A PROJECT REPORT ON

MUTUAL FUND RETURN CALCULATOR

SUBMITTED BY

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CANDIDATE'S DECLARATION

I, **Suryansh Bansal (23/EC/209)**, student of 1st year B. TECH ECE declare that the Project Report titled "**MUTUAL FUND RETURN CALCULATOR**" which is submitted by me to Department of Electronics and Communication, Delhi Technological University, Delhi, is original and not copied from any source. This work has not previously formed the basis for the award of any Degree, Diploma, Fellowship or other similar title or recognition.

Place: DTU, Delhi

Date: 15/09/2023

INTRODUCTION

A Mutual Fund Return Calculator built in C is shown in this project to assist users in estimating the total amount they would get from their mutual fund investments.

Investing in a diverse portfolio of securities, including stocks, bonds, and other assets, is possible through mutual funds, which combine the capital of several investors.

Lump Sum and Systematic Investment Plan (SIP) are the two main investing strategies that it offers.

This calculator offers an easy-to-use interface to predict returns for both lump sum and systematic investment plans (SIP) with the goal of giving investors a basic tool.

It collects user inputs such as investment type, amount, estimated return rate, and investment period before calculating and displaying the final return amount using the chosen investment strategy.

OBJECTIVES

The primary goals of this project are to:

• Assist users in making decisions about lump sum and SIP investments.

• Using user input to determine the return amount.

• To ensure accuracy and offer an easy-to-use interface.

• To show how mathematical formulas can be applied to C/C++ return calculations.

2.1 SIP Investment

A set amount is consistently invested by the user in a SIP investment (typically monthly). Compounding is the strategy used to gradually acquire wealth over time.

2.2 Lump Sum Investment

Investing a significant cash all at once is known as a lump sum investment. In accordance with the compound interest rate, the return grows over time.

SIP FORMULA EXPLANATION

The user makes periodic contributions to SIP, usually once a month. The SIP return formula is:

$$A = P \times \left(\frac{(1+r/n)^{nt}-1}{r/n} \right) \times (1 + r/n)$$

Where:

- A = Final amount
- P = Monthly investment
- r = Annual interest rate (in decimal form)
- n = Number of times the interest compounds per year (12 for monthly)
- t = Time in years

LUMP SUM FORMULA EXPLANATION

When making an investment in lump sum, the whole amount is paid in one go. The following formula can be used to get lump sum returns:

$$A = P \times (1 + r/n)^{nt}$$

Where:

- A = Final amount
- P = Lump sum investment
- r = Annual interest rate (in decimal)
- n = Number of times the interest compounds per year (usually 1)
- t = Time in years

ALGORITHM

- Launch the application.
- Present the consumer with a menu where they can select between lump sum and SIP investments.
- **For SIP**
    - Request that the user input the amount they want to invest each month, the projected yearly return, and the number of years they want to invest.
    - Use the following calculation to determine the total amount:

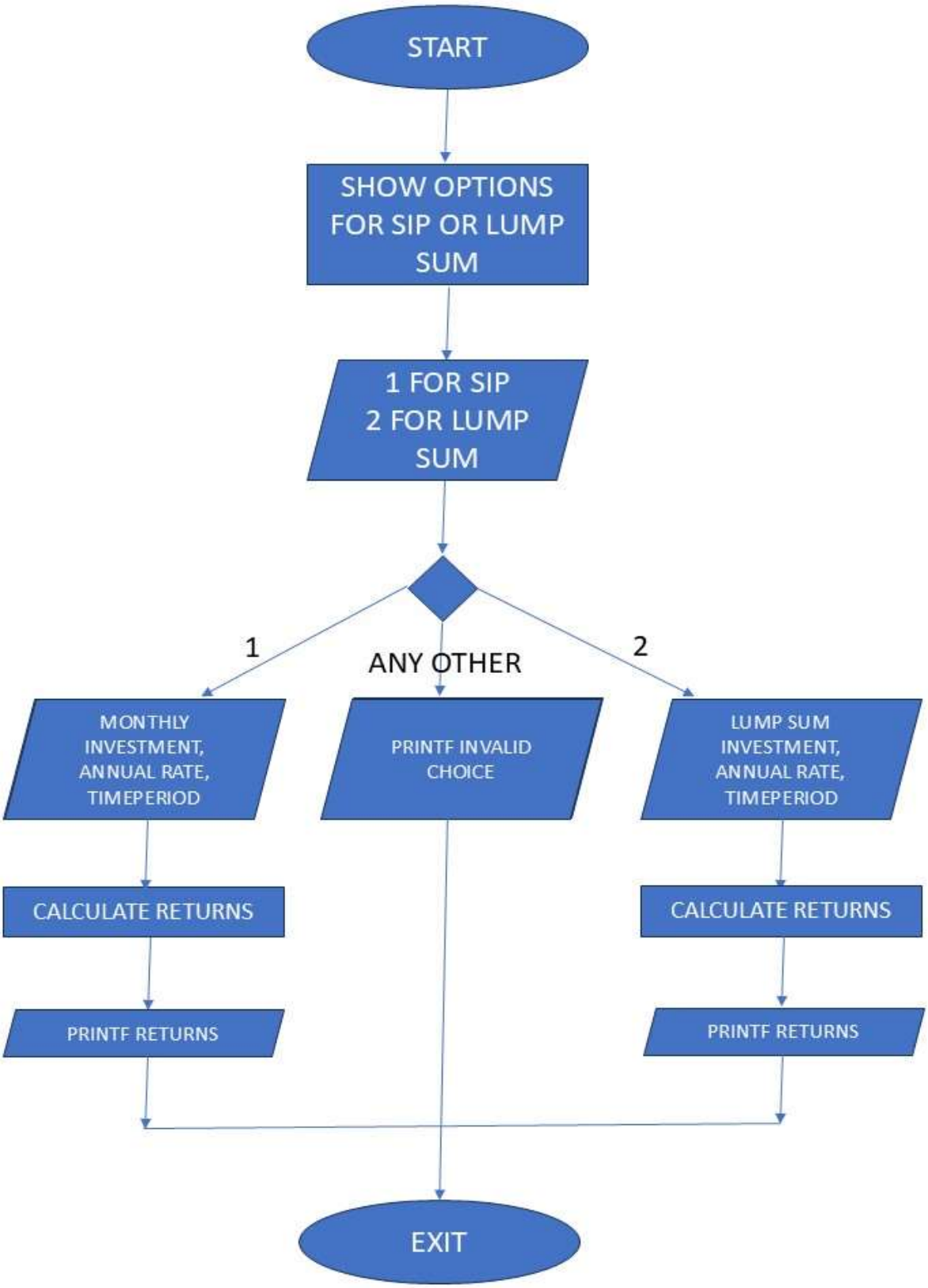
      $$A = P \times \left(\frac{(1+r/n)^{nt}-1}{r/n} \right) \times (1 + r/n)$$

    - Show the whole sum at the end.
- **For lump sum**
    - Request that the user input the total amount invested, the anticipated yearly return, and the length of the investment in years.
    - Use the following calculation to determine the total amount:

      $$A = P \times (1 + r/n)^{nt}$$

    - Show the whole sum at the end.
- Close the software.

FLOWCHART


START
SHOW OPTIONS FOR SIP OR LUMP SUM
1 FOR SIP
2 FOR LUMP SUM
1
ANY OTHER
2
MONTHLY INVESTMENT, ANNUAL RATE, TIMEPERIOD
PRINTF INVALID CHOICE
LUMP SUM INVESTMENT, ANNUAL RATE, TIMEPERIOD
CALCULATE RETURNS
CALCULATE RETURNS
PRINTF RETURNS
PRINTF RETURNS
EXIT

CODE IMPLEMENTATION

This is the C code that runs the Mutual Fund Return Calculator.

SIP Function

```c
#include <stdio.h>
#include <math.h>

void SIP(float monthlyInvestment, float annualRate, int years)
{
    float monthlyRate = (annualRate / 12) / 100;
    float Finalamount;
    Finalamount = (monthlyInvestment) * ((pow(1 + monthlyRate,
    12 * years) - 1) / monthlyRate) * (1 + monthlyRate);

    printf("Final amount after %d years with SIP: %.0f",
    years,Finalamount);
}
```

Lump Sum Function

```c
void LUMP_SUM(float Investment, float annualRate, int years)
{
    float monthlyRate = (annualRate) / 100;
    float Finalamount;
    Finalamount = (Investment)*pow(1 + monthlyRate, years);

    printf("Final amount after %d years with SIP: %.0f",
    years, Finalamount);
}
```

Main Program

```c
int main()
{
    int choice, years;
    float amount, rate;

    printf("Mutual Fund Return Calculator\n");
    printf("Choose investment type:\n");
    printf("1. SIP (Systematic Investment Plan)\n");
    printf("2. Lump Sum\n");
    printf("Enter your choice: ");
    scanf("%d", &choice);

    if (choice == 1)
    {
        printf("Enter monthly investment amount:");
        scanf("%f", &amount);
        printf("Enter expected annual return rate (in percentage):");
        scanf("%f", &rate);
        printf("Enter time period (in years):");
        scanf("%d", &years);
        SIP(amount, rate, years);
    }
    else if (choice == 2)
    {
        printf("Enter lump sum investment amount:");
        scanf("%f", &amount);
        printf("Enter expected annual return rate (in %):");
        scanf("%f", &rate);
        printf("Enter time period (in years):");
        scanf("%d", &years);
        LUMP_SUM(amount, rate, years);
    }
    else
    {
        printf("ERROR:Invalid choice!");
    }

    return 0;
}
```

RESULTS AND OUTPUT

The user will have the option to select lump sum or SIP when the software runs. The application will compute and display the total investment amount after receiving the required inputs (investment amount, return rate, and time period).

Sample Outputs:

For SIP investment:

```
Mutual Fund Return Calculator
Choose investment type:
1. SIP (Systematic Investment Plan)
2. Lump Sum
Enter your choice: 1
Enter monthly investment amount:10000
Enter expected annual return rate (in percentage):20
Enter time period (in years):20
Final amount after 20 years with SIP: 31614672
```

For lump sum investment:

```
Mutual Fund Return Calculator
Choose investment type:
1. SIP (Systematic Investment Plan)
2. Lump Sum
Enter your choice: 2
Enter lump sum investment amount:10000
Enter expected annual return rate (in ):20
Enter time period (in years):20
Final amount after 20 years with SIP: 383376
```

Other:

```
Mutual Fund Return Calculator
Choose investment type:
1. SIP (Systematic Investment Plan)
2. Lump Sum
Enter your choice: 3
ERROR:Invalid choice!
```

CONCLUSION

For investors who wish to project their returns based on two different investment possibilities, the Mutual Fund Return Calculator is an invaluable resource. With reliable results based on user input, the application applies the SIP and lump sum formulas properly.

This project gives you practical expertise with:

- Financial computations.
- Using formulas from mathematics in C programming.
- Developing console-based programs that are easy to use.

Possible enhancements might consist of:

- Increasing the number of investing possibilities (quarterly SIP, for example).
- Giving temporal graphical depictions of returns.

LEARNING OBJECTIVE

This project aims to teach us how to use compound interest formulas in C programming and to gain a deeper grasp of fundamental financial concepts like as SIP and lump sum investments. Additionally, it strengthens the application of functions, conditionals, and mathematical operations in C and improves problem-solving abilities.