Airgead Banking App – Pseudocode Planning Document

Program Purpose The Airgead Banking App calculates how an investment grows over time, both with and without monthly deposits. It prompts the user for input, performs calculations, and displays yearly summaries.

User Input Phase

Display welcome message

Prompt user to enter initial investment amount

Validate that the amount is a positive number

Prompt user to enter annual interest rate (as a percentage)

Validate that the interest rate is a positive number

Prompt user to enter number of years for investment

Validate that the number of years is a positive integer

Ask user if they want to make monthly deposits (yes or no)

If yes, prompt user to enter monthly deposit amount

Validate that the monthly deposit is a positive number

Calculation Phase – Without Monthly Deposits

Set starting balance to initial investment

For each year from 1 to number of years: a. Calculate yearly interest earned b. Add interest to balance c. Display year number, ending balance, and interest earned

Calculation Phase – With Monthly Deposits

Set starting balance to initial investment

For each year from 1 to number of years: a. Set yearly interest earned to 0 b. For each month from 1 to 12: i. Add monthly deposit to balance ii. Calculate monthly interest iii. Add monthly interest to balance iv. Add monthly interest to yearly interest earned c. Display year number, ending balance, and total interest earned

Summary Display

Show final balance and total interest earned without monthly deposits

Show final balance and total interest earned with monthly deposits

Compare both scenarios

Program Exit

Display thank-you message

End program

2.

Program Objective

Design a console-based application that calculates and displays investment growth over time, both with and without monthly deposits. The program will accept user input, perform compound interest calculations, and generate two static reports.

Step-by-Step Pseudocode

1. Display Welcome Message

Show program title and brief description

Prompt user to begin input

2. Collect User Input

Prompt for initial investment amount

Validate that input is a positive number

Prompt for monthly deposit amount

Validate that input is a positive number

Prompt for annual interest rate (as a percentage)

Validate that input is a positive number

Prompt for number of years

Validate that input is a positive integer

Prompt user to press any key to continue

3. Display Input Summary

Show all entered values for confirmation

Wait for user to continue

4. Calculate Report Without Monthly Deposits

Set current balance to initial investment

For each year from 1 to number of years:

Calculate yearly interest:

interest = current balance × (annual interest rate ÷ 100)

Add interest to current balance

Display year number, year-end balance, and interest earned

5. Calculate Report With Monthly Deposits

Set current balance to initial investment

For each year from 1 to number of years:

Set yearly interest earned to 0

For each month from 1 to 12:

Add monthly deposit to current balance

Calculate monthly interest:

interest = current balance × ((annual interest rate ÷ 100) ÷ 12)

Add interest to current balance

Add monthly interest to yearly interest earned

Display year number, year-end balance, and total interest earned

6. Display Summary

Show final balance and total interest earned without monthly deposits

Show final balance and total interest earned with monthly deposits

Optionally allow user to re-enter values to test different scenarios

7. End Program

Display thank-you message

Exit application