

UltrasonicService Pseudocode

InitUltrasonicService()

```
{  
Configure RB8 as a digital output for pseudo-PWM for ultrasonic  
sensor  
Call RunPseudoPWM4Ultra4Tree()  
Call DisableUltra4Tree()  
}
```

RunUltrasonicService()

```
{  
If ES_TIMEOUT is received  
    Call RunPseudoPWM4Ultra4Tree()  
}
```

configUltrasonicInterrupts()

```
{  
Set the priority of IC4 interrupts to 7  
Set the priority of Timer 3 interrupts to 6  
Clear the interrupt flag from IC4  
Clear the interrupt flag from Timer 3  
Enable interrupts from Timer 3  
}
```

configTimer3()

```
{  
Turn off Timer 3  
Select the internal clock as the source  
Choose a prescaler of 1:32  
Set the PR register to the max  
Set the TMR register to 0  
Clear the Timer 3 interrupt flag  
Turn on Timer 3  
}
```

configIC4()

```
{  
Disable IC4  
Configure RB4 as a digital output and map it to IC4  
Select Timer 3 as the timer  
Configure to interrupt on every event  
Configure to interrupt on rising edges  
Select a 16 bit timer as the source
```

```

Set priority of IC4 interrupts to 7
Clear the IC4 interrupt flag
Turn on IC4
}

```

RunPseudoPWM4Ultra4Tree()

```

{
Set RB8 high for roughly 10 us
Lower RB8
Set ULTRA_TIMER for 60 ms
}

```

EnableUltra4TREE()

```

{
Clear the IC4 buffer
Clear the IC4 interrupt flag
Enable interrupts from IC4
}

```

DisableUltra4TREE()

```

{
Clear the IC4 buffer
Clear the IC4 interrupt flag
Disable Interrupts from IC4
}

```

void __ISR(_INPUT_CAPTURE_4_VECTOR,IPL7SOFT)

UltrasonicInputCaptureTreeISR(void)

```

{
Clear the IC4 buffer
Clear the interrupt flag for IC4
If the Timer 3 interrupt flag is set and the Timer has rolled over
    Increment the rollover counter
    Clear the Timer 3 interrupt flag
Compute the difference in times between the previous and current
input capture (in ticks)
Set the previous capture equal to the current
Convert the period into a distance
If the distance is less than or equal to the desired proximity to a
TREE
    Post to TopHSM_Leader that a TREE was detected
    Call DisableUltra4TREE
}

```

```
Void __ISR(_TIMER_3_VECTOR,IPL6SOFT) Timer3Rollover(void)
{
Disable interrupts globally
If the Timer 3 interrupt flag is set
    Increment the rollover counter
    Clear the Timer 3 interrupt flag
}
```