Y	Y	Y	N	N	N	N
Gender = 'Female'	Y	Y	N	N	Y	Y	N	N
Male Special Officer	Y	N	Y	N	Y	N	Y	N
Pension Age = 45	X	X	X					
Pension Age = 50				X				
Pension Age = 55					X	X	X	X

Use Case Description

ID	UC01
Name	Calculate Pension Benefits
Brief Description	Allow the pensionable officer to calculate pension, gratuity and cash award in lieu to leave
Actor	Pensionable officer

Main Flow:

1. The pensionable officer fills birthdate, service-commencement date, last-salary, fixed-allowance, cash-award-in-lieu-of-leave, unpaid-leave, gender, male-special-officer and optional-retirement-date.
2. The pensionable officer clicks on the 'Calculate' button.
3. The system will display the amount of pension, gratuity, and cash award in lieu of leave.

Alternative Flow 1

1. If the pensionable officer does not fill in the details or incorrect details are entered, the system will display an error message.
2. The actor returns to the beginning of the basic flow.

Alternative Flow 2

1. This allows the pensionable officer to exit during the use case. The use case ends.

Alternative Flow 3

2. This allows the pensionable officer to reset the details during the use case. The actor returns to the beginning of the basic flow.