# *Sir Syed University of Engineering & Technology (SSUET)*

# *Software Engineering Department*

***Course Name: Computer organization and architecture (SE-212L)***

***Semester: 3rd***

***Batch: 2023F***

***Section: E***

***PROJECT REPORT***

***Project Title: MIPS AGE CALCULATOR PROGRAM***

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* *TEAM PROFILE*

1. ***Mariam Zuberi (2023F-BSE-261)***

***Research and Analysis***

* *Researched MIPS assembly language and system calls.*
* *Analyzed how to calculate the age based on the given date and current date.*

1. ***Gulrukh Kashaf (2023F-BSE-280)***

***Implementation of the Program***

* *Wrote the MIPS assembly code for input collection, age calculation, and output display.*
* *Implemented checks for valid date inputs and error handling.*

1. ***Isbah Ali (2023F-BSE-266)***

***Program Design***

* *Designed the program's structure, including input collection and output display.*
* *Planned error handling for invalid date inputs.*

1. ***Iraj Riaz (2023F-BSE-298)***

***Testing and Documentation***

* *Tested the program for accuracy with different birthdates and edge cases.*
* *Documented the project report, including the design, implementation, and outcomes.*

*MIPS Age Calculator Program*

* ***INTRODUCTION OF THE PROJECT***

*The purpose of this project is to design and implement an Age Calculator Program using the MIPS assembly language. The program computes a user's age based on their birthdate input (year, month, and day) and the current date (hardcoded into the program). The age is then displayed as an integer value, accounting for whether the user has already had their birthday in the current year or not. The program also provides error handling to ensure valid inputs are given for the birthdate.*

* ***ALGORITHM / PSEUDOCODE OF EACH OPERATION***

*The following pseudocode outlines the steps taken by the program:*

1. ***Input Collection****:*
   * *Prompt the user to input their birth year, month, and day.*
   * *Store the values entered by the user.*
2. ***Load Current Date****:*
   * *Load the current year, month, and day from hardcoded values in the program (2025, January, 9th).*
3. ***Age Calculation****:*
   * *Subtract the birth year from the current year to calculate the initial age.*
   * *If the current month is less than the birth month, subtract one from the age.*
   * *If the current month is the same as the birth month, check the day:*
     + *If the current day is less than the birth day, subtract one from the age.*
   * *Otherwise, display the calculated age.*
4. ***Display Output****:*
   * *Print the calculated age to the user.*
5. ***Exit****:*
   * *Terminate the program.*

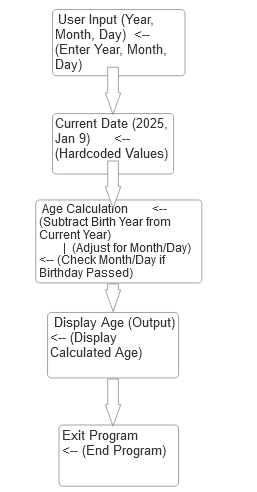
* ***PLAN OF WORK***

1. ***Research and Analysis****:*
   * *Study MIPS assembly language and understand the working of system calls in MIPS.*
   * *Analyze the problem of calculating the age based on the given date and current date.*
2. ***Design the Program****:*
   * *Decide on the structure of the program, including input collection, age calculation, and output display.*
   * *Plan how the system will handle invalid input (e.g., invalid dates).*
3. ***Implementation****:*
   * *Write the MIPS assembly code that collects user input, calculates age, and displays the result.*
   * *Incorporate checks to ensure valid input and handle error cases.*
4. ***Testing****:*
   * *Test the program with different birthdates and check if the age is calculated correctly.*
   * *Handle edge cases such as birthdays on the current date or invalid date inputs.*
5. ***Documentation****:*
   * *Write the project report detailing the design, implementation, and outcomes of the project.*

* ***PROJECT SHEDULING***

|  |  |  |  |
| --- | --- | --- | --- |
| *Task* | *Duration* | *Start Date* | *End Date* |
|  |  |  |  |
| *Research and Analysis* | *1 day* | *01/20/2025* | *01/20/2025* |
| *Program Design* | *1 day* | *01/20/2025* | *01/20/2025* |
| *Implementation of the Program* | *2 days* | *01/20/2025* | *01/21/2025* |
| *Testing and Debugging* | *1 day* | *01/21/2025* | *01/21/2025* |
| *Documentation and Final Report* | *1 day* | *01/21/2025* | *01/21/2025* |
|  |  |  |  |

* ***BLOCK DIAGRAM***



* ***SYSTEM FLOW DIAGRAM***

Start

|

v

Prompt User for Year, Month, Day

|

v

Store User Inputs (Birth Year, Birth Month, Birth Day)

|

v

Load Current Date (Year, Month, Day)

|

v

Calculate Age

|

v

Is the Birth Month > Current Month? ----> No --> Check Day < Current Day?

| |

Yes No

| |

v v

Adjust Age by 1 Display Age

| |

v v

Display Age End Program

|

v

End Program

* ***USER GUIDE***

1. ***Input****:*
   * *The program will prompt you to enter your birth year, birth month (between 1 and 12), and birth day (between 1 and 31).*
   * *Ensure that you enter valid date values as the program will not handle non-date inputs.*
2. ***Output****:*
   * *After entering your details, the program will calculate your age based on the current date (2025, January 9th) and display the result.*
3. ***Exit****:*
   * *The program will terminate after displaying your age.*

* ***CONCLUSION***

*This MIPS Age Calculator Program successfully calculates and displays the user's age based on their birthdate and the current date. The program also accounts for whether the user has had their birthday in the current year and adjusts the calculated age accordingly. It demonstrates the effective use of MIPS assembly language for real-world applications like date calculations. Additionally, the project provides insight into handling user input, performing arithmetic operations, and managing conditional logic in assembly language. The program is easy to use, and its design ensures that the user receives accurate results.*