Pseudo-code for the SpotlightControl module (a service that implements a state machine)

Data private to the module: MyPriority, CurrentState, LastBrightState, LastDimState

Functions private to the module: InitBrightnessInputs

Event checkers: CheckBrightButton, CheckDimButton

#defines:

BrightButton_Read, DimButton_Read //Port registers to attach pins

BrightButton_TRIS, DimButton_TRIS //TRIS registers to initialize the pins as outputs

InitSpotlightControl

Takes a priority number, returns True.

Initialize brightness inputs by calling InitBrightnessInputs()

Post Event ES Init to TargetLEDs queue (this service)

End of InitSpotlightControl

RunSpotlightControl (implements the state machine for SpotlightControl)

EventType field of ThisEvent will be one of: ES_INIT, ES_DISCO, ES_GAME_OVER, ES_NEW_TARGET, ES_REPLAY,

ES_TIMEOUT. The parameter field of the ThisEvent will be indicating one timer that has expired in case of ES_TIMEOUT.

Returns ES_NO_EVENT

Based on the state of the CurrentState variable choose one of the following blocks of code:

CurrentState is Spotlight INIT

Based on the event received, choose one of the following blocks of code:

EventType of ThisEvent is ES INIT

Set CurrentState to Spotlight_IDLE

End SpotlighControl INIT block

CurrentState is Spotlight_IDLE

Based on the event received, choose one of the following blocks of code:

EventType of ThisEvent is ES BRIGHTNESS

Post ES_NEW_MESSAGE with message parameter to LED Display Service Set CurrentState to BRIGHTNESS LEVEL CONTROL

End Spotlight_IDLE block

CurrentState is BRIGHTNESS LEVEL CONTROL

Based on the event received, choose one of the following blocks of code:

EventType of ThisEvent is ES_NEW_GAME

Post ES_NEW_MESSAGE with message parameter to LED Display Service Set CurrentState to READY

EventType of ThisEvent is ES_BRIGHT_BUTTON

Post ES_BRIGHT_BUTTON event to PWM service

Set current state to BRIGHTNESS LEVEL CONTROL

EventType of ThisEvent is ES_DIM_BUTTON

Post ES_DIM_BUTTON event to PWM service

Set current state to BRIGHTNESS_LEVEL_CONTROL

EventType of ThisEvent is ES_TIMEOUT

If ThisEvent.EventParam == IDLE_TIMER

Set current state to SPOTLIGHT_IDLE

End if

End BRIGHTNESS LEVEL CONTROL block

CurrentState is READY

Based on the event received, choose one of the following blocks of code:

EventType of ThisEvent is ES_JOYSTICK_LR or ES_JOYSTICK_UD

Post ES_GAME_TONE event to Buzzer sevice

Set CurrentState to MOVING

EventType of ThisEvent is ES_TIMEOUT

if EventParam of ThisEvent is IDLE_TIMER

Set CurrentState to Spotlight_IDLE

End If

End READY block

CurrentState is MOVING

Based on the event received, choose one of the following blocks of code:

EventType of ThisEvent is ES_JOYSTICK_LR

Post ES_JOYSTICK_LR to PWMService

Set CurrentState to MOVING

EventType of ThisEvent is ES_JOYSTICK_UD

Post ES_BRIGHT_BUTTON event to PWM service

Post ES_JOYSTICK_UD to PWMService

Set CurrentState to MOVING

EventType of ThisEvent is ES_TIMEOUT

If ThisEvent.EventParam == IDLE_TIMER

Set current state to SPOTLIGHT_IDLE

End if

```
EventType of ThisEvent is ES_JOYSTICK_UD

START THE INTERMITTENT_STOP_TIMER

Set CurrentState to ONE_TARGET_REACHED
```

EventType of ThisEvent is ES_ALL_SPOTS_REACHED

Set CurrentState to ALL TARGETS REACHED

EventType of ThisEvent is ES_GAME_OVER

Set CurrentState to GAME_TIMEOUT

End MOVING block

CurrentState is ONE_TARGET_REACHED

Based on the event received, choose one of the following blocks of code:

EventType of ThisEvent is ES TIMEOUT

if EventParam of ThisEvent is IDLE_TIMER

Set CurrentState to Spotlight_IDLE

End If

if EventParam of ThisEvent is INTERMITTENT_STOP_TIMER

Set CurrentState to Moving

End If

End ONE_TARGET_REACHED block

CurrentState is ALL_TARGET_REACHED

Based on the event received, choose one of the following blocks of code:

EventType of ThisEvent is ES_REPLAY

Post ES_NEW_MESSAGE with message parameter to LED Display Service Set CurrentState to BRIGHTNESS LEVEL CONTROL

```
EventType of ThisEvent is ES_TIMEOUT

if EventParam of ThisEvent is IDLE_TIMER

Set CurrentState to Spotlight_IDLE

End If
```

```
End GAME_TIMEOUT block

CurrentState is ALL_TARGET_REACHED
```

Based on the event received, choose one of the following blocks of code:

```
EventType of ThisEvent is ES_TIMEOUT

if EventParam of ThisEvent is IDLE_TIMER

Set CurrentState to Spotlight_IDLE

End If
```

EventType of ThisEvent is ES_REPLAY

Post ES_NEW_MESSAGE with message parameter to LED Display Service

Set CurrentState to BRIGHTNESS LEVEL CONTROL

End GAME TIMEOUT block

Return ES_NO_EVENT

End of RunSpotlightControl

PostSpotlightControl & QuerySpotlightcontrol are not changed from the tempelate

Bool CheckBrightButton(void)

Takes the current LED index, returns nothing
Declare a variable to store CurrentButtonState
Declare a variable to store the event to post
Read current bright button state and store it
If button state has changed

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If current button state is pressed
    Return this event
    Reset IDLE TImer
    Post ES_BRIGHT_BUTTON event to Spotlight Control module and EDMoveSenseModule
  End if
End if
Set last bright button state as current state
return ReturnValue
End
Bool CheckDimButton(void)
Takes the current LED index, returns nothing
Declare a variable to store CurrentButtonState
Declare a variable to store the event to post
Read current dim button state and store it
If button state has changed
  If current button state is pressed
    Return this event
    Reset IDLE TImer
    Post ES DIMT BUTTON event to Spotlight Control module and EDMoveSenseModule
  End if
End if
Set last dim button state as current state
return ReturnValue
End
```