Source code and output

Source code:

.data

grid: .word 'O' 'O' 'O' 'O' 'O' 'O' 'O' 'O' 'O'

prompt: .asciiz "\nEnter your mark 'X' or 'O': \n x player: Please enter row/col, one per line:\n o player: Please enter row/col"

input: .asciiz "\n Enter a number between 1-9:"

player1: .asciiz"\n Player 1: you won: congrats.\nPlayer 2 better luck nexr time. \nThank you for playing\n"

player2: .asciiz "\nPlayer 2: you won: congrats.\nPlayer 1 better luck next time. \nThank you fo playing\n"

playAgain: .asciiz "\n thank you fot playing. would you like to play again(y/n)?"

.text

start:

la $a0, prompt #prompting player 1

li $v0, 4

syscall

li $v0,12 #checks the player one entry

syscall

move $s0,$v0 #setting the player

beq $s0, 'X',setPlayer2

li $s1,'X'

setPlayer2:

li $s1,'o'

la $s2,grid

move $a0,$s2 #display grid

jal gridDisplay

repeat: #creating a loop until one of the player wins

move $a0,$s2 #creating player 1 moves and the play

move $a1,$s0

jal placeMark

move $a0,$s2

jal gridDisplay

move $a0,$s2

move $a1,$s0

jal checkWinner

beq $v0,0,next

li $v0,4

la $a0,player1

syscall

j nextGame #using j nect game for if one game is over the next game should start

next:

move $a0,$s2 #creating player 2 moves and play

move $a1,$s1

jal placeMark

move $a0,$s2

jal gridDisplay

move $a0,$s2

move $a1,$s1

jal checkWinner

beq $v0,0,repeat

li $v0,4

la $a0,player2

syscall

j nextGame #using j next game for if one game is over the next game should start

nextGame:

la $a0,playAgain

li $v0,4

syscall

li $v0,12

syscall

beq $v0,'y',start

end: #the end of the program using end: to end the game

li $v0,10

syscall

gridDisplay: #using Display grid to display when the game is run

li $t0,1

move $t1,$a0

li $t3,3

li $a0,10

li $v0,11

syscall

dispLoop: #using displayLoop to display 3\*3 grid

bgt $t0,9,retDisp

lw $a0,($t1)

li $v0,11

syscall

div $t0,$t3

mfhi $t2

beqz $t2,nextLine

li $a0,32 #creating a space display

li $v0,11

syscall

addi $t0,$t0,1

addi $t1,$t1,4

j dispLoop

nextLine: #creating next line display to show the next line that needs to be showed

li $a0,10

li $v0,11

syscall

addi $t0,$t0,1

addi $t1,$t1,4

j dispLoop

retDisp: #take you back to main screeen which is the start of the game

jr $ra

placeMark: #showing on the grid what did the player select

move $t0,$a0

la $a0,input

li $v0,4

syscall

li $v0,5

syscall

addi $v0,$v0,-1

mul $v0,$v0,4

add $t0,$t0,$v0

lw $t1,($t0)

beq $t1,'O',change

jr $ra

change:

sw $a1,($t0)

jr $ra

checkWinner: #using checkWinner to check who won thw game

move $t0,$a0

li $t1,1

li $v0,1

loop:

bgt $t1,9,ret

lw $t2,($t0)

beq $t2,$a1,nextCo12

addi $t0, $t0,4

lw $t2,($t0)

addi $t1,$t1,1

beq $t2,$a1,nextCo12

addi $t0,$t0,4

lw $t2,($t0)

addi $t1, $t1,1

beq $t2,$a1,nextCo13

li $v0,0

j ret

nextCo12: #checks each column

addi $t0,$t0,4

lw $t2,($t0)

addi $t1,$t1,1

beq $t2,$a1,nextCo13

addi $t0,$t0,8

lw $t2,($t0)

addi $t1, $t1,1

beq $t2,$a1,nextRow

addi $t0,$t0,8

lw $t2,($t0)

addi $t1,$t1,1

beq $t2,$a1,nextDiag

nextCo13:

addi $t0,$t0,4

lw $t2,($t0)

addi $t1,$t1,1

beq $t2,$a1,ret

j loop

nextRow:

addi $t0,$t0,12

lw $t2,($t0)

addi $t1,$t1,1

beq $t2,$a1,ret

j loop

nextDiag:

addi $t0,$t0,16

lw $t2,($t0)

addi $t1,$t1,1

beq $t2,$a1,ret

j loop

ret:

jr $ra

output:



