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PERSONAL REPORT

Overall, the program uses various C programming concepts, such as structs, functions, loops, and control flow statements, to provide a simple banking system with features for deposits, planned savings, transaction history checking, and uses the interestTable function to calculate the interest earned on deposits and savings plans.

Here is a more detailed breakdown of each section of the program:

- **Headers:**
  - stdio.h: This header file is used for input and output operations. It contains the functions for reading input from the user and displaying output to the screen.
  - string.h: This header file is used for string manipulation operations. It contains the functions for manipulating arrays of characters, such as strcpy, strcat, and strcmp.
  - time.h: This header file is used for time-related operations. It contains the time_t and struct tm types, which are used to represent time and date values.
  - stdlib.h: This header file is used for general purpose operations. It contains the functions for memory allocation, random number generation, and system operations.
- **Struct transaction:**
  - This struct is used to store information about transactions. It has four members:
  - name: an array of characters with a maximum length of 50, used to store the name of the account holder.
  - day: an integer used to store the day of the transaction.
  - month: an integer used to store the month of the transaction.
  - year: an integer used to store the year of the transaction.
- **interestTable function: This function takes in two parameters:**
  - save: an integer representing the amount of deposit
  - y: an integer representing the length of deposit in years The function uses if-else statements to determine the interest rate based on the amount of savings and the duration of the deposit. It returns the interest rate as a float.

- **Main Function:**
  - Initialization:
    - The program first initializes the date and time by using the localtime() function from the time.h header, which is used to get the current date and time.
    - Declare the variable choose, again and some other variables used in the program.
  - Loop:
    - The program uses a while loop with the condition again != 'n' to keep the program running until the user decides to exit.
    - Inside the loop, the program displays the welcome message and the menu for the user to select the feature.
  - User Input:
    - The program prompts the user to enter a choice (1, 2, 3, or 4) using the scanf() function, which is used to read input from the user.
    - The program uses the switch statement to execute the corresponding feature based on the user's choice.
  - Feature 1: Deposits:
    - The program prompts the user to enter their name, deposit amount, and deposit duration (in months) using the scanf() function.
    - It then calculates the interest earned on the deposit using the interestTable function and the deposit duration.
    - The program then calculates the new total balance by adding the deposit amount and the interest earned.
    - The program will then save the creation date, name, and the new total balance in a file and display the new total savings using the printf() function.
  - Feature 2: Planned Savings:
    - The program prompts the user to enter the name of the savings plan, the amount to be saved, the duration of the savings plan (in months), and the autodebet day using the scanf() function.
    - It then calculates the interest earned on the savings plan using the interestTable function and the savings plan duration.
    - The program then calculates the new total balance by adding the savings plan amount and the interest earned.

  - The program will then save the new creation date, name, and new total savings in a file and displays the amount of savings earned per month and the amount of savings earned according to the saving period.
- ➢ Feature 3: Planned Savings Transactions Check:
  - This feature allows the user to check the history of transactions of the planned savings. The program will display the savings plan name and transaction date using the printf() function.
- ➢ Feature 4: Exit:
  - The program exits the program and terminates the execution when the user choose this feature.

The main function of the program is responsible for handling user input, executing the selected feature, and displaying the output results.

There are some input validation that i use in this program:

- ✓ Minimum deposit amount validation: This validation is used in the Deposits feature to ensure that the user enters a deposit amount that is greater than or equal to 1000000. The program uses a while loop to check if the deposit amount entered by the user is less than 1000000. If it is, the program will display an error message and prompt the user to enter a new amount. Once the user enters an amount greater than or equal to 1000000, the loop will exit, and the program will proceed to calculate the interest and new total balance.
- ✓ Planned saving name validation: This validation is used to ensure that the user enters a valid saving name for the planned savings. The program uses a while loop to check if the length of saving name entered by the user is less than 7 and greater than 25. If it is, the program will display an error message and prompt the user to enter a new number of months. Once the user enters a number of months from 7 to 25, the loop will exit, and the program will proceed to calculate the interest.
- ✓ Deposit and planned savings month validation: This validation is used to ensure that the user enters a valid number of months for the planned savings. The program uses a while loop to check if the number of months entered by the user is less than 12 and greater or equal to 120. If it is, the program will display an error message and prompt the user to enter a new number of months. Once the user enters a number of months from 12 to 119, the loop will exit, and the program will proceed to calculate the interest.
- ✓ Autodebet day validation: This validation is used to ensure that the user enters a valid autodebet day from 1 to 28. The program uses a while loop to check if the autodebet day

entered by the user is less than 1 or greater than 28. If it is, the program will display an error message and prompt the user to enter a new autodebet day.

- ✓ Choice input validation: This validation is used in the menu feature to ensure that the user enters a valid choice. The program uses a label named "labelinvalid" and checks if the user's choice is less than 1 or greater than 4, if so it will display an error message and direct the flow back to the label "labelinvalid" and prompt the user to input again.