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| A picture of a winding road and trees  MulTiplication game  SE2340-501 Computer Architecture | Abstract  Use your multiplication facts to beat the computer. Enter your input to choose your number. You and the computer take turns moving one marker at a time. Get 4 in a row before the computer and you win.  Lee, Sujin  Aron, Momo, Sean |

1. About this program

1. a description of the program

The Multiplication Game in MIPS Assembly is a two-player strategy game played on a 6x6 board. The game involves taking turns between a user and the computer, with the objective of creating a line (horizontal, vertical, or diagonal) of products on the board. The products are obtained by multiplying two numbers chosen by the player and computer.

The game begins with the user inputting a number in the range of 1 to 9. The program validates the input to ensure it falls within the correct range. Subsequently, the computer selects a number from the same range, and the product of the user and computer inputs is placed on the 6x6 board. This process continues in a turn-based manner. The board is initialized with all elements (product of two number in 1 to 9). Each player's input updates the corresponding element on the board with ‘O’ or ‘X’. The game is won when a player successfully creates a line of products either horizontally, vertically, or diagonally. The winning player is determined by the one who made the last

input in that line.

Throughout the game, the program continuously checks for a winner after each move. If a winning line is detected, the game ends, and the corresponding player (user or computer) is declared the winner.

1. the challenges that you and your team had and how did you or the team overcome them,

The biggest difficulty I encountered while working on this project was completing the project by using MIPS, an assembly language. I was already familiar with the language, but implementing the game using a new language, especially MIPS, which requires a completely different syntax, led to frequent mistakes.

1. what you have learned by doing the project,
2. a discussion of algorithms and techniques used in the program, e.g. how to generate and display the cards? how does the program work?
3. contributions of each team member (peer evaluation),

Aron: Game Logic

Momo: Board Obj

Sean: AI Obj

Sujin: User Obj

1. any suggestions you may have (optional).

Make sure that you write what have you learned by doing this project and peer evaluation parts individually.

2. A short video clip demonstrating the program in action. (If the video is too big you can post it on a website, e.g. youTube, and submit the link). The video should have audio narration explaining the behavior of your program.

3. All MIPS assembly language modules that are needed to run your program.

4. A user manual on how to run and how to use the program.

Obviously items 2. 3 and 4. are the same for all team members but item 1 must be prepared by each student individually (but some sections of the report, e.g. a) and d), can be shared).