Part One: delay(*n*),now()

- **what does your timer-0 ISR have to do to support these multiple delays and now()?**

When each time myTimer0Handler(void) is called, cnt will be incremented by 1.Every four times myTimer0Handler(void) is called, now will be incremented by 1 and cnt will be flushed to 0.

- **what if all threads call delay() and happen to finish their delays all at the same time? How can you ensure the accuracy of your delay? (i.e., between *n* and *n*+0.5 time units)?**
-

Instead of using the real time unit, we set a logically time unit. Because the time we use at floating point might be regarded as the same number. But if we use logically time units, we set we don't have to worry about that king of issue.

- **How does the worst-case delay completion (i.e., all threads finish delaying at the same time) affect your choice of time unit?**

The time unit I choose is related to the interrupt interval of switching threads but not actual time units. The length of one time unit in my project equals to four interrupt intervals of timer0. I can set every cnt to be 1/8time units and make now to increment every 8 interrupts. Then, we do nothing when cnt is between 5 and 8 to make delay(n) bounds to "less than (n+0.5) time units, yet that would be less efficient.

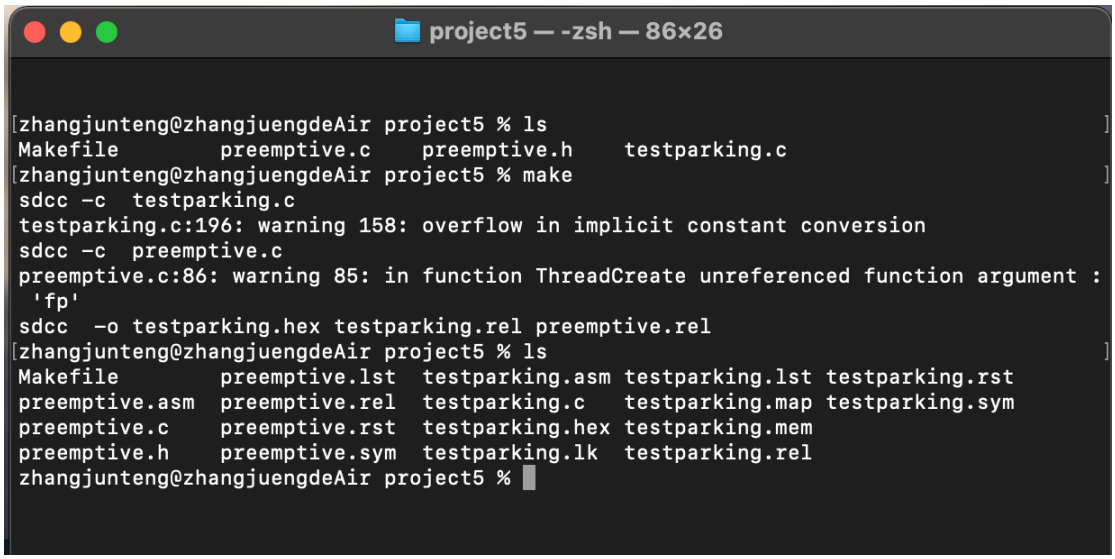
Part Two: Robust Thread Termination and Creation

```
void ThreadExit(void) {
    EA=0;                   // disable interrupt when terminate thread
        __asm               // reset stack to 0s (for debug)
        mov A, #0           // >> so we can clearly see whether
        push A              // >> a thread is terminated or not
        push A
        push A
        push A
        push A
        push A
        push A
        push A
        push A
        __endasm;

        sp[curThread] = 0;          // reset stack pointer
        bitmap &= ~(1<<curThread);  // update bitmap
        if(bitmap == 0){            // if it is the last thread
            while(1){};             // then enter infinite loop
        }

        do {                        // switch to the next ready thread
            curThread = (curThread == MAXTHREADS-1) ? 0 : curThread+1;
            if(bitmap & checkAlive[curThread]) break;
        } while (1);
        RESTORESTATE;
    EA=1;                   // enable interrupt after terminate and switch thread
}
```

Part Three: Parking Lot Example

```
Car1 park at spot 0 at time unit: 0 and exits at time unit: 4
Car2 park at spot 1 at time unit: 2 and exits at time unit: 6
Car3 park at spot 0 at time unit: 4 and exits at time unit: 8
Car4 park at spot 1 at time unit: 6 and exits at time unit: 10
Car5 park at spot 0 at time unit: 8 and exits at time unit: 12
```

Part Four: Typescript and screenshots



data memory

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
2		sem	spotsSync	spots[2]		CarIn[5]							delayid[MAXTHREADS]			
3	sp[MAXTHREADS]				curThread	bitmap	newThread	i	tmp	tmp2	checkAlive[MAXTHREADS]				cnt	now
4	stack space for thread 0										CarOut[5]					
5	stack space for thread 1										CarSpot[5]					
6	stack space for thread 2															
7	stack space for thread 3															