1. Kernel7.asm

```
;Calculate
mov r1,#4 ;input
mov sp,$1000  ;make room on the stack
mov r0,r1
bl FACTORIAL
mov r7,r0 ;store answer


BASE = $3F000000 ;RP2 and RP3 ;GPIO_SETUP
GPIO_OFFSET = $200000
mov r0,BASE
bl SETUP_LED



loop$:
  mov r1,#1
  lsl r1,#18
  str r1,[r0,#28]  ;turn LED on
  mov r2,$0F0000  ;not using r2 for anything else so no need to push/pop
  bl TIMER
  mov r1,#1
  lsl r1,#18
  str r1,[r0,#40]  ;turn LED off
  mov r2,$0F0000
  bl TIMER
sub r7,#1
cmp r7,#0
bne  loop$  ;end of outer loop. Runs r7 times
wait:
b wait
include "TIMER.asm"
include "factorialj.asm"

SETUP_LED:      ;Step 1
 orr r0,GPIO_OFFSET
 mov r1,#1
 lsl r1,#24
 str r1,[r0,#4]     ;set GPIO18 to output
 bx lr
```

2. Kernel7.asm

```
;Calculate
mov r1,#4 ;input
mov sp,$1000  ;make room on the stack
mov r0,r1
```

```
bl FACTORIAL
mov r7,r0 ;store answer


BASE = $3F000000 ;RP2 and RP3 ;GPIO_SETUP
GPIO_OFFSET = $200000
mov r0,BASE
bl SETUP_LED

push {r0,r1}
mov r0,BASE
mov r1,r7
bl FLASH
pop {r0,r1]



wait:
b wait
include "TIMER.asm"
include "factorialj.asm"

SETUP_LED:      ;Step 1
 orr r0,GPIO_OFFSET
 mov r1,#1
 lsl r1,#24
 str r1,[r0,#4]     ;set GPIO18 to output
 bx lr

FLASH:
 orr r0,GPIO_OFFSET
 mov r7,r1


loop$:
  mov r1,#1
  lsl r1,#18
  str r1,[r0,#28]  ;turn LED on
  mov r2,$0F0000  ;not using r2 for anything else so no need to push/pop
  bl TIMER
  mov r1,#1
  lsl r1,#18
  str r1,[r0,#40]  ;turn LED off
  mov r2,$0F0000
  bl TIMER
sub r7,#1
cmp r7,#0
bne  loop$  ;end of outer loop. Runs r7 times
bx lr
```

3. kernel7.asm

```
;Calculate
mov r1,#4 ;input
mov sp,$1000  ;make room on the stack
mov r0,r1
bl FACTORIAL
mov r7,r0 ;store answer


BASE = $3F000000 ;RP2 and RP3 ;GPIO_SETUP

mov r0,BASE
bl SETUP_LED


mov r0,BASE
bl SETUP_LED
mov r0,BASE
mov r1,r7
bl FLASH
wait:
b wait


include "TIMER.asm"
include "factorialj.asm"
include "gpio.asm"
```

4. kernel7.asm
5.

```
;Calculate
mov r1,#4 ;input
mov sp,$1000  ;make room on the stack
mov r0,r1
bl FACTORIAL
mov r7,r0 ;store answer


BASE = $3F000000 ;RP2 and RP3 ;GPIO_SETUP

mov r0,BASE
bl SETUP_LED


mov r0,BASE
bl SETUP_LED
mov r0,BASE
mov r1,r7
bl FLASH
wait:
```

```
b wait


include "timer2_2Param.asm"
include "factorialj.asm"
include "gpio.asm"
```