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;*****
;* Name      : Animated Grugo Pinball Mod      *
;* Author    : John Lundy                      *
;*-----*
;* Version   : 1.02                            *
;* Date      : 3/9/2022                        *
;* Notes     : This code is for using a PIC12F683 for animating *
;*            : a Mandalorian "The Child" toy UPC 5010993762163 *
;*            : purchased from Target. This code controls three *
;*            : relays that essentially bypasses the original mode*
;*            : switch and sleep ball tilt sensor for activating *
;*            : force, touch and sleep modes. Three possible *
;*            : microcontroller inputs trigger specific effects *
;*            : generated in code to control specific outputs *
;*            : to trigger desired effects. The highest priority *
;*            : effect using an interrupt is force mode when the *
;*            : Grogu magnet is activated. Normal mode is *
;*            : triggered by either the left or right "Child" LED.*
;*            : Attract mode is triggered while the game is not *
;*            : active by monitoring the left flipper EOS switch *
;*            : for a given time of inactivity. This will also *
;*            : close Grogu's eyes and simulate him sleeping as *
;*            : well as waking up to do attract animations *
;*            : followed by falling asleep again. *
;*-----*
;*          : v.01 beta (2/14/2022) - Initial beta release *
;* Removed  : v.02 beta (2/16/2022) - Added additional delay *
;* Removed  : between closing Normal and Force relays. *
;*          : v.03 beta (2/21/2022) - Hardware changes - added *
;*          : new outputs to trigger relays to activate Grogu *
;*          : capacitance sensor and sleep mode. Grogu is always*
;*          : powered on now to avoid Grogu processor confusion *
;*          : and lock-ups. Used freed-up relay for new sleep *
;*          : mode (close eyes) when machine is not active. *
;* Release  : v.1.00 (2/22/2022) - Initial release. Changed idle*
;*          : count to trigger at 1 minute. This looks best when*
;*          : having Grogu's eyes close when inactive. These *
;*          : Grogu toys aren't exactly built for a rugged high *
;*          : use pinball environment and less activity is *
;*          : better for the the life of the toy and more *
;*          : excitement when a Grogu effect is triggered. *
;*          : v.1.01 (2/24/2022) - Added sleep effect directly *
;*          : after force effect to simulate Grogu being tired *
;*          : after using the force like in the show. Added *
;*          : and cleaned up comments for future reference. *
;*          : Fixed typos. *
;*          : v.1.02 (3/9/2022) - Reduced the wait time between *
;*          : doing force mode and then falling asleep. Reduced *
;*          : the duration of sleep mode after using the force. *
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;* Port | Pin | Description | Active *
;*-----+-----+-----+-----*
;* GP0 | 7 | Grogu capacitance trigger (Output) | HIGH *
;* GP1 | 6 | Left flipper EOS switch (Input) | HIGH *
;* GP2 | 5 | Force (magnet)(Input uses interrupt) | LOW *
;* GP3 | 7 | L or R "Child" LEDs (ORing)(Input) | LOW *
;* GP4 | 3 | Force effect control (Output) | HIGH *
;* GP5 | 2 | Sleep effect control (Output) | HIGH *
;-----*
; Three relay outputs and power connections *
;-----*
; (POWER) *
; MANDO VCC ---|>|---[ | ]--- GROGU TOY YELLOW (Labeled VMOTOR)*
; PINBALL 1N4007 RESETTABLE FUSE *
; FROM SWITCH PCB *
; *
; MANDO GND ----- GROGU TOY BLACK (Labeled GND) *
; PINBALL TOY *
; *
; MANDO VCC -----|>|----- CONTROLLER RED(VCC) *
; PINBALL 1N4007 *
; *
; MANDO GND ----- CONTROLLER BLACK(GND) *
; PINBALL *
;-----*
; (FORCE MODE RELAY) *
; CONTROLLER *
; GRAY WIRE(GP.4) NC RELAY *
; GROGU RED -----*-*----- GROGU WHITE (OPEN FOR FORCE MODE)*
; TOY TOY *
; (Labeled R3-1) (Labeled ON) *
; *
; CONTROLLER (CAPACITANCE TOUCH RELAY) *
; BLUE WIRE(GP.0) .001UF METAL FILM MYLAR CAPACITOR *
; NO RELAY TO FOOL CAPACITANCE SENSOR *
; GND -----*/ *-----| |----- GROGU BLUE *
; Locate relay as close as (Labeled T1) *
; possible to T1 and capacitor! *
; *
; (SLEEP MODE RELAY) *
; CONTROLLER *
; PURPLE WIRE(GP.5) NC RELAY *Remove original ball tilt sensor *
; GROGU BALL -----*-*----- GROGU BALL (OPEN FOR FORCE MODE)*
; TOY SENSOR TOY SENSOR *
; (Labeled EN2) (Labeled SW2) *
;-----*
; Child LED Diagram *
;-----*
; [NODE 8 - CN4-6 (ORG/YEL)] [NODE 9 - CN2-5 (ORG/YEL)] *
; | | *

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; L R X | | 1N4148 *
; ----- | Oring diodes +--|<|---+--> ORANGE *
; 0 X 0 | | 1N4148 | CONTROLLER*
; X 0 0 +-----|<|---+ *
; X X 1 *
;-----*
; Force mode reed switch diagram *
;-----*
; Reed switch *
; WHITE <-----{--~/ /~--}-----| *
; CONTROLLER PN# GP560/20-25 | *
; | *
; *Locate under Playfield GND *
; close to Grogu magnet *
;-----*
; Controller Wiring Diagram *
;-----*
; [INPUTS] [OUTPUTS] *
; RED - MANDO VCC GRAY(FORCE) - IN1 NC 1 RELAY BD *
; BLACK - MANDO GROUND PURPLE(SLEEP) - IN2 NC 2 RELAY BD*
; ORANGE - CHILD LED(s) BLUE(TOUCH) - IN1 NO 2 RELAY BD *
; BROWN - L FLIPPER EOS SWITCH *
; WHITE - REED SWITCH MAGNET *
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