# Mars bot

.eqv HEADING 0xffff8010

.eqv MOVING 0xffff8050

.eqv LEAVETRACK 0xffff8020

.eqv WHEREX 0xffff8030

.eqv WHEREY 0xffff8040

# Key matrix

.eqv OUT\_ADRESS\_HEXA\_KEYBOARD 0xFFFF0014

.eqv IN\_ADRESS\_HEXA\_KEYBOARD 0xFFFF0012

.data

# postscript-DCE => numpad 0

# (rotate,time,0=untrack | 1=track;)

pscript1: .asciiz "90,2000,0;180,3000,0;180,5790,1;80,500,1;70,500,1;60,500,1;50,500,1;40,500,1;30,500,1;20,500,1;10,500,1;0,500,1;350,500,1;340,500,1;330,500,1;320,500,1;310,500,1;300,500,1;290,500,1;280,490,1;90,8500,0;270,500,1;260,500,1;250,500,1;240,500,1;230,500,1;220,500,1;210,500,1;200,500,1;190,500,1;180,500,1;170,500,1;160,500,1;150,500,1;140,500,1;130,500,1;120,500,1;110,500,1;100,500,1;90,800,1;90,5000,0;270,2500,1;0,5800,1;90,2500,1;180,2900,0;270,2500,1;90,3000,0;"

# postscript-DOAN => numpad 4

pscript2: .asciiz "90,2000,0;180,3000,0;180,5790,1;80,500,1;70,500,1;60,500,1;50,500,1;40,500,1;30,500,1;20,500,1;10,500,1;0,500,1;350,500,1;340,500,1;330,500,1;320,500,1;310,500,1;300,500,1;290,500,1;280,490,1;90,5000,0;180,1390,0;180,3010,1;170,500,1;150,500,1;130,500,1;110,500,1;90,500,1;70,500,1;50,500,1;30,500,1;10,500,1;0,3010,1;350,500,1;330,500,1;310,500,1;290,500,1;270,500,1;250,500,1;230,500,1;210,500,1;190,500,1;180,4500,0;90,5000,0;20,6160,1;160,6160,1;340,3030,0;270,2240,1;90,2240,0;160,3030,0;90,3000,0;0,5790,1;150,6690,1;0,5790,1;90,1000,0;"

# postscript-DUNG => numpad 8

pscript3: .asciiz "90,2000,0;180,3000,0;180,5790,1;80,500,1;70,500,1;60,500,1;50,500,1;40,500,1;30,500,1;20,500,1;10,500,1;0,500,1;350,500,1;340,500,1;330,500,1;320,500,1;310,500,1;300,500,1;290,500,1;280,490,1;90,5000,0;180,4400,1;170,500,1;150,500,1;130,500,1;110,500,1;90,500,1;70,500,1;50,500,1;30,500,1;10,500,1;0,4400,1;90,3000,0;180,5790,1;0,5790,0;150,6690,1;0,5790,1;90,6000,0;270,500,1;260,500,1;250,500,1;240,500,1;230,500,1;220,500,1;210,500,1;200,500,1;190,500,1;180,500,1;170,500,1;160,500,1;150,500,1;140,500,1;130,500,1;120,500,1;110,500,1;100,500,1;90,800,1;0,3200,1;90,1000,1;270,1000,0;270,1000,1;90,3000,0;"

.text

# <--xu ly tren keymatrix-->

li $t3, IN\_ADRESS\_HEXA\_KEYBOARD

li $t4, OUT\_ADRESS\_HEXA\_KEYBOARD

polling:

li $t5, 0x01 # row-1 of key matrix

sb $t5, 0($t3)

lb $a0, 0($t4)

bne $a0, 0x11, NOT\_NUMPAD\_0

la $a1, pscript1

j START

NOT\_NUMPAD\_0:

li $t5, 0x02 # row-2 of key matrix

sb $t5, 0($t3)

lb $a0, 0($t4)

bne $a0, 0x12, NOT\_NUMPAD\_4

la $a1, pscript2

j START

NOT\_NUMPAD\_4:

li $t5, 0X04 # row-3 of key matrix

sb $t5, 0($t3)

lb $a0, 0($t4)

bne $a0, 0x14, COME\_BACK

la $a1, pscript3

j START

COME\_BACK: j polling # khi cac so 0,4,8 khong duoc chon -> quay lai doc tiep

# <!--end-->

# <--xu li mars bot -->

START:

jal GO

READ\_PSCRIPT:

addi $t0, $zero, 0 # luu gia tri rotate

addi $t1, $zero, 0 # luu gia tri time

READ\_ROTATE:

add $t7, $a1, $t6 # dich bit

lb $t5, 0($t7) # doc cac ki tu cua pscript

beq $t5, 0, END # ket thuc pscript

beq $t5, 44, READ\_TIME # gap ki tu ','

mul $t0, $t0, 10

addi $t5, $t5, -48 # So 0 co thu tu 48 trong bang ascii.

add $t0, $t0, $t5 # cong cac chu so lai voi nhau.

addi $t6, $t6, 1 # tang so bit can dich chuyen len 1

j READ\_ROTATE # quay lai doc tiep den khi gap dau ','

READ\_TIME: # doc thoi gian chuyen dong.

add $a0, $t0, $zero

jal ROTATE

addi $t6, $t6, 1

add $t7, $a1, $t6 # ($a1 luu dia chi cua pscript)

lb $t5, 0($t7)

beq $t5, 44, READ\_TRACK

mul $t1, $t1, 10

addi $t5, $t5, -48

add $t1, $t1, $t5

j READ\_TIME # quay lai doc tiep den khi gap dau ','

READ\_TRACK:

addi $v0,$zero,32 # Keep mars bot running by sleeping with time=$t1

add $a0, $zero, $t1

addi $t6, $t6, 1

add $t7, $a1, $t6

lb $t5, 0($t7)

addi $t5, $t5, -48

beq $t5, $zero, CHECK\_UNTRACK # 1=track | 0=untrack

jal UNTRACK

jal TRACK

j INCREAMENT

CHECK\_UNTRACK:

jal UNTRACK

INCREAMENT:

syscall

addi $t6, $t6, 2 # bo qua dau ';'

j READ\_PSCRIPT

GO:

li $at, MOVING

addi $k0, $zero,1

sb $k0, 0($at)

jr $ra

STOP:

li $at, MOVING

sb $zero, 0($at)

jr $ra

TRACK:

li $at, LEAVETRACK

addi $k0, $zero,1

sb $k0, 0($at)

jr $ra

UNTRACK:

li $at, LEAVETRACK

sb $zero, 0($at)

jr $ra

ROTATE:

li $at, HEADING

sw $a0, 0($at)

jr $ra

END:

jal STOP

li $v0, 10

syscall

j polling

# <!--end-->