**Bank Loan System Documentation**

**Group 5**

**Overview**

The Bank Loan System program allows users to calculate and evaluate loan options based on predefined interest rates and loan terms. The system ensures that monthly payments do not exceed 50% of the user’s monthly income, offers adjustment options when necessary, and records approved loans in a CSV file.

**Features**

* User-friendly loan selection: Users choose loan types by entering a single letter (H for Housing, A for Auto, P for Personal).
* Robust input validation: Ensures valid entries for loan type, amount, term, and income.
* Loan calculation logic: Computes monthly payments and total interest using a standard loan formula.
* Debt ratio enforcement: Prevents approval if monthly payments exceed 50% of income, offering adjustments.
* Summary display: Provides loan details before final approval.
* Data persistence: Stores finalized loan records in loan\_records.csv.

**Member Contributions**

1. **Dingani Freddie Kandiwo (G00450731):** User Input Validation and Error Handling
   * Implemented the get\_valid\_input() function to ensure numeric inputs are valid.
   * Enforced constraints on loan type selection (only H, A, or P allowed).
   * Ensured the loan term is within the allowed range for each loan type.
   * Implemented a strict yes/no confirmation for loan approval.
2. **Shalom Donga (G00450733):** Loan Calculation Logic and Debt Ratio Constraints
   * Created the calculate\_monthly\_payment() function to compute monthly payments.
   * Implemented the validate\_term() function to restrict loan terms.
   * Enforced the rule that monthly payments cannot exceed 50% of monthly income.
   * Designed an option to adjust loan terms or amounts when debt limits are exceeded.
3. **Grace Ngoma (G00450740):** Summary Display and Loan Finalization
   * Developed the loan summary display to provide a clear breakdown of loan details.
   * Included prompts for users to proceed or adjust loan details if needed.
   * Ensured that final loan records are stored in loan\_records.csv only after confirmation.
4. **Chilawo Nchimunya Munene (G00450721):** Edge Case Testing and Documentation
   * Conducted tests with edge cases (e.g., very high/low loan amounts, 0% interest rate cases, maximum term limits).
   * Ensured program stability by testing multiple incorrect inputs.
   * Documented program logic and member contributions.

**Program Flow**

1. User selects a loan type by entering H, A, or P.
2. User inputs loan amount, term, and monthly income with validation.
3. Monthly payment is calculated based on loan details.
4. Debt ratio check is performed:
   * If monthly payment > 50% of income, the user can adjust the term or amount.
   * If adjustments fail, the loan is canceled.
5. Loan summary is displayed, showing key details.
6. User confirms loan approval (Y/N) before finalizing.
7. Loan is recorded in CSV if approved.