ICT167 Principle of Computer Science

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# **1.** **Title**

**Change Management System Documentation:** This document, authored by Keith Neo Kai Si on February 26, 2024, outlines the functionalities of the Change Management System. It encompasses five Java files: CoinDenominationCountry.java, CoinCountNode.java, CoinNodeList.java, Change.java, and Client.java. The system aims to manage coin count data and calculate change efficiently. CoinDenominationCountry.java defines coin denominations for specific countries. CoinCountNode.java represents a node in a linked list storing coin counts, while CoinNodeList.java manages linked lists of coin count nodes. Change.java handles change calculation for individuals, allowing manual input or use of hardcoded test data. Client.java serves as the main program, enabling user interactions and displaying results. These classes form a comprehensive system for managing and processing change-related data.

# **2. Requirements/Specification**

The program is designed as a change management system that allows users to enter data about their data and their coin holdings and perform various operations on this data. Users can enter data manually by specifying a person’s name and corresponding coin balance or use hard-coded test data for convenience. The program calculates the optimal combination of coins needed to form each person’s exchange amount, considering the available coin values set per country. Next, a breakdown of each denomination’s change and the total number and amount will be displayed. The valid coin amount is assumed to be a multiple of 5, and the name consists of one word. The expected output includes detailed information about each person’s change, including their name, total change amount, and change breakdown by denomination. In addition, the program could find the person with the largest and smallest amount of coins, calculate the total number of coins of each denomination for all people, and find the total amount, which is the sum of all coins.

# **3. User Guide**

**Complication and Execution:**

1. **IDE:**  This program is developed using Eclipse version 2023-12 (4.30.0).

2. **Compilation:** Open Eclipse and import the Java project containing the provided source code files:

CoinDenominationCountr.java, CoinCountNode.java, CointNodeList.java, Change.java, and Client.java.

3. **Execution:**  Right-click on the Client.java file, select “Run As,” and choose “Java Application” from the dropdown menu

**Using the Program:**

1. **Data Input Choice:**

* Upon program execution, you can enter user-defined data interactively or use hardcoded test data.
* For user-defined data, follow the prompts to input a person’s name and coin value (ensure it is a multiple of 5).
* For hardcoded test data, no further action is required.

1. **Main Menu:**

* After data input, the main menu will displayed with various options:
  + Option 1: Enter a name and display the change.
  + Option 2: Find the person with the largest amount and display the change.
  + Option 3: Find the person with the smallest amount and display the change.
  + Option 4: Calculate and display each denomination's total number of coins.
  + Option 5: Calculate and display the total number for all denominations.
  + Option 6: Exit the program.

1. **Selecting Options:**

* Enter the corresponding option number to perform the desired action.
* Follow any additional prompts or instructions displayed.

1. **Exiting the Program:**

* To exit the program, select option 6 form the main menu.