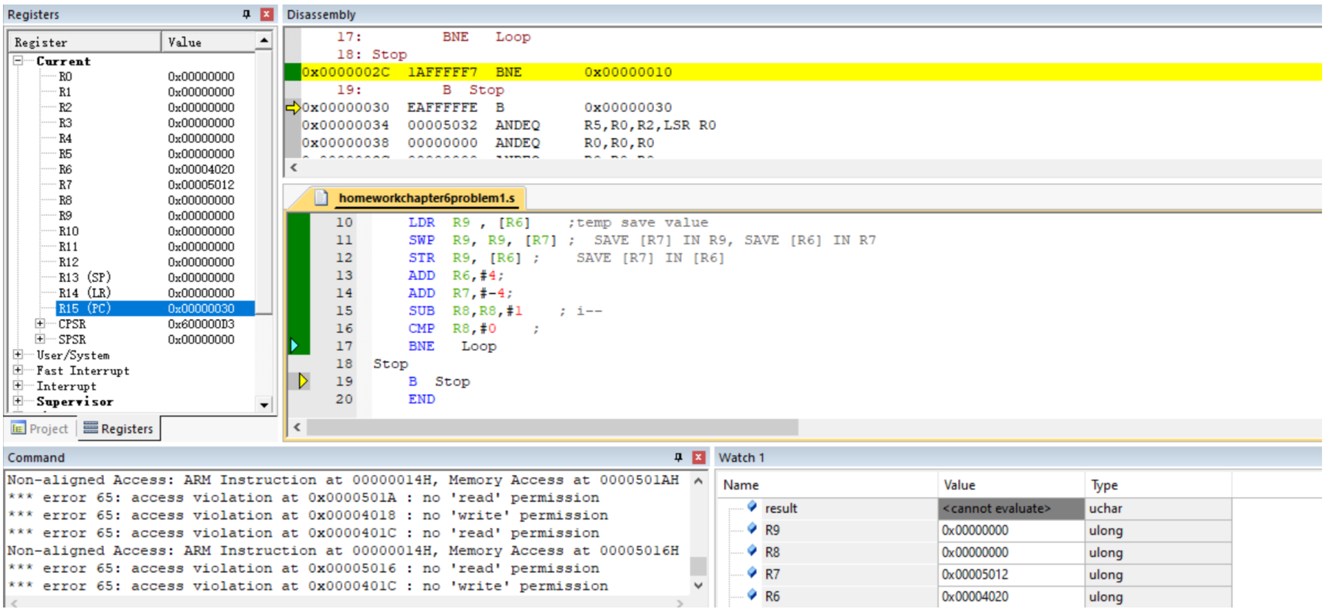
```
        AREA Fctrl,CODE,READONLY        ; declare Fctrl
        ENTRY                 ;
        CODE32                ; declare 32 b ARM
START
        LDR    R6, =0x4000   ; A[] frist address sent to r6
        LDR    R7, =0x5032   ;    B[] frist address sent to r7
        MOV    R9 , #0       ; init temp
        MOV    R8 , #8       ; init i
Loop     ; for swap
        LDR    R9 , [R6]        ;temp save value
        SWP    R9, R9, [R7] ;    SAVE [R7] IN R9, SAVE [R6] IN R7
        STR    R9, [R6] ;        SAVE [R7] IN [R6]
        ADD    R6,#4;
        ADD    R7,#-4;
        SUB    R8,R8,#1       ; i--
        CMP    R8,#0       ;
        BNE     Loop
Stop
        B    Stop
        END
```



Register	Value
Current	
R0	0x00000000
R1	0x00000000
R2	0x00000000
R3	0x00000000
R4	0x00000000
R5	0x00000000
R6	0x00004020
R7	0x00005012
R8	0x00000000
R9	0x00000000
R10	0x00000000
R11	0x00000000
R12	0x00000000
R13 (SP)	0x00000000
R14 (LR)	0x00000000
R15 (PC)	0x00000030
CPSR	0x600000D3
SPSR	0x00000000
User/System	
Fast Interrupt	
Interrupt	
Supervisor	

```
    17:           BNE    Loop
    18: Stop
0x0000002C  1AFFFFF7  BNE        0x00000010
    19:           B  Stop
0x00000030  EAFFFFFE  B          0x00000030
0x00000034  00005032  ANDEQ      R5,R0,R2,LSR R0
0x00000038  00000000  ANDEQ      R0,R0,R0
```

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```
      LDR  R9 , [R6]     ;temp save value
      SWP  R9, R9, [R7] ;  SAVE [R7] IN R9, SAVE [R6] IN R7
      STR  R9, [R6] ;    SAVE [R7] IN [R6]
      ADD  R6,#4;
      ADD  R7,#-4;
      SUB  R8,R8,#1     ; i--
      CMP  R8,#0     ;
      BNE   Loop
Stop
      B  Stop
      END
```

```
Non-aligned Access: ARM Instruction at 00000014H, Memory Access at 0000501AH
*** error 65: access violation at 0x0000501A : no 'read' permission
*** error 65: access violation at 0x00004018 : no 'write' permission
*** error 65: access violation at 0x0000401C : no 'read' permission
Non-aligned Access: ARM Instruction at 00000014H, Memory Access at 00005016H
*** error 65: access violation at 0x00005016 : no 'read' permission
*** error 65: access violation at 0x0000401C : no 'write' permission
```

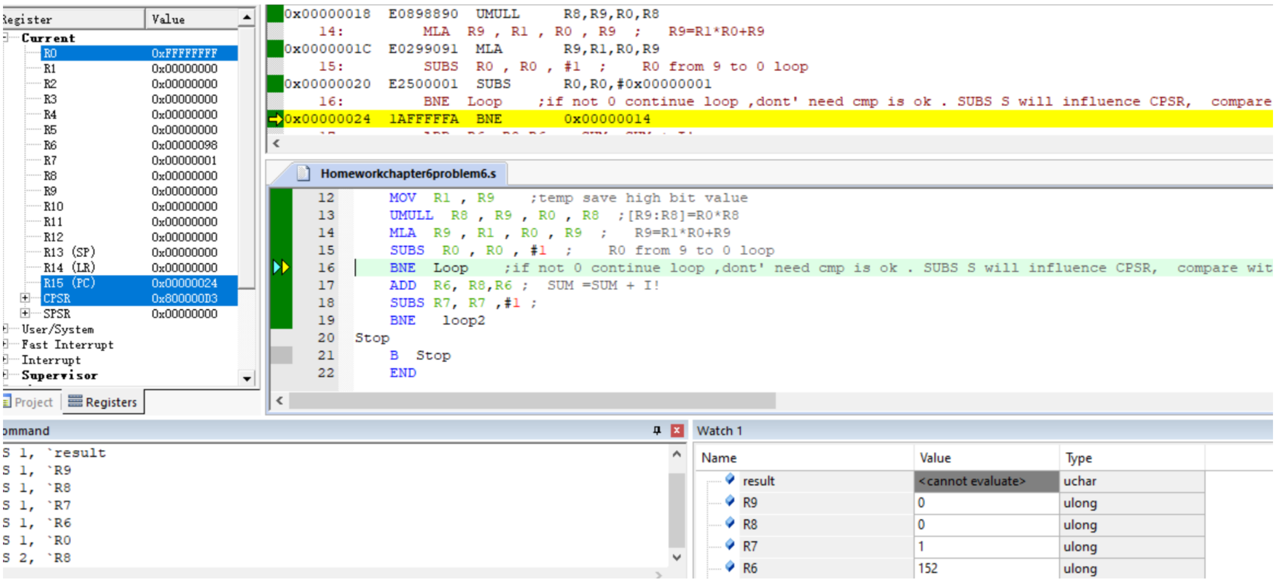
Name	Value	Type
result	<cannot evaluate>	uchar
R9	0x00000000	ulong
R8	0x00000000	ulong
R7	0x00005012	ulong
R6	0x00004020	ulong

第六题:

代码如下:

```
        AREA Fctrl,CODE,READONLY        ; declare Fctrl
        ENTRY                 ;
        CODE32                ; declare 32 b ARM
START
        MOV    R6,    #0    ; save sum
        MOV    R7, #5      ;    R7    from 5 begin
loop2     ;this is    FOR i--
        MOV    R8 , R7        ; init low bit , such as calculate 4!, R7 give 4 to R8
        MOV    R9 , #0        ; init high bit
        SUB    R0,R8,#1        ; init R0
Loop     ; for calculate i!
        MOV    R1 , R9        ;temp save high bit value
        UMULL    R8 , R9 , R0 , R8    ;[R9:R8]=R0*R8
        MLA    R9 , R1 , R0 , R9    ;    R9=R1*R0+R9
        SUBS    R0 , R0 , #1    ;       R0 from 9 to 0 loop
        BNE    Loop        ;if not 0 continue loop ,dont' need cmp is ok . SUBS S will influence CPSR,
compare with zero
        ADD    R6, R8,R6 ;    SUM =SUM + I!
        SUBS R7, R7 ,#1 ;
        BNE      loop2
Stop
        B    Stop
        END
```

结果保存在 R6



```
Register            Value
Current
    R0              0xFFFFFFFF
    R1              0x00000000
    R2              0x00000000
    R3              0x00000000
    R4              0x00000000
    R5              0x00000000
    R6              0x00000098
    R7              0x00000001
    R8              0x00000000
    R9              0x00000000
    R10             0x00000000
    R11             0x00000000
    R12             0x00000000
    R13 (SP)        0x00000000
    R14 (LR)        0x00000000
    R15 (PC)        0x00000024
    CPSR            0x800000D3
    SPSR            0x00000000
User/System
Fast Interrupt
Interrupt
Supervisor
```

```
0x00000018  E0898890  UMULL     R8,R9,R0,R8
    14:          MLA  R9 , R1 , R0 , R9  ;   R9=R1*R0+R9
0x0000001C  E0299091  MLA       R9,R1,R0,R9
    15:          SUBS  R0 , R0 , #1  ;    R0 from 9 to 0 loop
0x00000020  E2500001  SUBS      R0,R0,#0x00000001
    16:          BNE  Loop    ;if not 0 continue loop ,dont' need cmp is ok . SUBS S will influence CPSR,  compare
0x00000024  1AFFFFFA  BNE       0x00000014
```

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```
    MOV  R1 , R9    ;temp save high bit value
    UMULL  R8 , R9 , R0 , R8  ;[R9:R8]=R0*R8
    MLA  R9 , R1 , R0 , R9  ;   R9=R1*R0+R9
    SUBS  R0 , R0 , #1  ;    R0 from 9 to 0 loop
    BNE  Loop    ;if not 0 continue loop ,dont' need cmp is ok . SUBS S will influence CPSR,  compare wit
    ADD  R6, R8,R6 ;  SUM =SUM + I!
    SUBS R7, R7 ,#1 ;
    BNE   loop2
Stop
    B  Stop
    END
```

```
S 1, `result
S 1, `R9
S 1, `R8
S 1, `R7
S 1, `R6
S 1, `R0
S 2, `R8
```

Watch 1

Name	Value	Type
result	<cannot evaluate>	uchar
R9	0	ulong
R8	0	ulong
R7	1	ulong
R6	152	ulong