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ECE 375

Lab#2 PreLab

Pseudocode

Include definition file

Declare variables and constants

set register r16 as multi-purpose register

set register r17 as a counter for wait loop

set register r18 as a counter for an inner loop

set register r19 as a counter for an outer loop

instantiate variable to hold a quantity of time for wait loop

instantiate variable to hold a quantity of time for wait loop for reverse action prior to a turn

instantiate variable to hold binary digit associated with Right Whisker input

instantiate variable to hold alternate binary digit associated with Left Whisker Input

instantiate variable to hold Right Engine Enable Bit

instantiate variable to hold Left Engine Enable Bit

instantiate variable to hold Right Engine Direction Bit

instantiate variable to hold Left Engine Direction Bit

Declare macros to govern TekBot movement

instantiate macro for Move Forward Command

instantiate macro for Move Backward Command

instantiate macro for Turn Right Command

instantiate macro for Turn Left Command

instantiate macro for Halt Command

Begin code segment

Create Interrupt Vectors

set Reset and Power On Interrupt

set Jump to Program Initialization

set End of Interrupt Vector

Program initialization

Initialize stack pointer

Initialize Port B for output

Initialize Port D for input

Initialize TekBot Forward Movement

Main Program Section

get whisker input from Port D

check for Right Whisker input

continue with next check

call the HitRight subroutine

continue with program

check for Left Whisker input

no whisker input, then continue program

call the HitLeft subroutine

continue with program

Write Subroutines & Functions

HitRight subroutine

save mpr register

save wait register

save program state

save mpr register

; Backwards movement

load Move Backward Command

Send command to port

continue action for period of time set by variable

call wait function

; Turn left for a second

load Turn Left Command

Send command to port

continue action for period of time set by variable

call wait function

; Continue moving forward

load Move Forward command

send command to port

restore program state

restore wait register

restore mpr

return from subroutine

HitLeft subroutine

save mpr register

save wait register

save program state

save mpr register

; Backwards movement

load Move Backward Command

Send command to port

continue action for period of time set by variable

call wait function

; Turn right for a second

load Turn Right Command

Send command to port

continue action for period of time set by variable

call wait function

; Continue moving forward

load Move Forward command

send command to port

restore program state

restore wait register

restore mpr

return from subroutine

Wait subroutine

save wait register

save inner loop register

save outer loop register

load outer loop register

load inner loop register

decrement inner loop register

continue inner loop

decrement outer loop

continue outer loop

decrement wait

continue wait loop

restore outer loop register

restore inner loop register

restore wait register

return from subroutine