Multiplication Game User Manual

Objective:

The objective of this program is to get four numbers in a row, horizontally, diagonally, or vertically using multiplication, the game is between the user and the computer where the user and the computer take turns one at a time to pick a number. The objective of this program is to get four numbers in a row, vertically, horizontally, or diagonally. Whoever gets four numbers in a line first wins.

Rules:

If a move by a user is not valid such as a number greater than 9 or less than 1 then the program will display an invalid error and ask the user to enter the number again. In addition, if the product of the two numbers is not on the grid then it will display an invalid error. Furthermore, the product of the user's number and computer's number should not be a product number already used on the grid.

Instructions (How to run and How to use):

Only the finalMain.asm and data_section is needed to run the project. The other sections are there to show the separation of code. Open up the finalMain.asm and data_section.asm in the MARS environment. Make sure to keep these files in the same folder. Then click assemble in the finalMain.asm.

Throughout this game, both the user and the computer will take turns one by one to pick a number from the grid. First, the program will greet the user and then the grid of the numbers board will be shown to the user through which they can know which numbers are available on the board and which numbers are not. First, the user will be provided with an option to decide if they want to pick number 1 or number 2, then they will be asked to input their chosen number, if the number is not from 1-9 then the program will display an invalid error saying number must be from 1-9 please try again, then it will create a random number for the computer, If the product number is available in the grid then the program will change the used number on the grid. Now, the game will show the product of those two numbers by multiplying user's input number and the random number generated by the computer, if the product is not in the grid then it will show an error. If the product is available in the grid then the program will mark the answer as used. Furthermore, if the product of the number picked by the user and the random generated number is a product number already used before then the code will show invalid and instruct the user that the square is already used please try again. The game will continue until either the user or computer wins, or the program will need to be stopped if all the areas fill up with no 4 in a row by pressing the stop button in the top bar of MARS.

Game Ends

The Game will end once either the computer or the user gets 4 product numbers in a row, diagonal, or horizontal