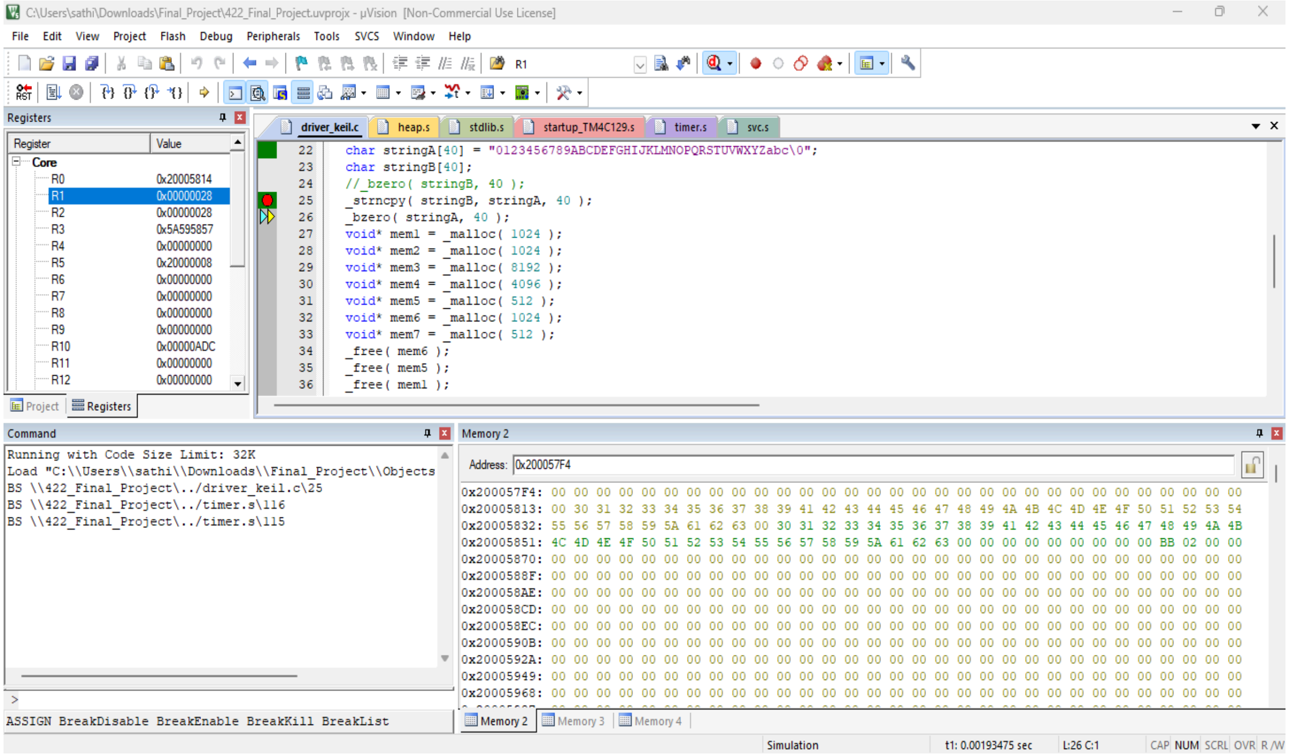
_strncpy(stringB, stringA, 40);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Project Registers
Command
Memory 2
Memory 2 Memory 3 Memory 4
Simulation
t1: 0.00193475 sec
L:26 C:1
CAP NUM SCRL OVR R /W

Register	Value
Core	
R0	0x20005814
R1	0x00000028
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000ADC
R11	0x00000000
R12	0x00000000

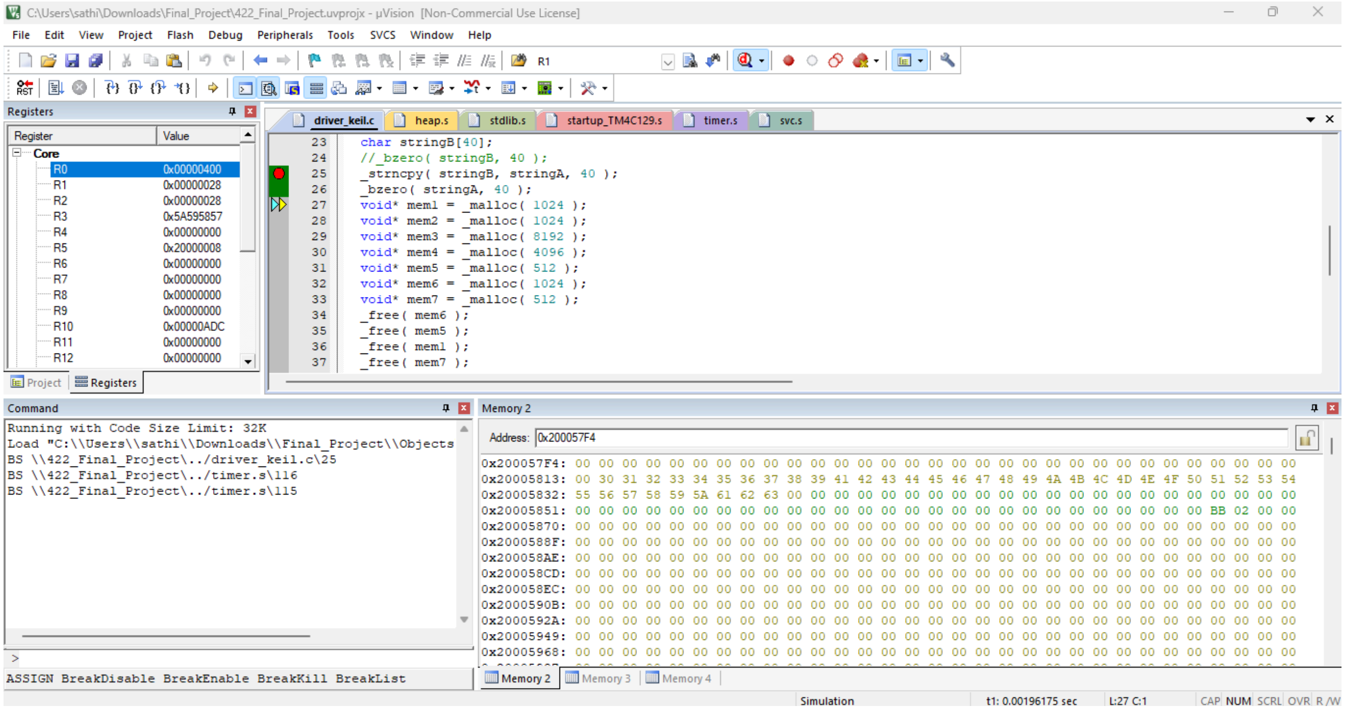
```c
char stringA[40] = "0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabc\0";
char stringB[40];
//_bzero( stringB, 40 );
_strncpy( stringB, stringA, 40 );
_bzero( stringA, 40 );
void* mem1 = _malloc( 1024 );
void* mem2 = _malloc( 1024 );
void* mem3 = _malloc( 8192 );
void* mem4 = _malloc( 4096 );
void* mem5 = _malloc( 512 );
void* mem6 = _malloc( 1024 );
void* mem7 = _malloc( 512 );
_free( mem6 );
_free( mem5 );
_free( mem1 );
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects
BS \\422_Final_Project\../driver_keil.c\25
BS \\422_Final_Project\../timer.s\116
BS \\422_Final_Project\../timer.s\115
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList
```

Address: 0x200057F4

```
0x200057F4: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20005813: 00 30 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54
0x20005832: 55 56 57 58 59 5A 61 62 63 00 30 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 47 48 49 4A 4B
0x20005851: 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 61 62 63 00 00 00 00 00 00 00 00 00 BB 02 00 00
0x20005870: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000588F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200058AE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200058CD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200058EC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000590B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000592A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20005949: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20005968: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

_bzero(stringA, 40);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Project Registers
Command
Memory 2
Memory 2 Memory 3 Memory 4
Simulation
t1: 0.00196175 sec
L:27 C:1
CAP NUM SCRL OVR R /W

Register	Value
Core	
R0	0x00000400
R1	0x00000028
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000ADC
R11	0x00000000
R12	0x00000000

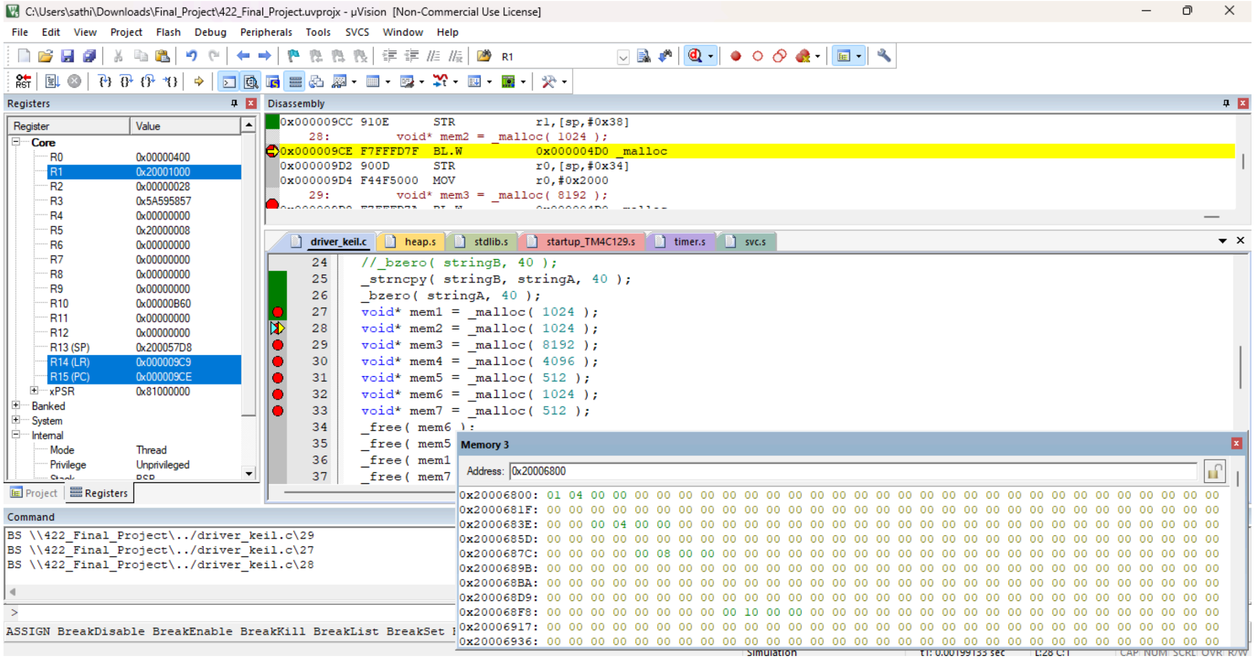
```c
char stringB[40];
//_bzero( stringB, 40 );
_strncpy( stringB, stringA, 40 );
_bzero( stringA, 40 );
void* mem1 = _malloc( 1024 );
void* mem2 = _malloc( 1024 );
void* mem3 = _malloc( 8192 );
void* mem4 = _malloc( 4096 );
void* mem5 = _malloc( 512 );
void* mem6 = _malloc( 1024 );
void* mem7 = _malloc( 512 );
_free( mem6 );
_free( mem5 );
_free( mem1 );
_free( mem7 );
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects
BS \\422_Final_Project\../driver_keil.c\25
BS \\422_Final_Project\../timer.s\116
BS \\422_Final_Project\../timer.s\115
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList
```

Address: 0x200057F4

```
0x200057F4: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20005813: 00 30 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54
0x20005832: 55 56 57 58 59 5A 61 62 63 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20005851: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 BB 02 00 00
0x20005870: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000588F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200058AE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200058CD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200058EC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000590B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000592A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20005949: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20005968: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

void* mem1 = _malloc(1024);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Memory 3
Project
Registers
Command
Simulation
t1: 0.00199133 sec
L:28 C:1
CAP NUM SCRL OVR R/W

```
Register        Value
Core
  R0            0x00000400
  R1            0x20001000
  R2            0x00000028
  R3            0x5A595857
  R4            0x00000000
  R5            0x20000008
  R6            0x00000000
  R7            0x00000000
  R8            0x00000000
  R9            0x00000000
  R10           0x00000B60
  R11           0x00000000
  R12           0x00000000
  R13 (SP)      0x200057D8
  R14 (LR)      0x000009C9
  R15 (PC)      0x000009CE
  xPSR          0x81000000
Banked
System
Internal
  Mode          Thread
  Privilege     Unprivileged
```

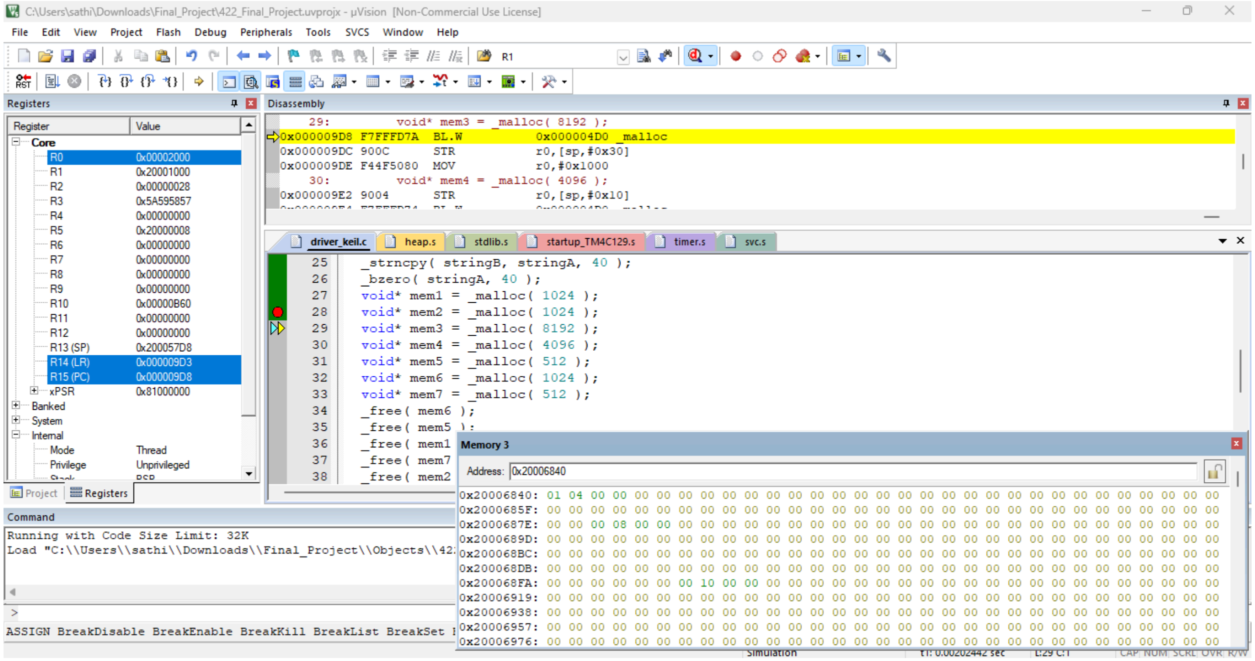
```
0x000009CC 910E      STR          r1,[sp,#0x38]
    28:          void* mem2 = _malloc( 1024 );
0x000009CE F7FFFD7F  BL.W         0x000004D0 _malloc
0x000009D2 900D      STR          r0,[sp,#0x34]
0x000009D4 F44F5000  MOV          r0,#0x2000
    29:          void* mem3 = _malloc( 8192 );
```

```
  //_bzero( stringB, 40 );
  _strncpy( stringB, stringA, 40 );
  _bzero( stringA, 40 );
  void* mem1 = _malloc( 1024 );
  void* mem2 = _malloc( 1024 );
  void* mem3 = _malloc( 8192 );
  void* mem4 = _malloc( 4096 );
  void* mem5 = _malloc( 512 );
  void* mem6 = _malloc( 1024 );
  void* mem7 = _malloc( 512 );
  _free( mem6 );
  _free( mem5
  _free( mem1
  _free( mem7
```

```
Address: 0x20006800
0x20006800: 01 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000681F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000683E: 00 00 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687C: 00 00 00 00 00 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068F8: 00 00 00 00 00 00 00 00 00 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006917: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006936: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
BS \\422_Final_Project\../driver_keil.c\29
BS \\422_Final_Project\../driver_keil.c\27
BS \\422_Final_Project\../driver_keil.c\28
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

void* mem2 = _malloc(1024);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Memory 3
Project
Registers
Command
Simulation
t1: 0.00202442 sec
L:29 C:1
CAP NUM SCRL OVR R/W

```
Register        Value
Core
  R0            0x00002000
  R1            0x20001000
  R2            0x00000028
  R3            0x5A595857
  R4            0x00000000
  R5            0x20000008
  R6            0x00000000
  R7            0x00000000
  R8            0x00000000
  R9            0x00000000
  R10           0x00000B60
  R11           0x00000000
  R12           0x00000000
  R13 (SP)      0x200057D8
  R14 (LR)      0x000009D3
  R15 (PC)      0x000009D8
  xPSR          0x81000000
Banked
System
Internal
  Mode          Thread
  Privilege     Unprivileged
```

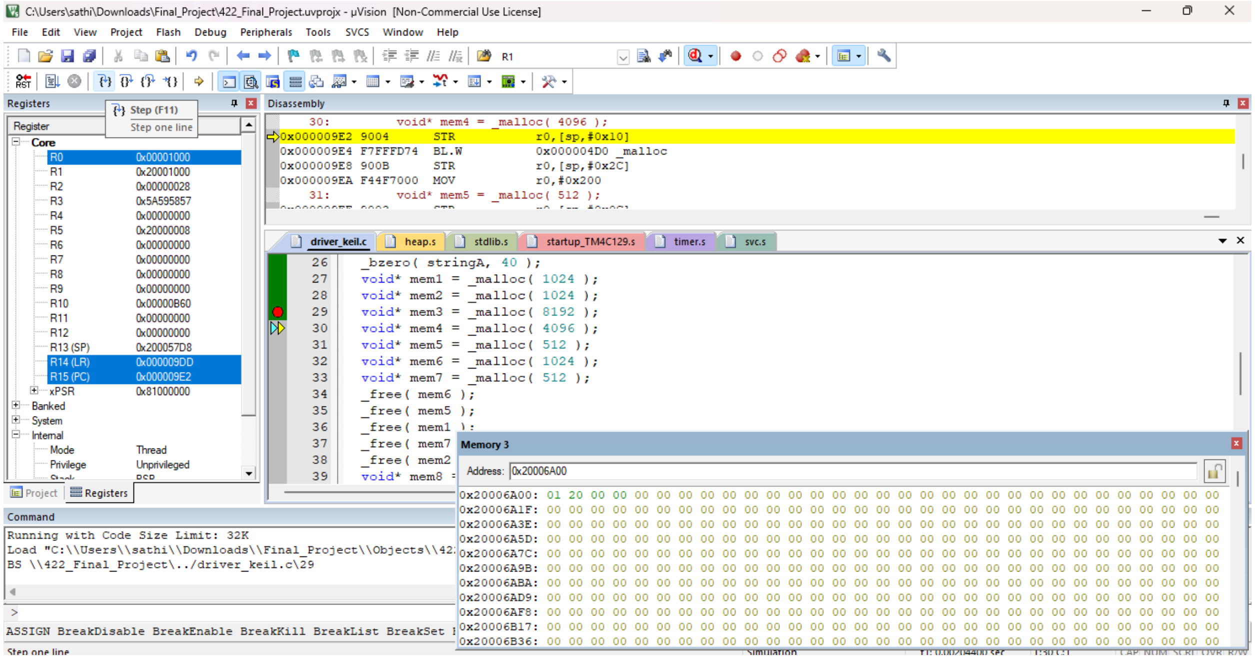
```
    29:          void* mem3 = _malloc( 8192 );
0x000009D8 F7FFFD7A  BL.W         0x000004D0 _malloc
0x000009DC 900C      STR          r0,[sp,#0x30]
0x000009DE F44F5080  MOV          r0,#0x1000
    30:          void* mem4 = _malloc( 4096 );
0x000009E2 9004      STR          r0,[sp,#0x10]
```

```
  _strncpy( stringB, stringA, 40 );
  _bzero( stringA, 40 );
  void* mem1 = _malloc( 1024 );
  void* mem2 = _malloc( 1024 );
  void* mem3 = _malloc( 8192 );
  void* mem4 = _malloc( 4096 );
  void* mem5 = _malloc( 512 );
  void* mem6 = _malloc( 1024 );
  void* mem7 = _malloc( 512 );
  _free( mem6 );
  _free( mem5 );
  _free( mem1
  _free( mem7
  _free( mem2
```

```
Address: 0x20006840
0x20006840: 01 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687E: 00 00 00 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068DB: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068FA: 00 00 00 00 00 00 00 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006919: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006938: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006957: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006976: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

void* mem3 = _malloc(8192);



Register	Value
Core	
R0	0x00001000
R1	0x20001000
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x000009DD
R15 (PC)	0x000009E2
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
    30:         void* mem4 = _malloc( 4096 );
0x000009E2 9004      STR         r0,[sp,#0x10]
0x000009E4 F7FFFD74  BL.W        0x000004D0 _malloc
0x000009E8 900B      STR         r0,[sp,#0x2C]
0x000009EA F44F7000  MOV         r0,#0x200
    31:         void* mem5 = _malloc( 512 );
```

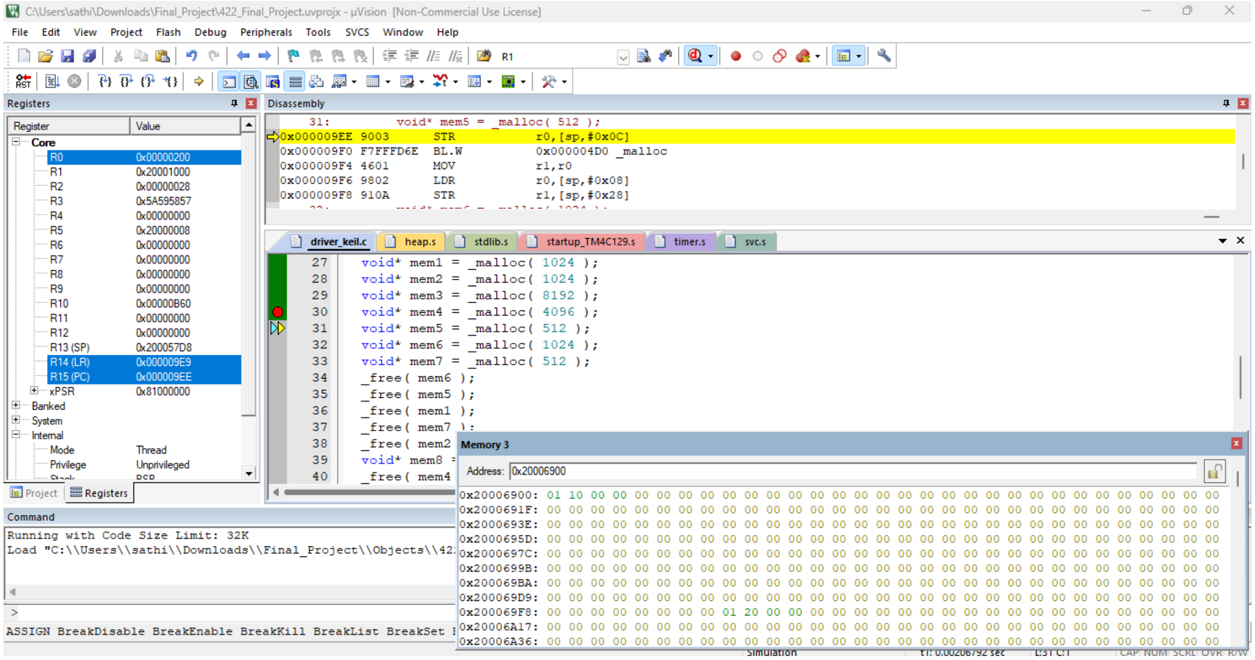
```
_bzero( stringA, 40 );
void* mem1 = _malloc( 1024 );
void* mem2 = _malloc( 1024 );
void* mem3 = _malloc( 8192 );
void* mem4 = _malloc( 4096 );
void* mem5 = _malloc( 512 );
void* mem6 = _malloc( 1024 );
void* mem7 = _malloc( 512 );
_free( mem6 );
_free( mem5 );
_free( mem1 ):
_free( mem7
_free( mem2
void* mem8 =
```

Address: 0x20006A00

```
0x20006A00: 01 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A1F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A3E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A5D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A7C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A9B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006ABA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006AD9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006AF8: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006B17: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006B36: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\29
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

void* mem4 = _malloc(4096);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Memory 3
Project
Registers
Command
Simulation
t1: 0.00206792 sec
L:31 C:1
CAP NUM SCRL OVR R/W

Register	Value
Core	
R0	0x00000200
R1	0x20001000
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x000009E9
R15 (PC)	0x000009EE
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
    31:         void* mem5 = _malloc( 512 );
0x000009EE 9003      STR         r0,[sp,#0x0C]
0x000009F0 F7FFFD6E  BL.W        0x000004D0 _malloc
0x000009F4 4601      MOV         r1,r0
0x000009F6 9802      LDR         r0,[sp,#0x08]
0x000009F8 910A      STR         r1,[sp,#0x28]
```

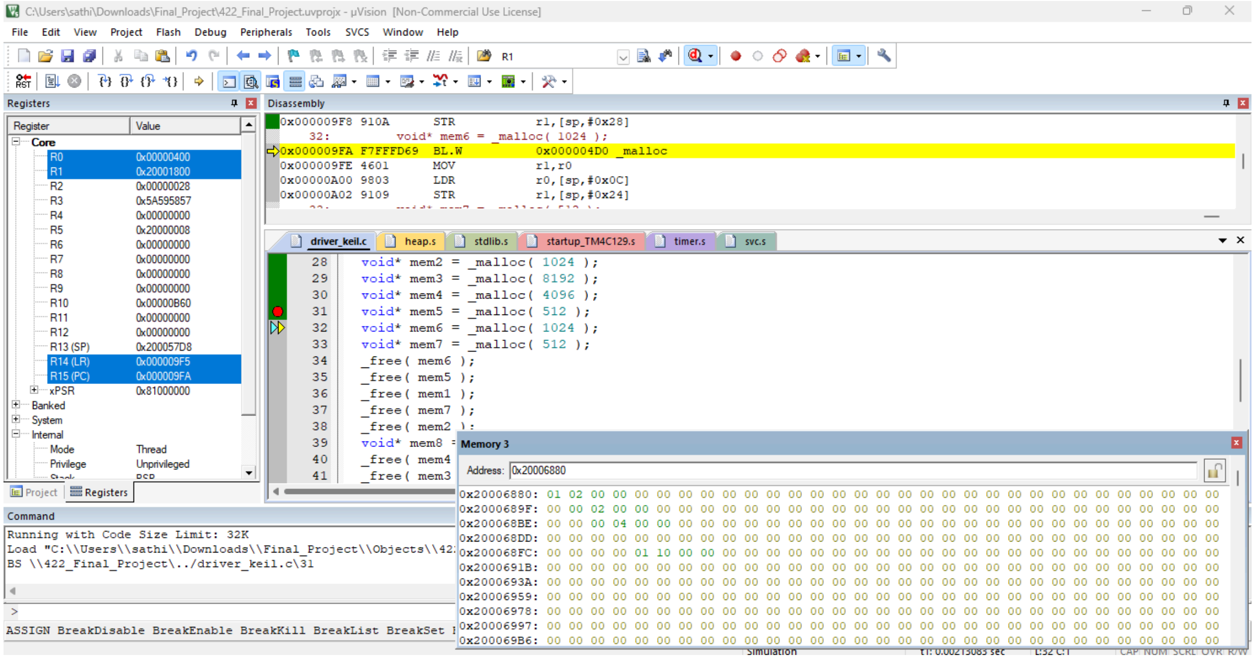
```
void* mem1 = _malloc( 1024 );
void* mem2 = _malloc( 1024 );
void* mem3 = _malloc( 8192 );
void* mem4 = _malloc( 4096 );
void* mem5 = _malloc( 512 );
void* mem6 = _malloc( 1024 );
void* mem7 = _malloc( 512 );
_free( mem6 );
_free( mem5 );
_free( mem1 );
_free( mem7 ):
_free( mem2
void* mem8 =
_free( mem4
```

Address: 0x20006900

```
0x20006900: 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000691F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000693E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000695D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000697C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000699B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069F8: 00 00 00 00 00 00 00 00 01 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A17: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A36: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

void* mem5 = _malloc(512);



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Project
Registers
Command
Memory 3

Register	Value
Core	
R0	0x00000400
R1	0x20001800
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x000009F5
R15 (PC)	0x000009FA
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x000009F8 910A      STR          r1,[sp,#0x28]
    32:          void* mem6 = _malloc( 1024 );
0x000009FA F7FFFD69  BL.W         0x000004D0 _malloc
0x000009FE 4601      MOV          r1,r0
0x00000A00 9803      LDR          r0,[sp,#0x0C]
0x00000A02 9109      STR          r1,[sp,#0x24]
```

```
void* mem2 = _malloc( 1024 );
void* mem3 = _malloc( 8192 );
void* mem4 = _malloc( 4096 );
void* mem5 = _malloc( 512 );
void* mem6 = _malloc( 1024 );
void* mem7 = _malloc( 512 );
_free( mem6 );
_free( mem5 );
_free( mem1 );
_free( mem7 );
_free( mem2 );
void* mem8 =
_free( mem4
_free( mem3
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\31
```

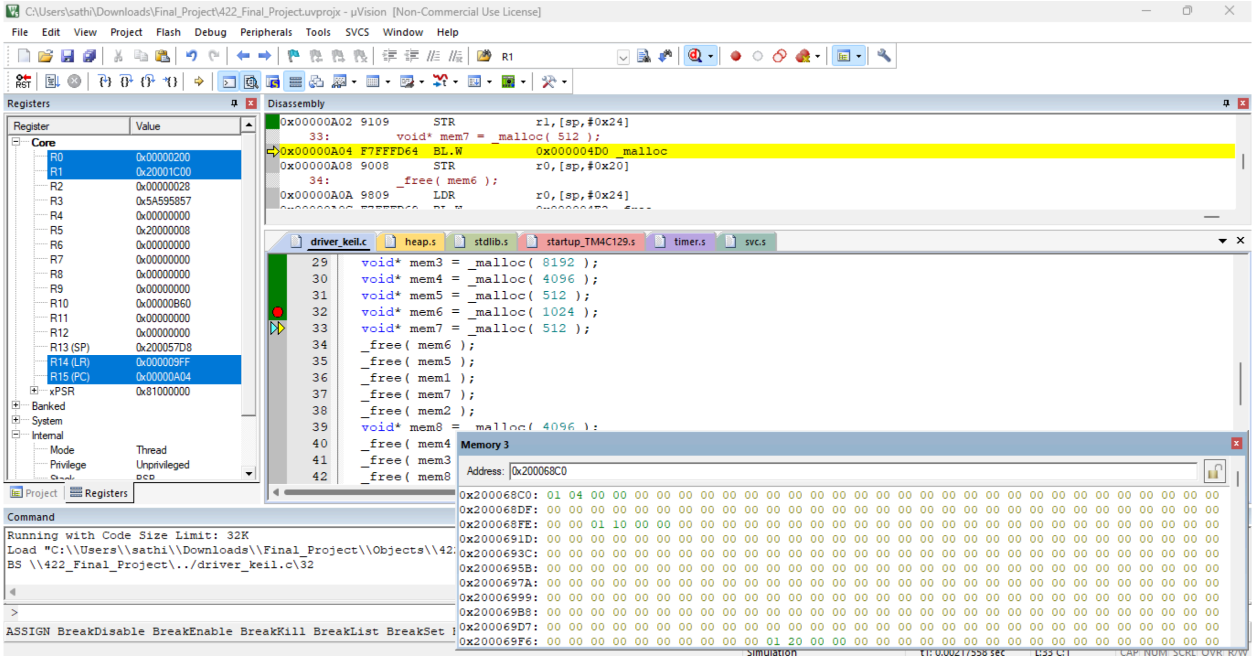
```
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

Address: 0x20006880

```
0x20006880: 01 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689F: 00 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BE: 00 00 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068DD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068FC: 00 00 00 00 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000691B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000693A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006959: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006978: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006997: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069B6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Simulation t1: 0.00213083 sec L:32 C:1 CAP NUM SCRL OVR R/W

void* mem6 = _malloc(1024);



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Project
Registers
Command
Memory 3

Register	Value
Core	
R0	0x00000200
R1	0x20001C00
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x000009FF
R15 (PC)	0x00000A04
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A02 9109      STR          r1,[sp,#0x24]
    33:          void* mem7 = _malloc( 512 );
0x00000A04 F7FFFD64  BL.W         0x000004D0 _malloc
0x00000A08 9008      STR          r0,[sp,#0x20]
    34:          _free( mem6 );
0x00000A0A 9809      LDR          r0,[sp,#0x24]
```

```
void* mem3 = _malloc( 8192 );
void* mem4 = _malloc( 4096 );
void* mem5 = _malloc( 512 );
void* mem6 = _malloc( 1024 );
void* mem7 = _malloc( 512 );
_free( mem6 );
_free( mem5 );
_free( mem1 );
_free( mem7 );
_free( mem2 );
void* mem8 = _malloc( 4096 );
_free( mem4
_free( mem3
_free( mem8
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\32
```

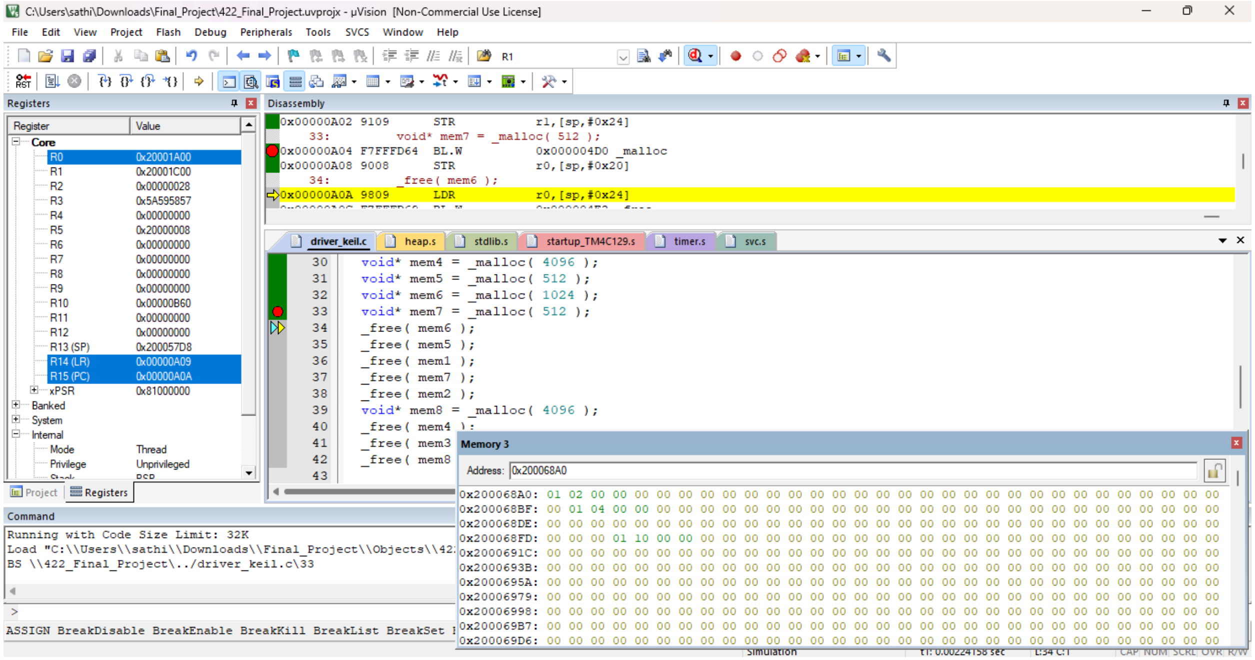
```
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

Address: 0x200068C0

```
0x200068C0: 01 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068DF: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068FE: 00 00 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000691D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000693C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000695B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000697A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006999: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069B8: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069D7: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069F6: 00 00 00 00 00 00 00 00 00 00 01 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Simulation t1: 0.00217558 sec L:33 C:1 CAP NUM SCRL OVR R/W

void* mem7 = _malloc(512);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Project Registers
Command
Memory 3
Simulation t1: 0.00224158 sec L:34 C:1 CAP NUM SCRL OVR R/W

Register	Value
Core	
R0	0x20001A00
R1	0x20001C00
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A09
R15 (PC)	0x00000A0A
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A02 9109      STR           r1,[sp,#0x24]
    33:         void* mem7 = _malloc( 512 );
0x00000A04 F7FFFD64  BL.W          0x000004D0 _malloc
0x00000A08 9008      STR           r0,[sp,#0x20]
    34:          _free( mem6 );
0x00000A0A 9809      LDR           r0,[sp,#0x24]
```

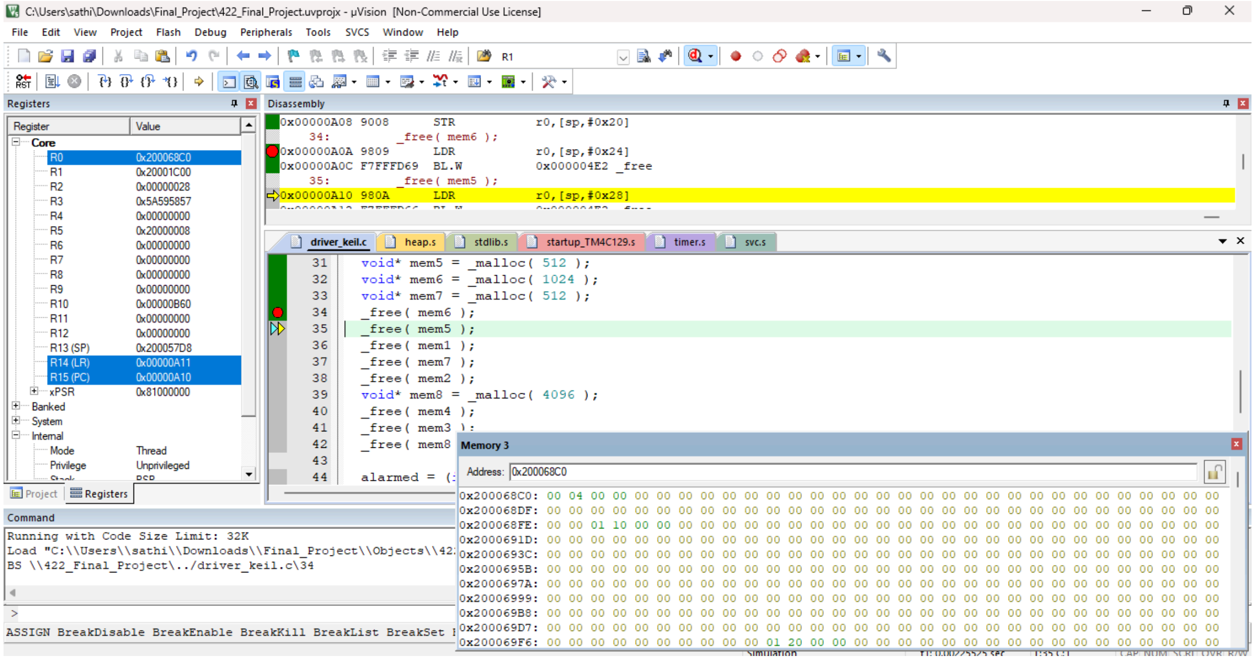
```
  void* mem4 = _malloc( 4096 );
  void* mem5 = _malloc( 512 );
  void* mem6 = _malloc( 1024 );
  void* mem7 = _malloc( 512 );
  _free( mem6 );
  _free( mem5 );
  _free( mem1 );
  _free( mem7 );
  _free( mem2 );
  void* mem8 = _malloc( 4096 );
  _free( mem4 );
  _free( mem3
  _free( mem8
```

Address: 0x200068A0

```
0x200068A0: 01 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BF: 00 01 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068DE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068FD: 00 00 00 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000691C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000693B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000695A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006979: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006998: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069B7: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069D6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\33
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

_free(mem6);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Project Registers
Command
Memory 3
Simulation t1: 0.00225525 sec L:35 C:1 CAP NUM SCRL OVR R/W

Register	Value
Core	
R0	0x200068C0
R1	0x20001C00
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A11
R15 (PC)	0x00000A10
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A08 9008      STR           r0,[sp,#0x20]
    34:          _free( mem6 );
0x00000A0A 9809      LDR           r0,[sp,#0x24]
0x00000A0C F7FFFD69  BL.W          0x000004E2 _free
    35:          _free( mem5 );
0x00000A10 980A      LDR           r0,[sp,#0x28]
```

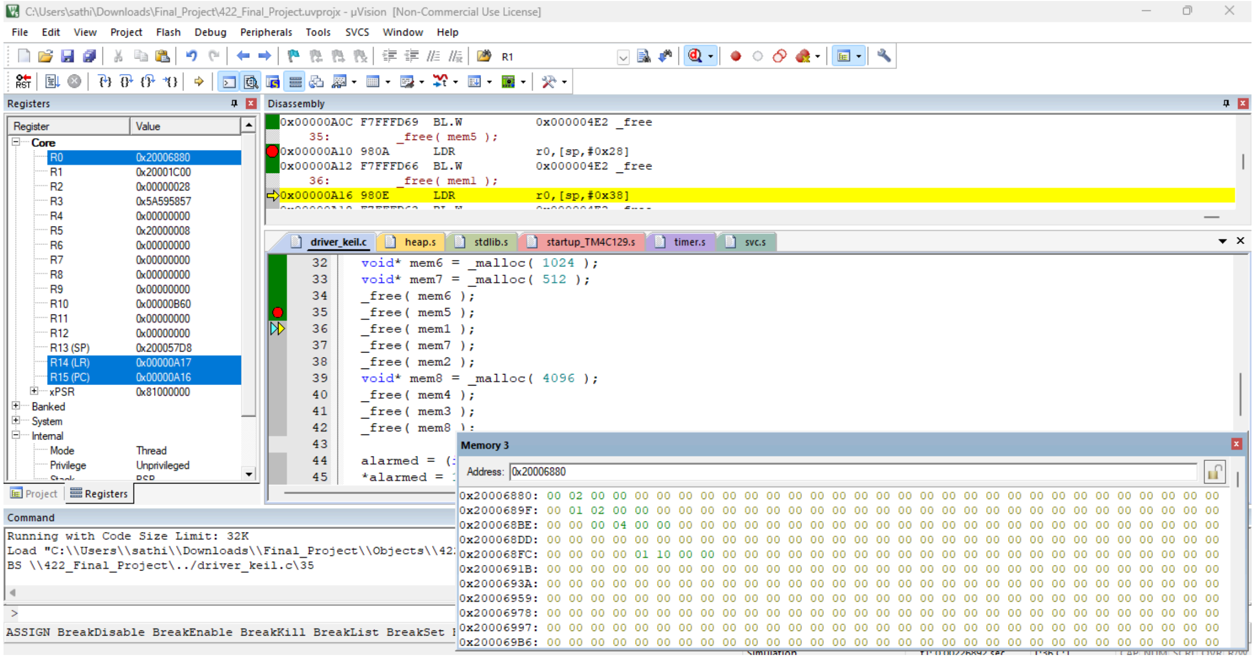
```
  void* mem5 = _malloc( 512 );
  void* mem6 = _malloc( 1024 );
  void* mem7 = _malloc( 512 );
  _free( mem6 );
  _free( mem5 );
  _free( mem1 );
  _free( mem7 );
  _free( mem2 );
  void* mem8 = _malloc( 4096 );
  _free( mem4 );
  _free( mem3 );
  _free( mem8

  alarmed = (
```

Address: 0x200068C0

```
0x200068C0: 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068DF: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068FE: 00 00 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000691D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000693C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000695B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000697A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006999: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069B8: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069D7: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069F6: 00 00 00 00 00 00 00 00 00 00 01 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\34
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

_free(mem5);



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]

Register	Value
Core	
R0	0x20006880
R1	0x20001C00
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A17
R15 (PC)	0x00000A16
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A0C F7FFFD69  BL.W          0x000004E2 _free
    35:         _free( mem5 );
0x00000A10 980A      LDR           r0,[sp,#0x28]
0x00000A12 F7FFFD66  BL.W          0x000004E2 _free
    36:         _free( mem1 );
0x00000A16 980E      LDR           r0,[sp,#0x38]
```

```
void* mem6 = _malloc( 1024 );
void* mem7 = _malloc( 512 );
_free( mem6 );
_free( mem5 );
_free( mem1 );
_free( mem7 );
_free( mem2 );
void* mem8 = _malloc( 4096 );
_free( mem4 );
_free( mem3 );
_free( mem8 );

alarmed = (
*alarmed = 
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\35
```

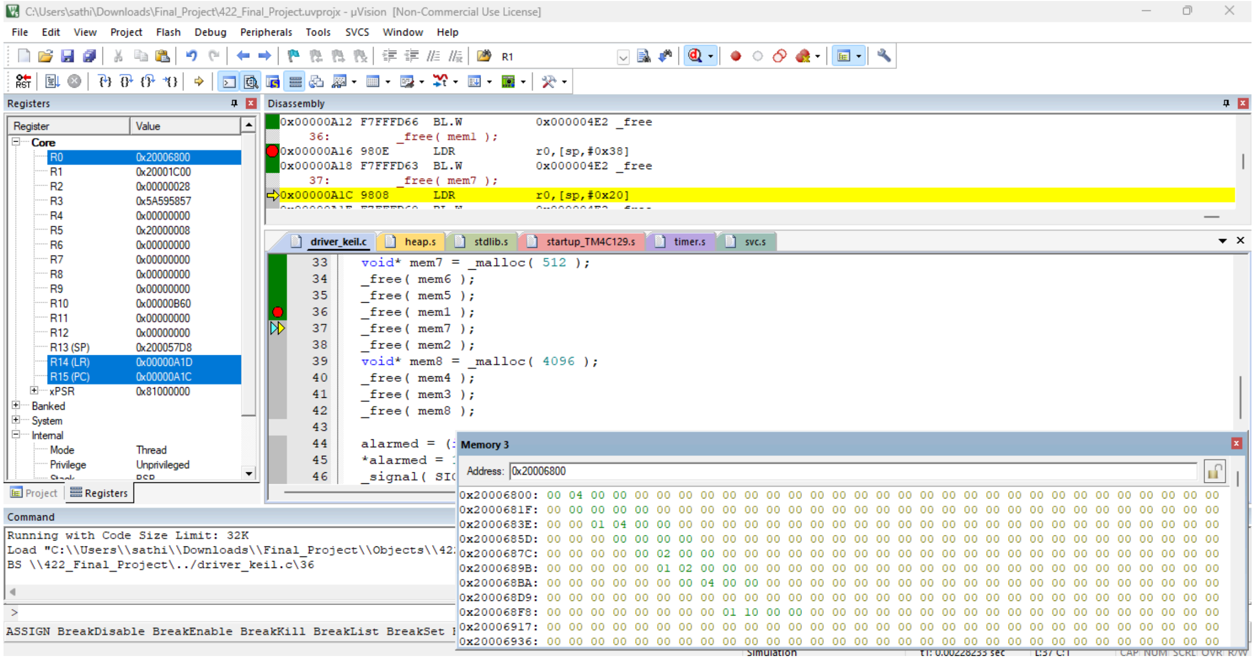
```
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

Memory 3

Address: 0x20006880

```
0x20006880: 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689F: 00 01 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BE: 00 00 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068DD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068FC: 00 00 00 00 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000691B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000693A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006959: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006978: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006997: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069B6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

_free(mem1);



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]

Register	Value
Core	
R0	0x20006800
R1	0x20001C00
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A1D
R15 (PC)	0x00000A1C
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A12 F7FFFD66  BL.W          0x000004E2 _free
    36:         _free( mem1 );
0x00000A16 980E      LDR           r0,[sp,#0x38]
0x00000A18 F7FFFD63  BL.W          0x000004E2 _free
    37:         _free( mem7 );
0x00000A1C 9808      LDR           r0,[sp,#0x20]
```

```
void* mem7 = _malloc( 512 );
_free( mem6 );
_free( mem5 );
_free( mem1 );
_free( mem7 );
_free( mem2 );
void* mem8 = _malloc( 4096 );
_free( mem4 );
_free( mem3 );
_free( mem8 );

alarmed = (
*alarmed = 
_signal( SI
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\36
```

```
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

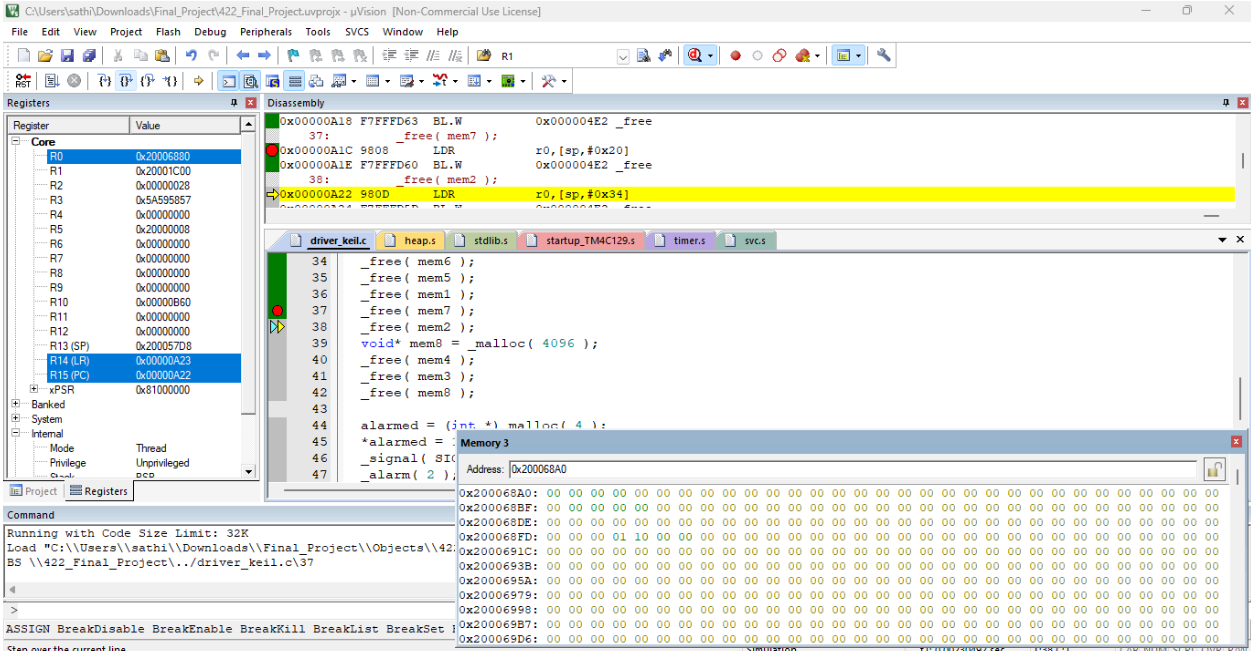
Memory 3

Address: 0x20006800

```
0x20006800: 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000681F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000683E: 00 00 01 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687C: 00 00 00 00 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689B: 00 00 00 00 00 01 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BA: 00 00 00 00 00 00 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068F8: 00 00 00 00 00 00 00 00 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006917: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006936: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Simulation t1: 0.00228233 sec L:37 C:1

_free(mem7);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Project
Registers
Command
Memory 3
Step over the current line

```
Register      Value
Core
  R0          0x20006880
  R1          0x20001C00
  R2          0x00000028
  R3          0x5A595857
  R4          0x00000000
  R5          0x20000008
  R6          0x00000000
  R7          0x00000000
  R8          0x00000000
  R9          0x00000000
  R10         0x00000B60
  R11         0x00000000
  R12         0x00000000
  R13 (SP)    0x200057D8
  R14 (LR)    0x00000A23
  R15 (PC)    0x00000A22
  xPSR        0x81000000
Banked
System
Internal
  Mode        Thread
  Privilege   Unprivileged
```

```
0x00000A18 F7FFFD63  BL.W          0x000004E2 _free
    37:           _free( mem7 );
0x00000A1C 9808      LDR           r0,[sp,#0x20]
0x00000A1E F7FFFD60  BL.W          0x000004E2 _free
    38:           _free( mem2 );
0x00000A22 980D      LDR           r0,[sp,#0x34]
```

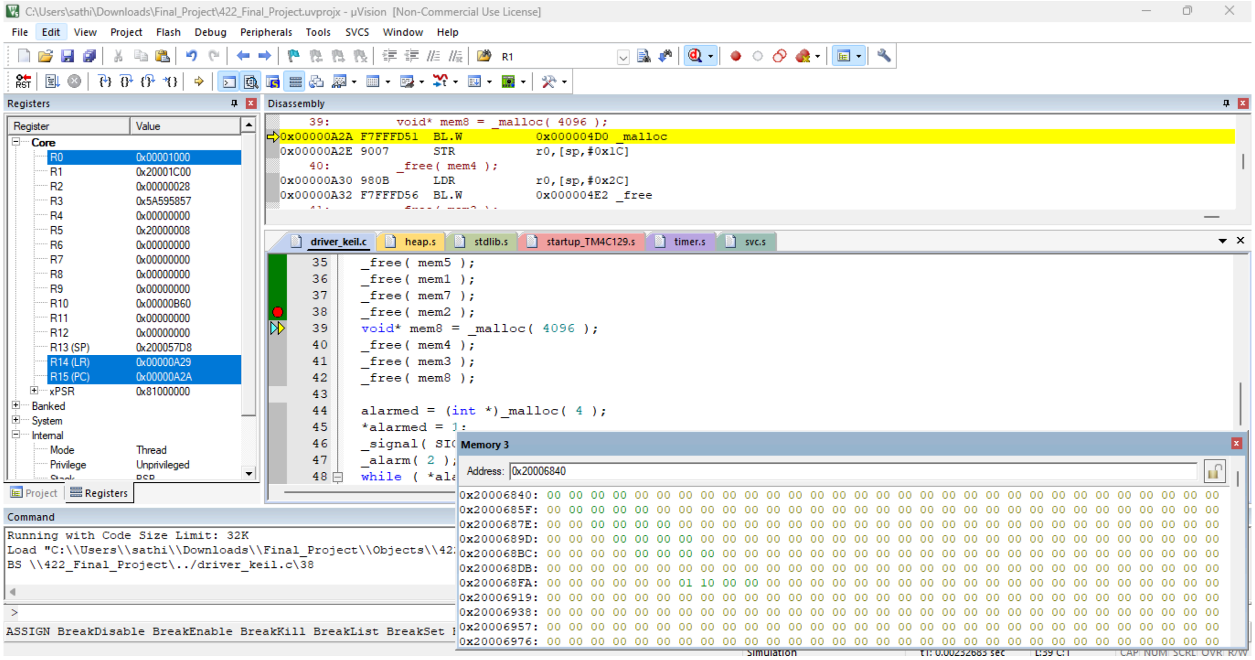
```
    _free( mem6 );
    _free( mem5 );
    _free( mem1 );
    _free( mem7 );
    _free( mem2 );
    void* mem8 = _malloc( 4096 );
    _free( mem4 );
    _free( mem3 );
    _free( mem8 );

    alarmed = (int *) malloc( 4 );
    *alarmed = 
    _signal( SI(
    _alarm( 2 );
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\37

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

Address: 0x200068A0

```
0x200068A0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BF: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068DE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068FD: 00 00 00 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000691C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000693B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000695A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006979: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006998: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069B7: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069D6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

_free(mem2);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Project
Registers
Command
Memory 3
Simulation
t1: 0.00232683 sec
L:39 C:1
CAP NUM SCRL OVR R/W

```
Register      Value
Core
  R0          0x00001000
  R1          0x20001C00
  R2          0x00000028
  R3          0x5A595857
  R4          0x00000000
  R5          0x20000008
  R6          0x00000000
  R7          0x00000000
  R8          0x00000000
  R9          0x00000000
  R10         0x00000B60
  R11         0x00000000
  R12         0x00000000
  R13 (SP)    0x200057D8
  R14 (LR)    0x00000A29
  R15 (PC)    0x00000A2A
  xPSR        0x81000000
Banked
System
Internal
  Mode        Thread
  Privilege   Unprivileged
```

```
    39:           void* mem8 = _malloc( 4096 );
0x00000A2A F7FFFD51  BL.W          0x000004D0 _malloc
0x00000A2E 9007      STR           r0,[sp,#0x1C]
    40:           _free( mem4 );
0x00000A30 980B      LDR           r0,[sp,#0x2C]
0x00000A32 F7FFFD56  BL.W          0x000004E2 _free
```

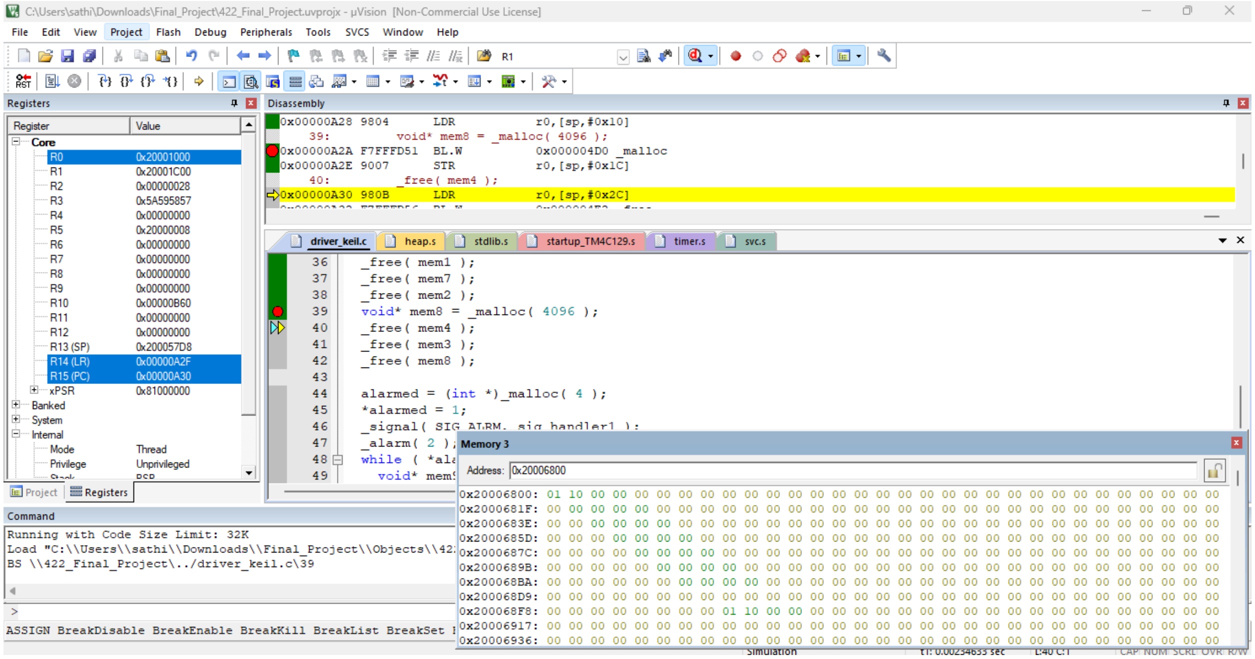
```
    _free( mem5 );
    _free( mem1 );
    _free( mem7 );
    _free( mem2 );
    void* mem8 = _malloc( 4096 );
    _free( mem4 );
    _free( mem3 );
    _free( mem8 );

    alarmed = (int *)_malloc( 4 );
    *alarmed = 1;
    _signal( SI(
    _alarm( 2 );
    while ( *ala
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\38

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

Address: 0x20006840

```
0x20006840: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068DB: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068FA: 00 00 00 00 00 00 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006919: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006938: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006957: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006976: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

void* mem8 = _malloc(4096);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Memory 3
Project Registers
Command

Register	Value
Core	
R0	0x20001000
R1	0x20001C00
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A2F
R15 (PC)	0x00000A30
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A28 9804      LDR          r0,[sp,#0x10]
    39:          void* mem8 = _malloc( 4096 );
0x00000A2A F7FFFD51  BL.W         0x000004D0 _malloc
0x00000A2E 9007      STR          r0,[sp,#0x1C]
    40:           _free( mem4 );
0x00000A30 980B      LDR          r0,[sp,#0x2C]
```

```
  _free( mem1 );
  _free( mem7 );
  _free( mem2 );
  void* mem8 = _malloc( 4096 );
  _free( mem4 );
  _free( mem3 );
  _free( mem8 );

  alarmed = (int *)_malloc( 4 );
  *alarmed = 1;
  _signal( SIG ALRM. sig handler1 ):
  _alarm( 2 );
  while ( *ala
    void* mem
```

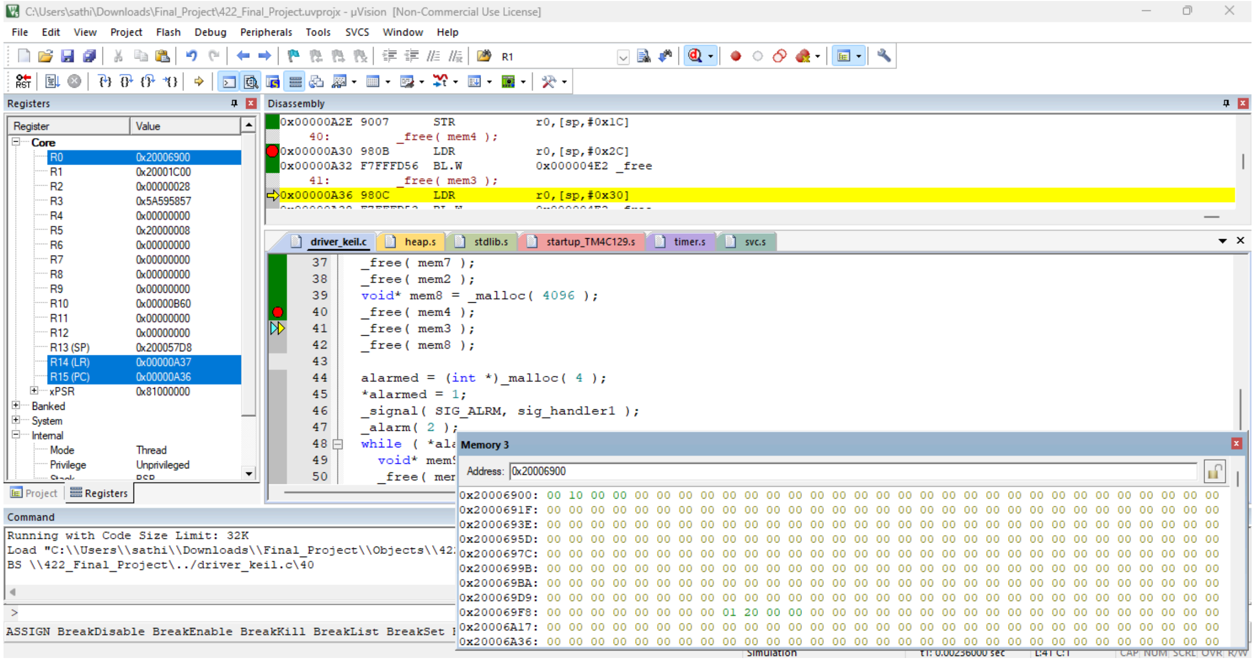
Address: 0x20006800

```
0x20006800: 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000681F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000683E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068F8: 00 00 00 00 00 00 00 00 01 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006917: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006936: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\39

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet B
```

Simulation t1: 0.00234633 sec L:40 C:1 CAP NUM SCRL OVR R/W

_free(mem4);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Memory 3
Project Registers
Command

Register	Value
Core	
R0	0x20006900
R1	0x20001C00
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A37
R15 (PC)	0x00000A36
xPSR	0x81000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A2E 9007      STR          r0,[sp,#0x1C]
    40:           _free( mem4 );
0x00000A30 980B      LDR          r0,[sp,#0x2C]
0x00000A32 F7FFFD56  BL.W         0x000004E2 _free
    41:           _free( mem3 );
0x00000A36 980C      LDR          r0,[sp,#0x30]
```

```
  _free( mem7 );
  _free( mem2 );
  void* mem8 = _malloc( 4096 );
  _free( mem4 );
  _free( mem3 );
  _free( mem8 );

  alarmed = (int *)_malloc( 4 );
  *alarmed = 1;
  _signal( SIG_ALRM, sig_handler1 );
  _alarm( 2 );
  while ( *ala
    void* mem
    _free( mer
```

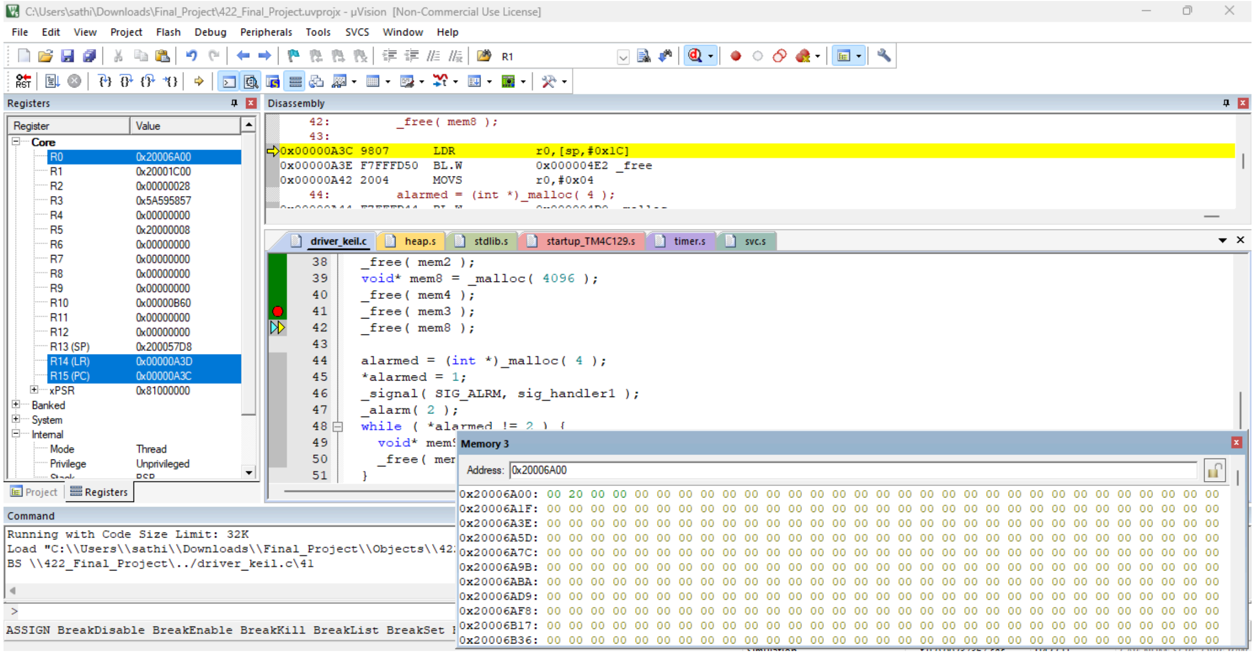
Address: 0x20006900

```
0x20006900: 00 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000691F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000693E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000695D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000697C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000699B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200069F8: 00 00 00 00 00 00 00 00 01 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A17: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A36: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\40

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet B
```

Simulation t1: 0.00236000 sec L:41 C:1 CAP NUM SCRL OVR R/W

_free(mem3);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Memory 3
Project Registers
Command

```
Register        Value
Core
  R0            0x20006A00
  R1            0x20001C00
  R2            0x00000028
  R3            0x5A595857
  R4            0x00000000
  R5            0x20000008
  R6            0x00000000
  R7            0x00000000
  R8            0x00000000
  R9            0x00000000
  R10           0x00000B60
  R11           0x00000000
  R12           0x00000000
  R13 (SP)      0x200057D8
  R14 (LR)      0x00000A3D
  R15 (PC)      0x00000A3C
  xPSR          0x81000000
Banked
System
Internal
  Mode          Thread
  Privilege     Unprivileged
```

```
    42:          _free( mem8 );
    43:
0x00000A3C 9807      LDR       r0,[sp,#0x1C]
0x00000A3E F7FFFD50  BL.W      0x000004E2 _free
0x00000A42 2004      MOVS      r0,#0x04
    44:          alarmed = (int *)_malloc( 4 );
```

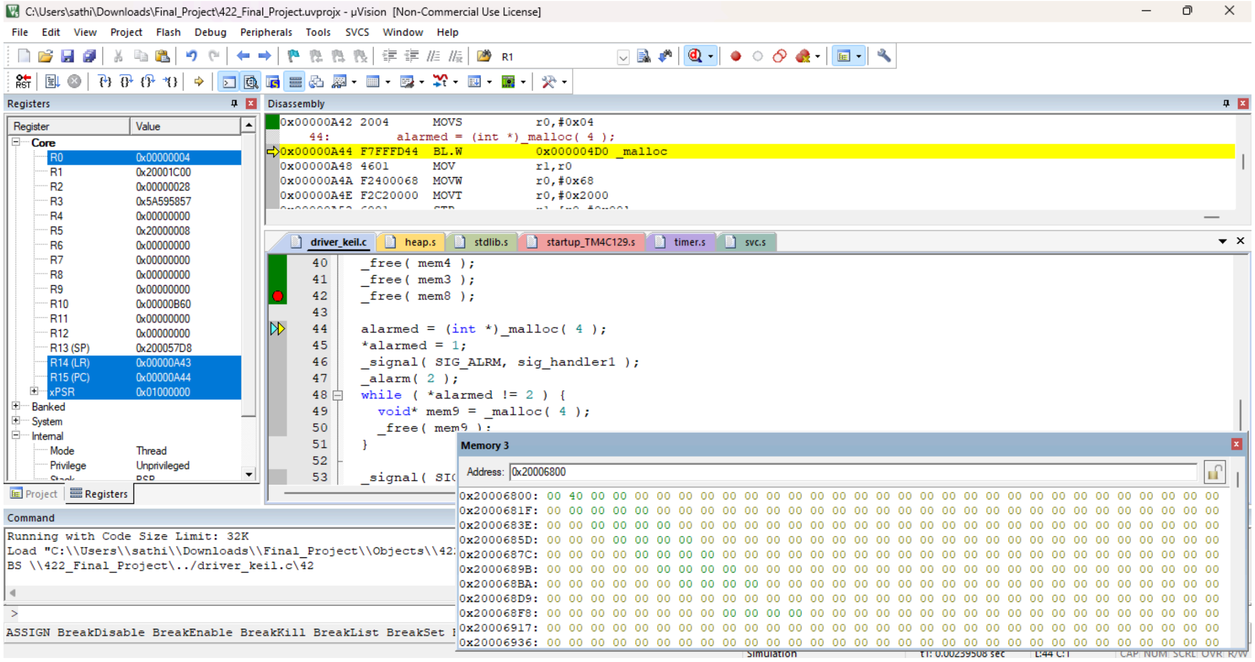
```c
_free( mem2 );
void* mem8 = _malloc( 4096 );
_free( mem4 );
_free( mem3 );
_free( mem8 );

alarmed = (int *)_malloc( 4 );
*alarmed = 1;
_signal( SIG_ALRM, sig_handler1 );
_alarm( 2 );
while ( *alarmed != 2 ) {
  void* mem
  _free( mer
}
```

Address: 0x20006A00

```
0x20006A00: 00 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A1F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A3E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A5D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A7C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006A9B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006ABA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006AD9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006AF8: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006B17: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006B36: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\41

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

_free(mem8);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Memory 3
Project Registers
Command
Simulation
t1: 0.00239508 sec
L:44 C:1
CAP NUM SCRL OVR R/W

```
Register        Value
Core
  R0            0x00000004
  R1            0x20001C00
  R2            0x00000028
  R3            0x5A595857
  R4            0x00000000
  R5            0x20000008
  R6            0x00000000
  R7            0x00000000
  R8            0x00000000
  R9            0x00000000
  R10           0x00000B60
  R11           0x00000000
  R12           0x00000000
  R13 (SP)      0x200057D8
  R14 (LR)      0x00000A43
  R15 (PC)      0x00000A44
  xPSR          0x01000000
Banked
System
Internal
  Mode          Thread
  Privilege     Unprivileged
```

```
0x00000A42 2004      MOVS      r0,#0x04
    44:          alarmed = (int *)_malloc( 4 );
0x00000A44 F7FFFD44  BL.W      0x000004D0 _malloc
0x00000A48 4601      MOV       r1,r0
0x00000A4A F2400068  MOVW      r0,#0x68
0x00000A4E F2C20000  MOVT      r0,#0x2000
```

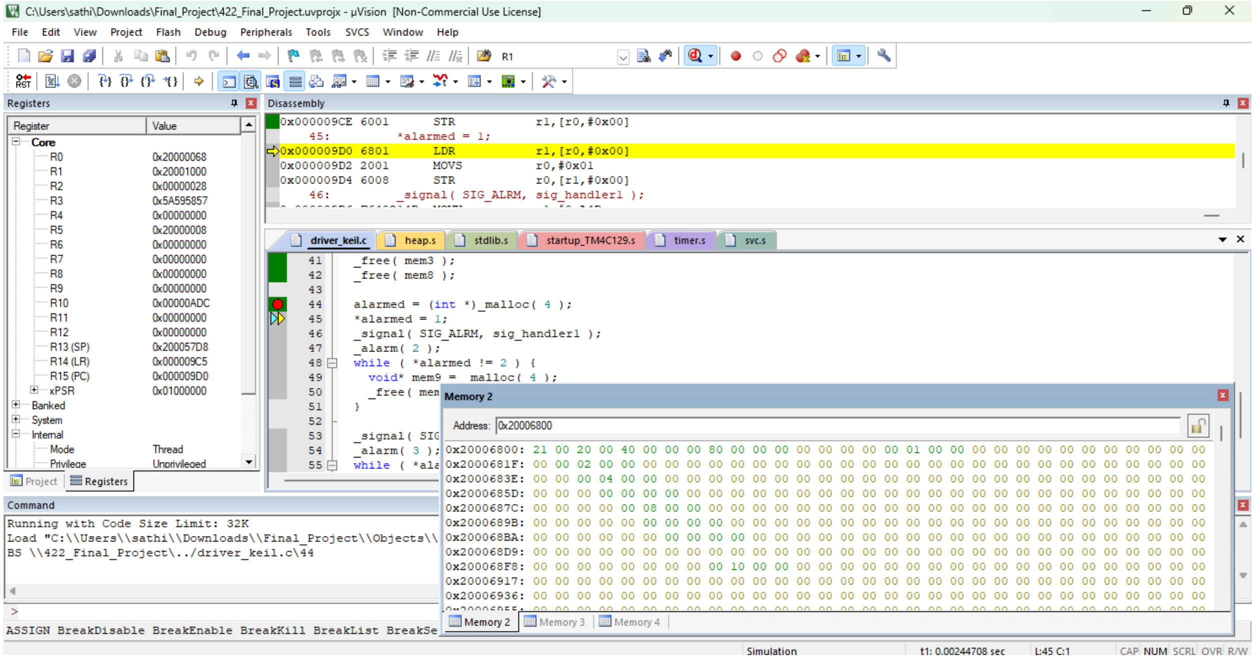
```c
_free( mem4 );
_free( mem3 );
_free( mem8 );

alarmed = (int *)_malloc( 4 );
*alarmed = 1;
_signal( SIG_ALRM, sig_handler1 );
_alarm( 2 );
while ( *alarmed != 2 ) {
  void* mem9 = _malloc( 4 );
  _free( mem9 );
}

_signal( SI
```

Address: 0x20006800

```
0x20006800: 00 40 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000681F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000683E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068F8: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006917: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006936: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\42

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

alarmed = (int *)_malloc(4);



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Project
Registers
Command
Memory 2
Memory 3
Memory 4

```
Register      Value
Core
  R0          0x20000068
  R1          0x20001000
  R2          0x00000028
  R3          0x5A595857
  R4          0x00000000
  R5          0x20000008
  R6          0x00000000
  R7          0x00000000
  R8          0x00000000
  R9          0x00000000
  R10         0x00000ADC
  R11         0x00000000
  R12         0x00000000
  R13 (SP)    0x200057D8
  R14 (LR)    0x000009C5
  R15 (PC)    0x000009D0
  xPSR        0x01000000
Banked
System
Internal
  Mode        Thread
  Privilege   Unprivileged
```

```
0x000009CE 6001      STR          r1,[r0,#0x00]
    45:          *alarmed = 1;
0x000009D0 6801      LDR          r1,[r0,#0x00]
0x000009D2 2001      MOVS         r0,#0x01
0x000009D4 6008      STR          r0,[r1,#0x00]
    46:          _signal( SIG_ALRM, sig_handler1 );
```

```
  _free( mem3 );
  _free( mem8 );

  alarmed = (int *)_malloc( 4 );
  *alarmed = 1;
  _signal( SIG_ALRM, sig_handler1 );
  _alarm( 2 );
  while ( *alarmed != 2 ) {
    void* mem9 =  malloc( 4 );
     _free( men
  }

  _signal( SIG
  _alarm( 3 );
  while ( *ala
```

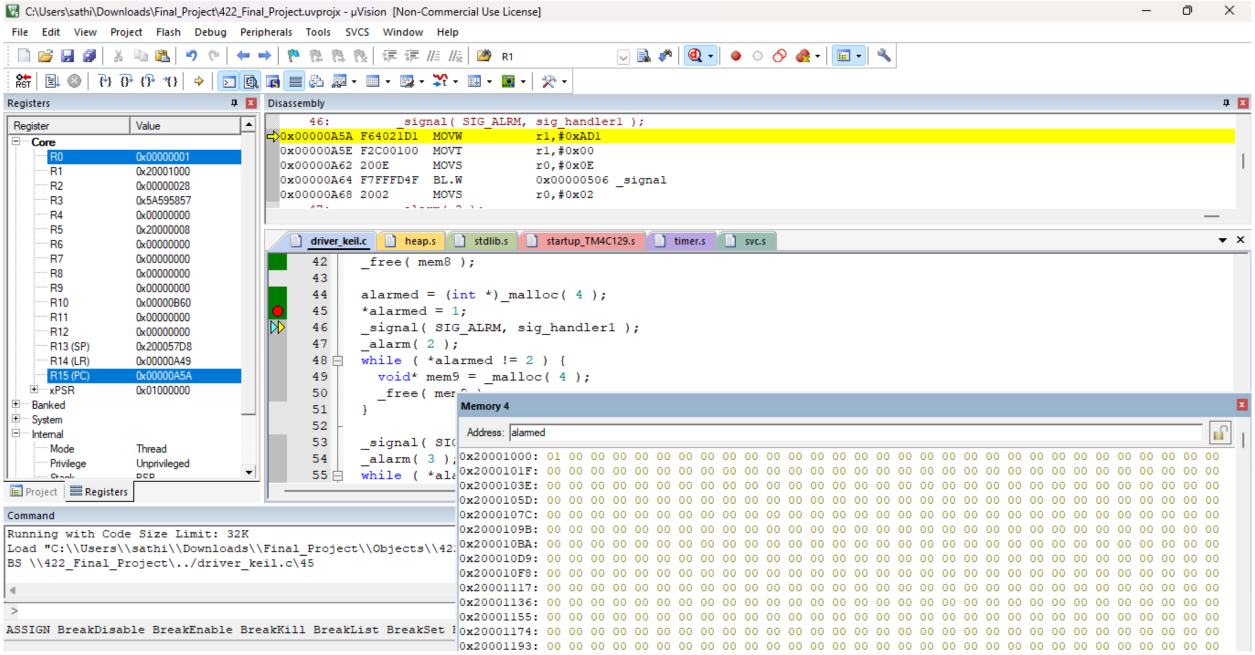
Address: 0x20006800

```
0x20006800: 21 00 20 00 40 00 00 00 80 00 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000681F: 00 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000683E: 00 00 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687C: 00 00 00 00 00 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068F8: 00 00 00 00 00 00 00 00 00 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006917: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006936: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\
BS \\422_Final_Project\../driver_keil.c\44
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSe
```

```
Simulation          t1: 0.00244708 sec     L:45 C:1      CAP NUM SCRL OVR R/W
```

*alarmed = 1;



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Project
Registers
Command
Memory 4

```
Register      Value
Core
  R0          0x00000001
  R1          0x20001000
  R2          0x00000028
  R3          0x5A595857
  R4          0x00000000
  R5          0x20000008
  R6          0x00000000
  R7          0x00000000
  R8          0x00000000
  R9          0x00000000
  R10         0x00000B60
  R11         0x00000000
  R12         0x00000000
  R13 (SP)    0x200057D8
  R14 (LR)    0x00000A49
  R15 (PC)    0x00000A5A
  xPSR        0x01000000
Banked
System
Internal
  Mode        Thread
  Privilege   Unprivileged
```

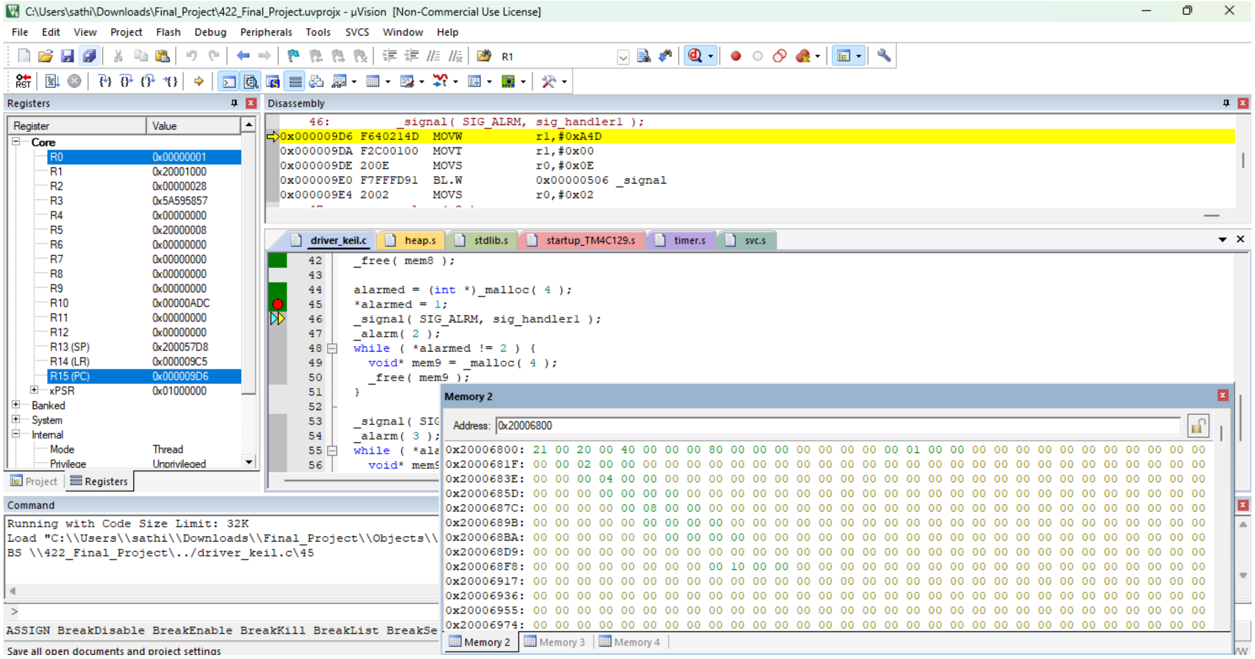
```
    46:          _signal( SIG_ALRM, sig_handler1 );
0x00000A5A F64021D1  MOVW         r1,#0xAD1
0x00000A5E F2C00100  MOVT         r1,#0x00
0x00000A62 200E      MOVS         r0,#0x0E
0x00000A64 F7FFFD4F  BL.W         0x00000506 _signal
0x00000A68 2002      MOVS         r0,#0x02
```

```
  _free( mem8 );

  alarmed = (int *)_malloc( 4 );
  *alarmed = 1;
  _signal( SIG_ALRM, sig_handler1 );
  _alarm( 2 );
  while ( *alarmed != 2 ) {
    void* mem9 = _malloc( 4 );
     _free( mer
  }

  _signal( SIC
  _alarm( 3 );
  while ( *ala
```

Address: alarmed

```
0x20001000: 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000101F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000103E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000105D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000107C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000109B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200010BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200010D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200010F8: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20001117: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20001136: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20001155: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20001174: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20001193: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\45
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]

Register	Value
Core	
R0	0x00000001
R1	0x20001000
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000ADC
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x000009C5
R15 (PC)	0x000009D6
xPSR	0x01000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
    46:             _signal( SIG_ALRM, sig_handler1 );
0x000009D6 F640214D  MOVW          r1,#0xA4D
0x000009DA F2C00100  MOVT          r1,#0x00
0x000009DE 200E      MOVS          r0,#0x0E
0x000009E0 F7FFFD91  BL.W          0x00000506 _signal
0x000009E4 2002      MOVS          r0,#0x02
```

```
  _free( mem8 );

  alarmed = (int *)_malloc( 4 );
  *alarmed = 1;
  _signal( SIG_ALRM, sig_handler1 );
  _alarm( 2 );
  while ( *alarmed != 2 ) {
    void* mem9 = _malloc( 4 );
    _free( mem9 );
  }

  _signal( SIG
  _alarm( 3 );
  while ( *ala
    void* mem9
```

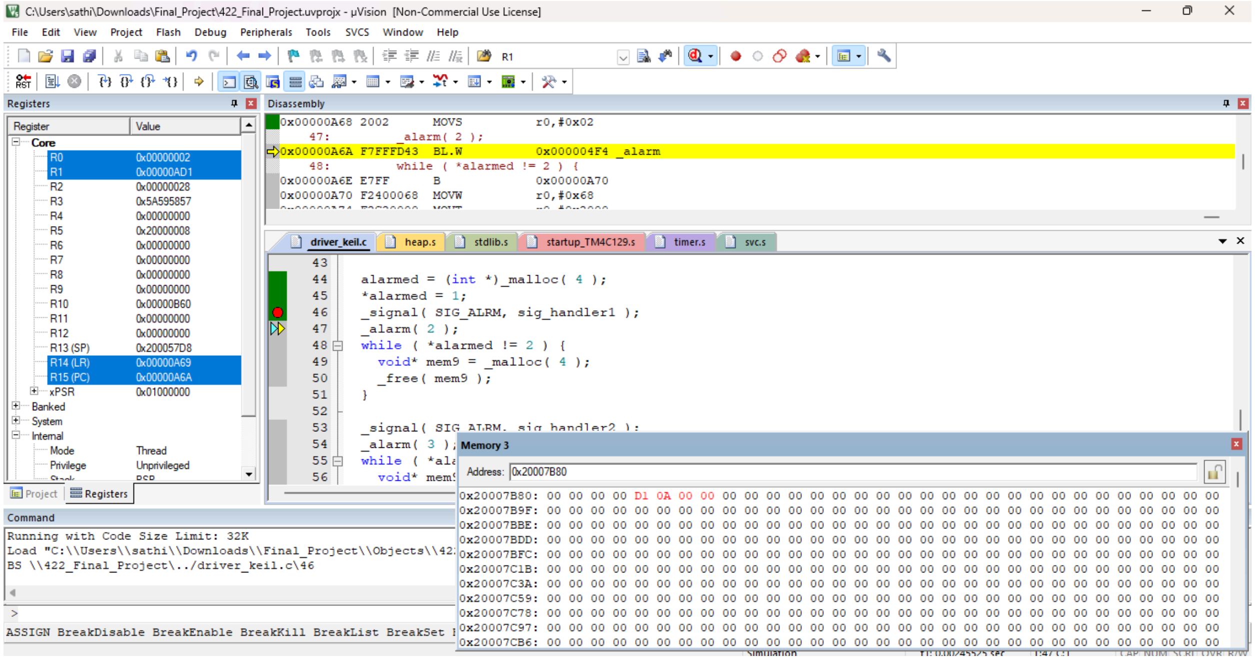
```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\
BS \\422_Final_Project\../driver_keil.c\45

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSe
```

Save all open documents and project settings

Address: 0x20006800

```
0x20006800: 21 00 20 00 40 00 00 00 80 00 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000681F: 00 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000683E: 00 00 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687C: 00 00 00 00 00 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068F8: 00 00 00 00 00 00 00 00 00 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006917: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006936: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006955: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006974: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

_signal(SIG_ALRM, sig_handler1);



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]

Register	Value
Core	
R0	0x00000002
R1	0x00000AD1
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A69
R15 (PC)	0x00000A6A
xPSR	0x01000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A68 2002      MOVS          r0,#0x02
    47:             _alarm( 2 );
0x00000A6A F7FFFD43  BL.W          0x000004F4 _alarm
    48:           while ( *alarmed != 2 ) {
0x00000A6E E7FF      B             0x00000A70
0x00000A70 F2400068  MOVW          r0,#0x68
```

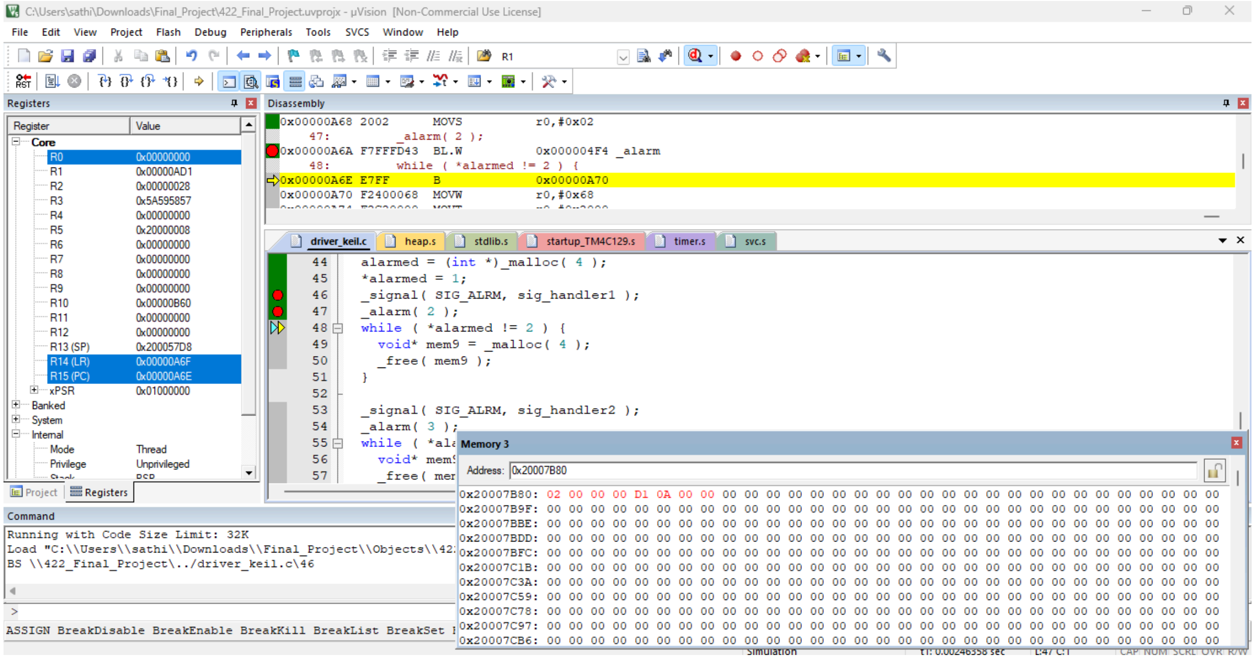
```

  alarmed = (int *)_malloc( 4 );
  *alarmed = 1;
  _signal( SIG_ALRM, sig_handler1 );
  _alarm( 2 );
  while ( *alarmed != 2 ) {
    void* mem9 = _malloc( 4 );
    _free( mem9 );
  }

  _signal( SIG_ALRM, sig_handler2 );
  _alarm( 3 );
  while ( *ala
    void* mem9
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\46

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

Address: 0x20007B80

```
0x20007B80: 00 00 00 00 D1 0A 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007B9F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BBE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BDD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BFC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C1B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C3A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C59: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C78: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C97: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007CB6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

_alarm(2);



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]

Register	Value
Core	
R0	0x00000000
R1	0x00000AD1
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A6F
R15 (PC)	0x00000A6E
xPSR	0x01000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A68 2002      MOVS          r0,#0x02
    47:          _alarm( 2 );
0x00000A6A F7FFFD43  BL.W          0x000004F4 _alarm
    48:        while ( *alarmed != 2 ) {
0x00000A6E E7FF      B             0x00000A70
0x00000A70 F2400068  MOVW          r0,#0x68
```

```
alarmed = (int *)_malloc( 4 );
*alarmed = 1;
_signal( SIG_ALRM, sig_handler1 );
_alarm( 2 );
while ( *alarmed != 2 ) {
  void* mem9 = _malloc( 4 );
  _free( mem9 );
}

_signal( SIG_ALRM, sig_handler2 );
_alarm( 3 );
while ( *ala
  void* mem
  _free( mer
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\46
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet B
```

Address: 0x20007B80

```
0x20007B80: 02 00 00 00 D1 0A 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007B9F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BBE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BDD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BFC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C1B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C3A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C59: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C78: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C97: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007CB6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

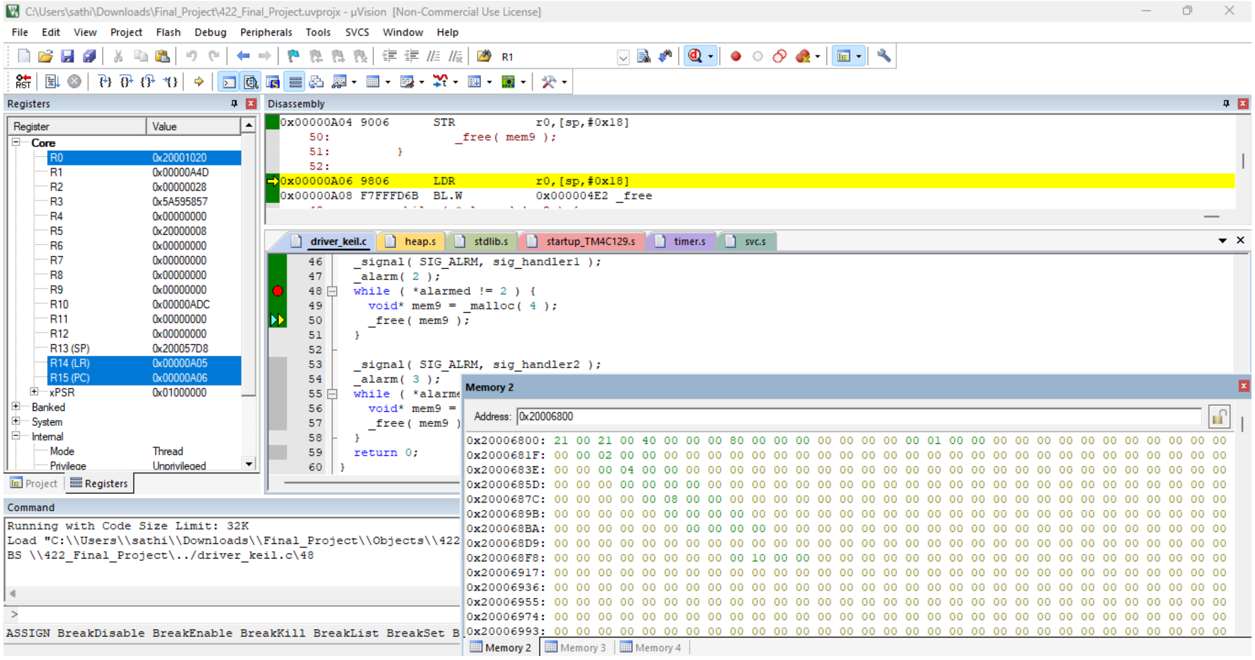
Simulation   t1: 0.00246358 sec   L:47 C:1   CAP NUM SCRL OVR R/W

while (*alarmed != 2) {

void* mem9 = _malloc(32);

_free(mem9);

}



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]

Register	Value
Core	
R0	0x20001020
R1	0x00000A4D
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000ADC
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A05
R15 (PC)	0x00000A06
xPSR	0x01000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000A04 9006      STR           r0,[sp,#0x18]
    50:                  _free( mem9 );
    51:          }
    52:
0x00000A06 9806      LDR           r0,[sp,#0x18]
0x00000A08 F7FFFD6B  BL.W          0x000004E2 _free
```

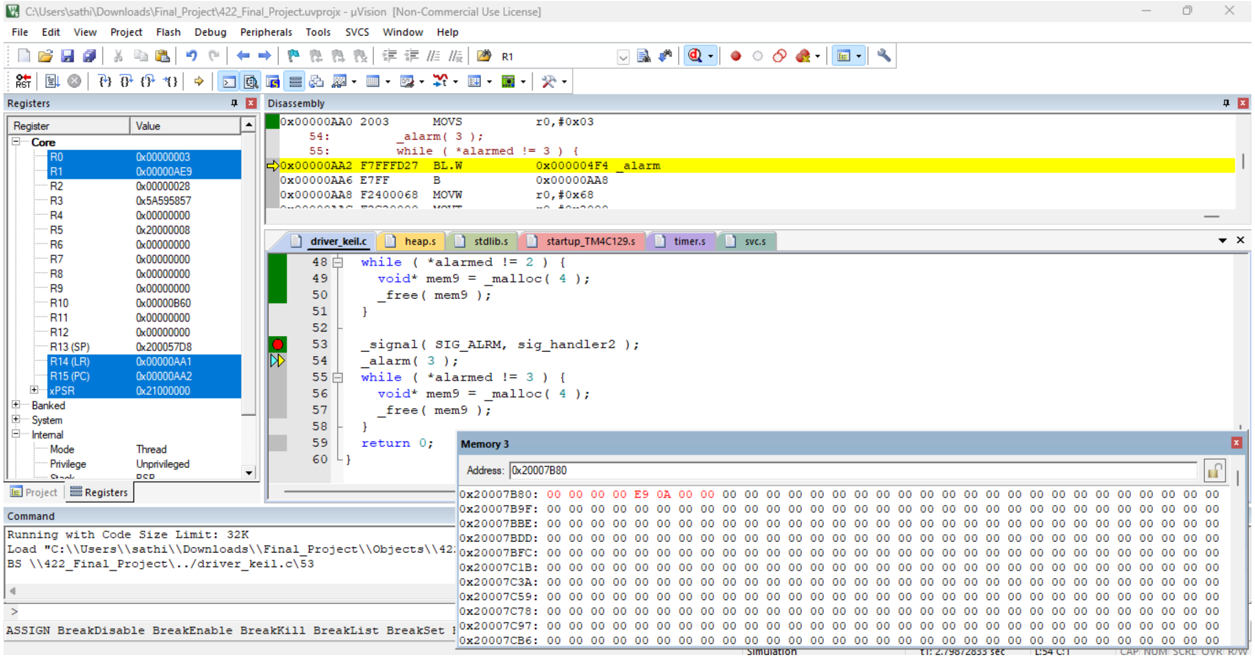
```
_signal( SIG_ALRM, sig_handler1 );
_alarm( 2 );
while ( *alarmed != 2 ) {
  void* mem9 = _malloc( 4 );
  _free( mem9 );
}

_signal( SIG_ALRM, sig_handler2 );
_alarm( 3 );
while ( *alarme
  void* mem9 =
  _free( mem9 )
}
return 0;
}
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\422
BS \\422_Final_Project\../driver_keil.c\48
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet B
```

Address: 0x20006800

```
0x20006800: 21 00 21 00 40 00 00 00 80 00 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000681F: 00 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000683E: 00 00 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687C: 00 00 00 00 00 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068F8: 00 00 00 00 00 00 00 00 00 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006917: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006936: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006955: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006974: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006993: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

_signal(SIG_ALRM, sig_handler2);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Memory 3
Project
Registers
Command

Register	Value
Core	
R0	0x00000003
R1	0x00000AE9
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000AA1
R15 (PC)	0x00000AA2
xPSR	0x21000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000AA0 2003      MOVS          r0,#0x03
    54:          _alarm( 3 );
    55:          while ( *alarmed != 3 ) {
0x00000AA2 F7FFFD27  BL.W          0x000004F4 _alarm
0x00000AA6 E7FF      B             0x00000AA8
0x00000AA8 F2400068  MOVW          r0,#0x68
```

```
while ( *alarmed != 2 ) {
  void* mem9 = _malloc( 4 );
  _free( mem9 );
}

_signal( SIG_ALRM, sig_handler2 );
_alarm( 3 );
while ( *alarmed != 3 ) {
  void* mem9 = _malloc( 4 );
  _free( mem9 );
}
return 0;
}
```

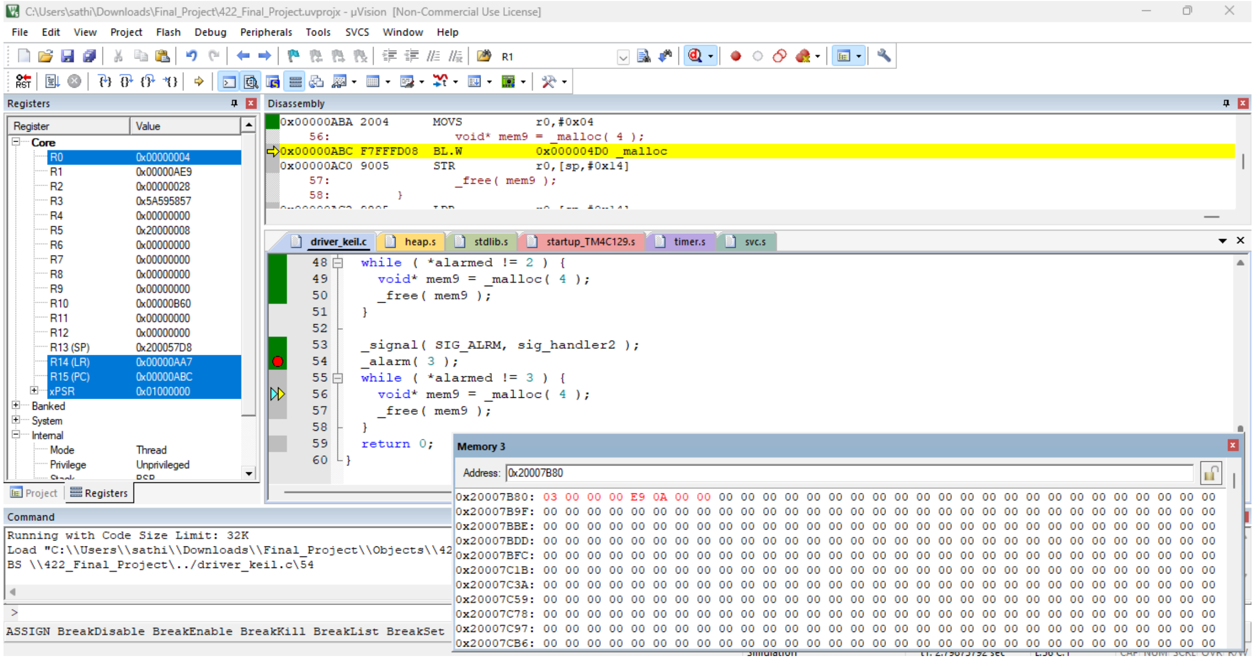
```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\53

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet B
```

Address: 0x20007B80

```
0x20007B80: 00 00 00 00 E9 0A 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007B9F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BBE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BDD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BFC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C1B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C3A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C59: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C78: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C97: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007CB6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Simulation t1: 2.79872833 sec L:54 C:1 CAP NUM SCRL OVR R/W

_alarm(3);


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Memory 3
Project
Registers
Command

Register	Value
Core	
R0	0x00000004
R1	0x00000AE9
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B60
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000AA7
R15 (PC)	0x00000ABC
xPSR	0x01000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000ABA 2004      MOVS          r0,#0x04
    56:              void* mem9 = _malloc( 4 );
0x00000ABC F7FFFD08  BL.W          0x000004D0 _malloc
0x00000AC0 9005      STR           r0,[sp,#0x14]
    57:              _free( mem9 );
    58:          }
```

```
while ( *alarmed != 2 ) {
  void* mem9 = _malloc( 4 );
  _free( mem9 );
}

_signal( SIG_ALRM, sig_handler2 );
_alarm( 3 );
while ( *alarmed != 3 ) {
  void* mem9 = _malloc( 4 );
  _free( mem9 );
}
return 0;
}
```

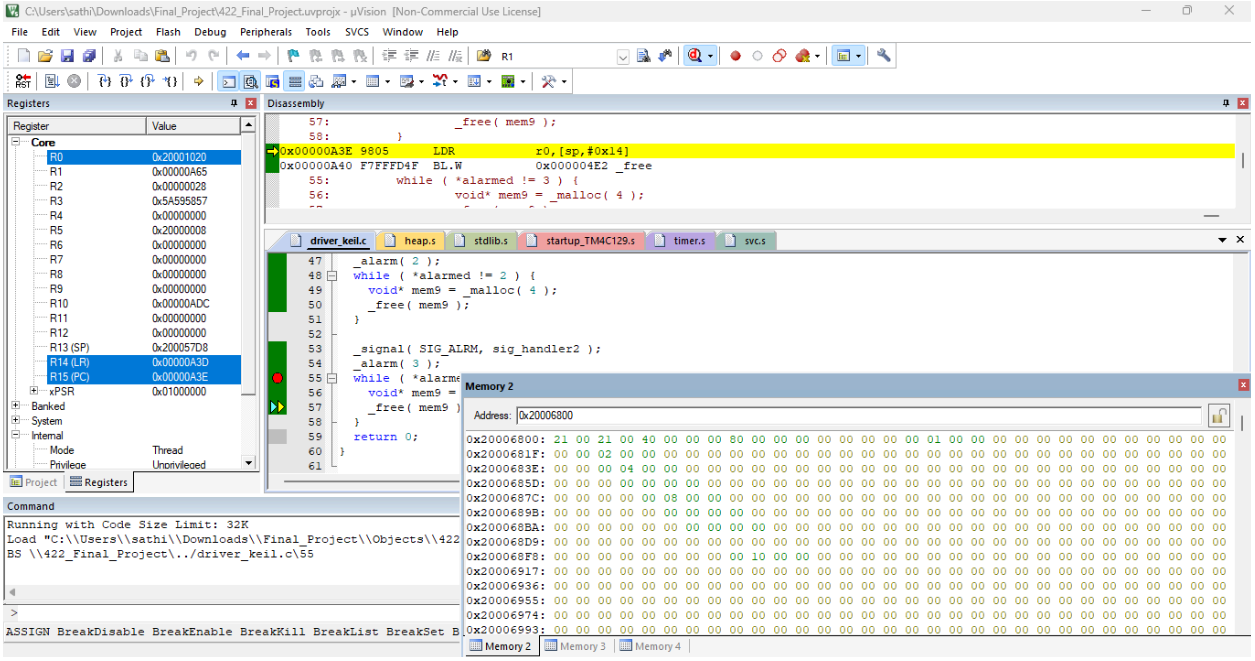
```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\54

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

Address: 0x20007B80

```
0x20007B80: 03 00 00 00 E9 0A 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007B9F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BBE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BDD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BFC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C1B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C3A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C59: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C78: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C97: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007CB6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Simulation

while (*alarmed != 3) {
void* mem9 = _malloc(4);
_free(mem9);
}


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]

Register	Value
Core	
R0	0x20001020
R1	0x00000A65
R2	0x00000028
R3	0x5A595857
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000ADC
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057D8
R14 (LR)	0x00000A3D
R15 (PC)	0x00000A3E
xPSR	0x01000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
    57:                 _free( mem9 );
    58:         }
0x00000A3E 9805      LDR           r0,[sp,#0x14]
0x00000A40 F7FFFD4F  BL.W          0x000004E2 _free
    55:         while ( *alarmed != 3 ) {
    56:                 void* mem9 = _malloc( 4 );
```

```
  _alarm( 2 );
  while ( *alarmed != 2 ) {
    void* mem9 = _malloc( 4 );
    _free( mem9 );
  }

  _signal( SIG_ALRM, sig_handler2 );
  _alarm( 3 );
  while ( *alarme
    void* mem9 =
    _free( mem9 )
  }
  return 0;
}
```

Memory 2

Address: 0x20006800

```
0x20006800: 21 00 21 00 40 00 00 00 80 00 00 00 00 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000681F: 00 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000683E: 00 00 00 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000685D: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000687C: 00 00 00 00 00 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000689B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068BA: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068D9: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200068F8: 00 00 00 00 00 00 00 00 00 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006917: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006936: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006955: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006974: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20006993: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

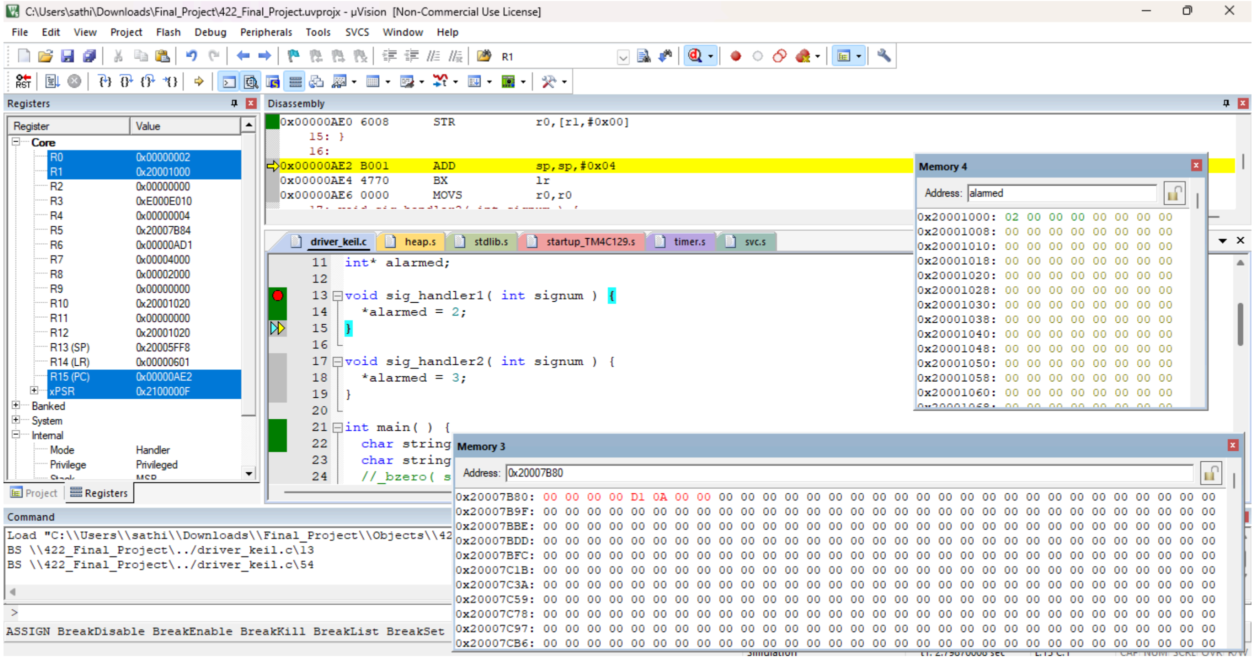
Command

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\422
BS \\422_Final_Project\../driver_keil.c\55

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet B
```

void sig_handler1(int signum) {

*alarmed = 2;

}


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]

Register	Value
Core	
R0	0x00000002
R1	0x20001000
R2	0x00000000
R3	0xE000E010
R4	0x00000004
R5	0x20007B84
R6	0x00000AD1
R7	0x00004000
R8	0x00002000
R9	0x00000000
R10	0x20001020
R11	0x00000000
R12	0x20001020
R13 (SP)	0x20005FF8
R14 (LR)	0x00000601
R15 (PC)	0x00000AE2
xPSR	0x2100000F
Banked	
System	
Internal	
Mode	Handler
Privilege	Privileged

```
0x00000AE0 6008      STR           r0,[r1,#0x00]
    15: }
    16:
0x00000AE2 B001      ADD           sp,sp,#0x04
0x00000AE4 4770      BX            lr
0x00000AE6 0000      MOVS          r0,r0
```

```
int* alarmed;

void sig_handler1( int signum ) {
  *alarmed = 2;
}

void sig_handler2( int signum ) {
  *alarmed = 3;
}

int main( ) {
  char string
  char string
  //_bzero( s
```

Memory 4

Address: alarmed

```
0x20001000: 02 00 00 00 00 00 00 00
0x20001008: 00 00 00 00 00 00 00 00
0x20001010: 00 00 00 00 00 00 00 00
0x20001018: 00 00 00 00 00 00 00 00
0x20001020: 00 00 00 00 00 00 00 00
0x20001028: 00 00 00 00 00 00 00 00
0x20001030: 00 00 00 00 00 00 00 00
0x20001038: 00 00 00 00 00 00 00 00
0x20001040: 00 00 00 00 00 00 00 00
0x20001048: 00 00 00 00 00 00 00 00
0x20001050: 00 00 00 00 00 00 00 00
0x20001058: 00 00 00 00 00 00 00 00
0x20001060: 00 00 00 00 00 00 00 00
```

Memory 3

Address: 0x20007B80

```
0x20007B80: 00 00 00 00 D1 0A 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007B9F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BBE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BDD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BFC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C1B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C3A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C59: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C78: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C97: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007CB6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

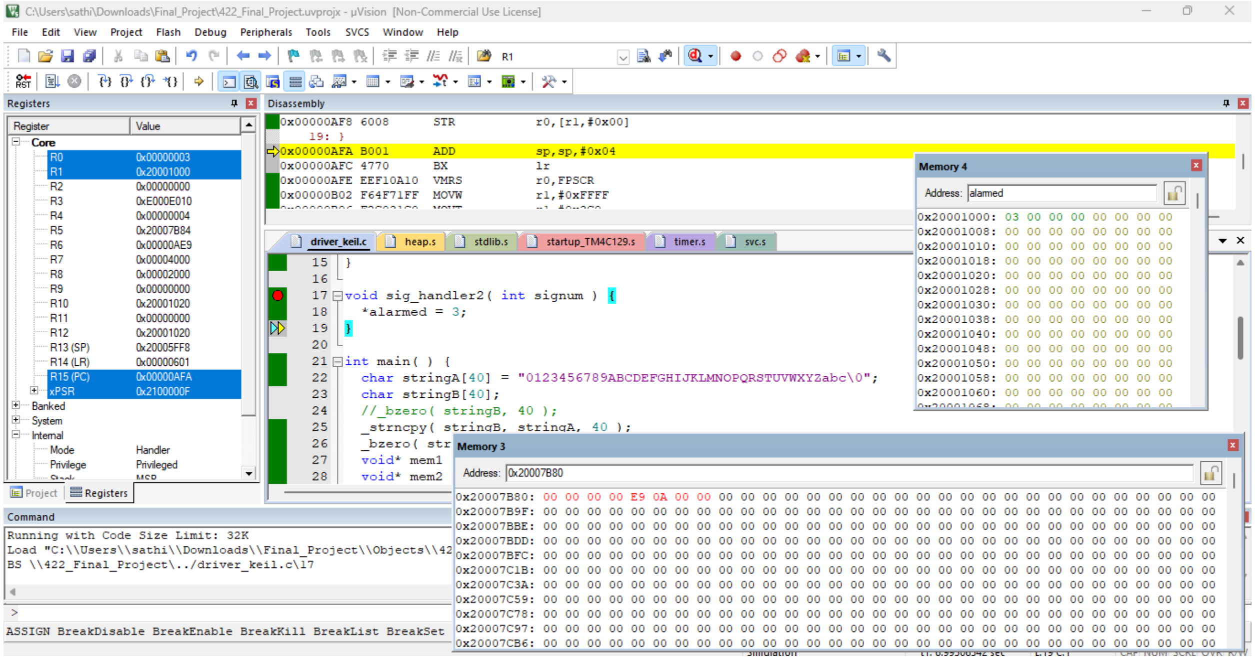
Command

```
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\13
BS \\422_Final_Project\../driver_keil.c\54

>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

void sig_handler2(int signum) {

*alarmed = 3;

```
}
```


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Project
Registers
Command

Register	Value
Core	
R0	0x00000003
R1	0x20001000
R2	0x00000000
R3	0xE000E010
R4	0x00000004
R5	0x20007B84
R6	0x00000AE9
R7	0x00004000
R8	0x00002000
R9	0x00000000
R10	0x20001020
R11	0x00000000
R12	0x20001020
R13 (SP)	0x20005FF8
R14 (LR)	0x00000601
R15 (PC)	0x00000AFA
xPSR	0x2100000F
Banked	
System	
Internal	
Mode	Handler
Privilege	Privileged

```
0x00000AF8 6008      STR       r0,[r1,#0x00]
    19: }
0x00000AFA B001      ADD       sp,sp,#0x04
0x00000AFC 4770      BX        lr
0x00000AFE EEF10A10  VMRS      r0,FPSCR
0x00000B02 F64F71FF  MOVW      r1,#0xFFFF
```

```
}

void sig_handler2( int signum ) {
  *alarmed = 3;
}

int main( ) {
  char stringA[40] = "0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabc\0";
  char stringB[40];
  //_bzero( stringB, 40 );
  _strncpy( stringB, stringA, 40 );
  _bzero( str
  void* mem1
  void* mem2
```

Memory 4

Address: alarmed

```
0x20001000: 03 00 00 00 00 00 00 00
0x20001008: 00 00 00 00 00 00 00 00
0x20001010: 00 00 00 00 00 00 00 00
0x20001018: 00 00 00 00 00 00 00 00
0x20001020: 00 00 00 00 00 00 00 00
0x20001028: 00 00 00 00 00 00 00 00
0x20001030: 00 00 00 00 00 00 00 00
0x20001038: 00 00 00 00 00 00 00 00
0x20001040: 00 00 00 00 00 00 00 00
0x20001048: 00 00 00 00 00 00 00 00
0x20001050: 00 00 00 00 00 00 00 00
0x20001058: 00 00 00 00 00 00 00 00
0x20001060: 00 00 00 00 00 00 00 00
```

Memory 3

Address: 0x20007B80

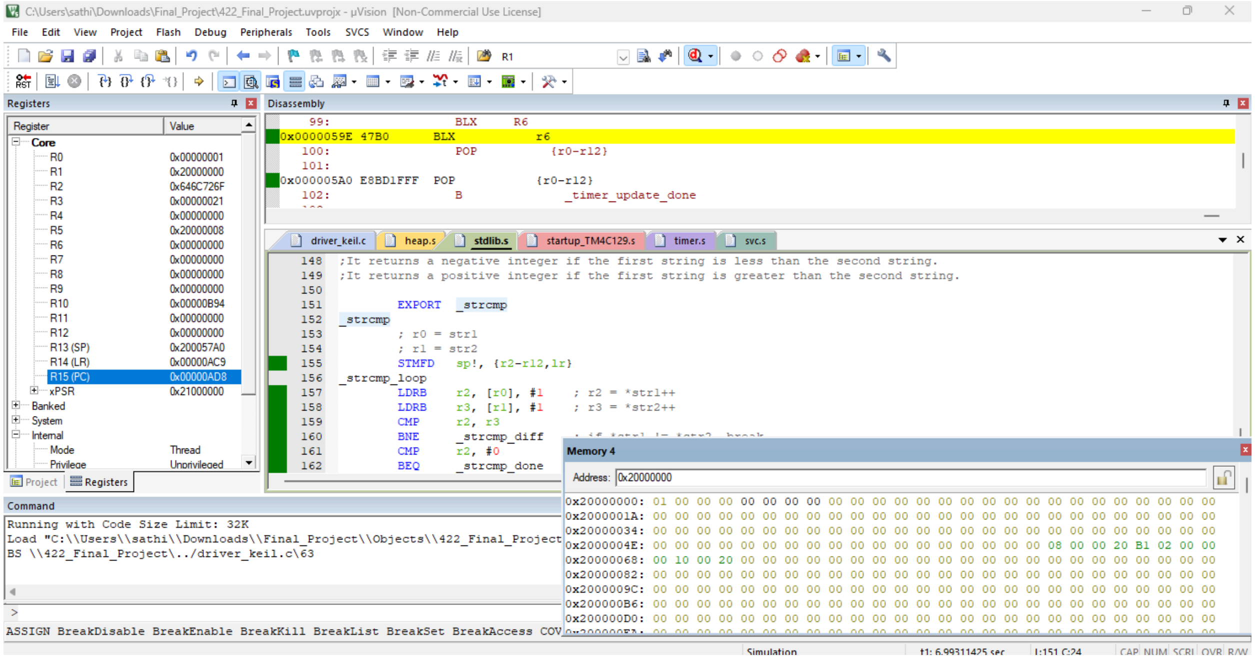
```
0x20007B80: 00 00 00 00 E9 0A 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007B9F: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BBE: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BDD: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007BFC: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C1B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C3A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C59: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C78: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007C97: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20007CB6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\42
BS \\422_Final_Project\../driver_keil.c\17
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet
```

EXTRAS CREDIT

_strcmp

```
char str1[] = "Hello, World!";
          char str2[] = "Hello, World!";
          char str3[] = "Hello, ARM!";

          int result1 = _strcmp(str1, str2); // result1 should be 0 (equal strings)
  int result2 = _strcmp(str1, str3); // result2 should be positive (str1 > str3)

    if (result1 == 0) {
                              *((int*)0x20000000) = 1;

    } else {
                              // If the strings are not equal
                              *((int*)0x20000000) = 0;
                    }
```


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Project Registers
Command
Memory 4
Simulation
CAP NUM SCRL OVR R/W

Register	Value
Core	
R0	0x00000001
R1	0x20000000
R2	0x646C726F
R3	0x00000021
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B94
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057A0
R14 (LR)	0x00000AC9
R15 (PC)	0x00000AD8
xPSR	0x21000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
    99:                 BLX      R6
0x0000059E 47B0      BLX              r6
   100:                 POP          {r0-r12}
   101:
0x000005A0 E8BD1FFF  POP          {r0-r12}
   102:                 B            _timer_update_done
```

```
;It returns a negative integer if the first string is less than the second string.
;It returns a positive integer if the first string is greater than the second string.

        EXPORT  _strcmp
_strcmp
        ; r0 = str1
        ; r1 = str2
        STMFD   sp!, {r2-r12,lr}
_strcmp_loop
        LDRB    r2, [r0], #1    ; r2 = *str1++
        LDRB    r3, [r1], #1    ; r3 = *str2++
        CMP     r2, r3
        BNE     _strcmp_diff
        CMP     r2, #0
        BEQ     _strcmp_done
```

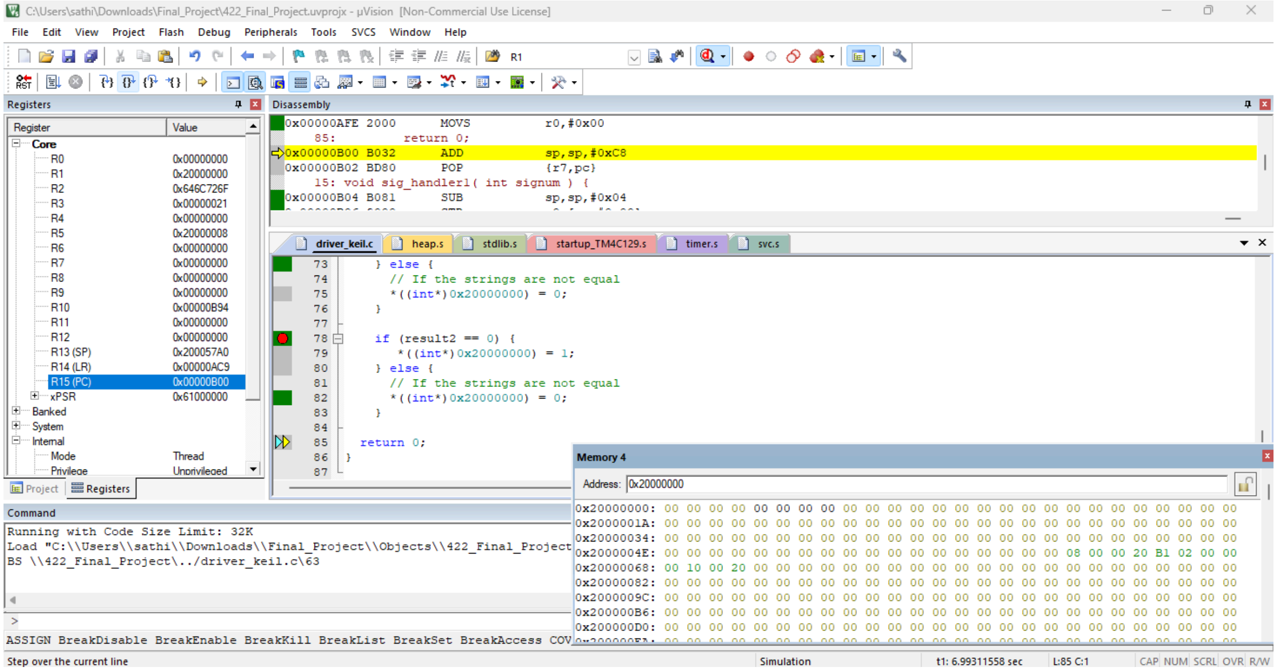
```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\422_Final_Project
BS \\422_Final_Project\../driver_keil.c\63
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COV
```

Address: 0x20000000

```
0x20000000: 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000001A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000034: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000004E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 08 00 00 20 B1 02 00 00
0x20000068: 00 10 00 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000082: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000009C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200000B6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200000D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

t1: 6.99311425 sec L:151 C:24

```
if (result2 == 0) {
      *((int*)0x20000000) = 1;
} else {
        // If the strings are not equal
         *((int*)0x20000000) = 0;
}
```


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Project Registers
Command
Memory 4
Simulation
CAP NUM SCRL OVR R/W

Register	Value
Core	
R0	0x00000000
R1	0x20000000
R2	0x646C726F
R3	0x00000021
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000B94
R11	0x00000000
R12	0x00000000
R13 (SP)	0x200057A0
R14 (LR)	0x00000AC9
R15 (PC)	0x00000B00
xPSR	0x61000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000AFE 2000      MOVS         r0,#0x00
    85:         return 0;
0x00000B00 B032      ADD          sp,sp,#0xC8
0x00000B02 BD80      POP          {r7,pc}
    15: void sig_handler1( int signum ) {
0x00000B04 B081      SUB          sp,sp,#0x04
```

```
    } else {
      // If the strings are not equal
      *((int*)0x20000000) = 0;
    }

    if (result2 == 0) {
      *((int*)0x20000000) = 1;
    } else {
      // If the strings are not equal
      *((int*)0x20000000) = 0;
    }

  return 0;
}
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\422_Final_Project
BS \\422_Final_Project\../driver_keil.c\63
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COV
```

Address: 0x20000000

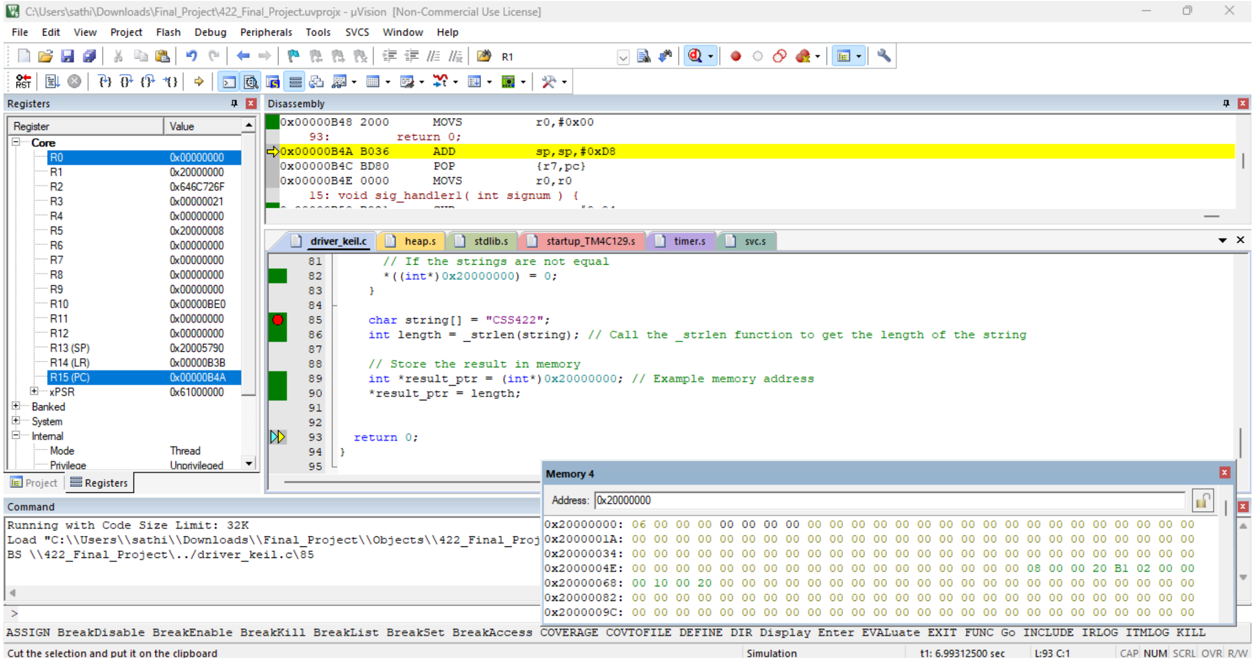
```
0x20000000: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000001A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000034: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000004E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 08 00 00 20 B1 02 00 00
0x20000068: 00 10 00 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000082: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000009C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200000B6: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200000D0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Step over the current line

t1: 6.99311558 sec L:85 C:1

_strlen

```
char string[] = "CSS422";
    int length = _strlen(string); // Call the _strlen function to get the length of the string

    // Store the result in memory
    int *result_ptr = (int*)0x20000000; // Example memory address
    *result_ptr = length;
```


C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c
heap.s
stdlib.s
startup_TM4C129.s
timer.s
svc.s
Project
Registers
Command
Memory 4

Register	Value
Core	
R0	0x00000000
R1	0x20000000
R2	0x646C726F
R3	0x00000021
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000BE0
R11	0x00000000
R12	0x00000000
R13 (SP)	0x20005790
R14 (LR)	0x00000B3B
R15 (PC)	0x00000B4A
xPSR	0x61000000
Banked	
System	
Internal	
Mode	Thread
Privilege	Unprivileged

```
0x00000B48 2000      MOVS         r0,#0x00
    93:         return 0;
0x00000B4A B036      ADD          sp,sp,#0xD8
0x00000B4C BD80      POP          {r7,pc}
0x00000B4E 0000      MOVS         r0,r0
    15: void sig_handler1( int signum ) {
```

```
        // If the strings are not equal
        *((int*)0x20000000) = 0;
      }

    char string[] = "CSS422";
    int length = _strlen(string); // Call the _strlen function to get the length of the string

    // Store the result in memory
    int *result_ptr = (int*)0x20000000; // Example memory address
    *result_ptr = length;


  return 0;
}
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\422_Final_Proj
BS \\422_Final_Project\../driver_keil.c\85
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COVERAGE COVTOFILE DEFINE DIR Display Enter EVALuate EXIT FUNC Go INCLUDE IRLOG ITMLOG KILL
```

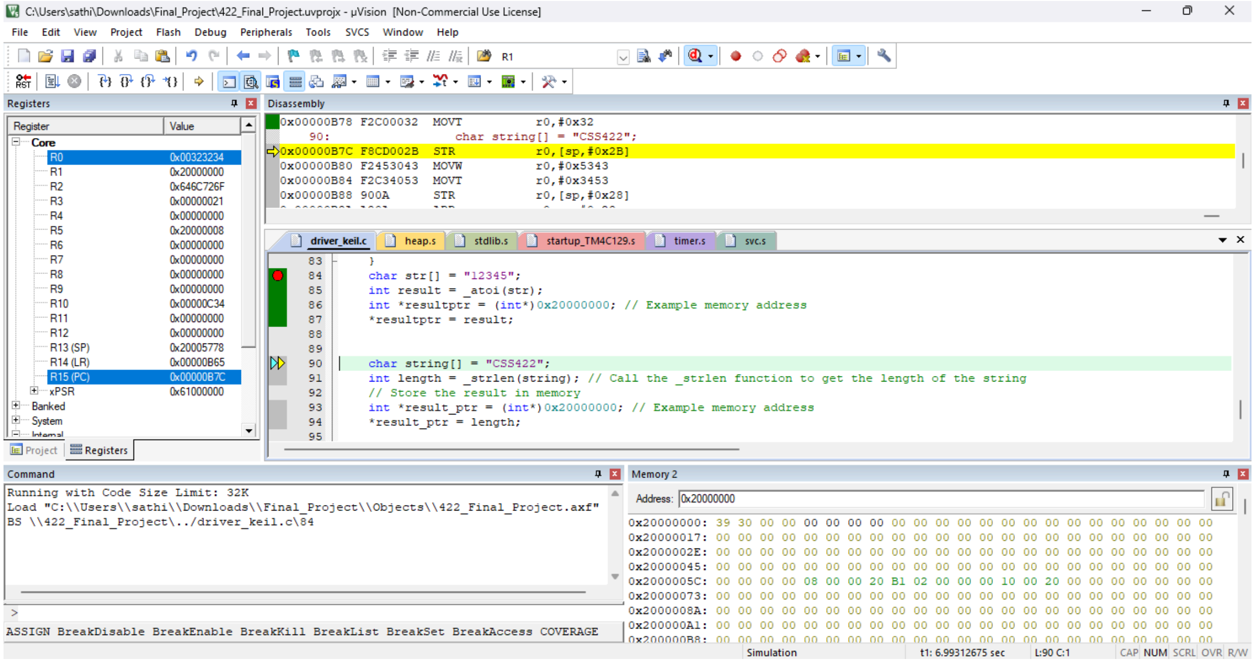
Address: 0x20000000

```
0x20000000: 06 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000001A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000034: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000004E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 08 00 00 20 B1 02 00 00
0x20000068: 00 10 00 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000082: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000009C: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Cut the selection and put it on the clipboard   Simulation   t1: 6.99312500 sec   L:93 C:1   CAP NUM SCRL OVR R/W

_atoi

```
char str[] = "12345";
int result = _atoi(str);
int *resultptr = (int*)0x20000000; // Example memory address
*resultptr = result;
```



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
R1
Registers
Disassembly
driver_keil.c heap.s stdlib.s startup_TM4C129.s timer.s svc.s
Project Registers
Command
Memory 2
Simulation t1: 6.99312675 sec L:90 C:1 CAP NUM SCRL OVR R/W

Register	Value
Core	
R0	0x00323234
R1	0x20000000
R2	0x646C726F
R3	0x00000021
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000C34
R11	0x00000000
R12	0x00000000
R13 (SP)	0x20005778
R14 (LR)	0x00000B65
R15 (PC)	0x00000B7C
xPSR	0x61000000
Banked	
System	
Internal	

```
0x00000B78 F2C00032  MOVT          r0,#0x32
    90:                char string[] = "CSS422";
0x00000B7C F8CD002B  STR           r0,[sp,#0x2B]
0x00000B80 F2453043  MOVW          r0,#0x5343
0x00000B84 F2C34053  MOVT          r0,#0x3453
0x00000B88 900A      STR           r0,[sp,#0x28]
```

```
    }
    char str[] = "12345";
    int result = _atoi(str);
    int *resultptr = (int*)0x20000000; // Example memory address
    *resultptr = result;


    char string[] = "CSS422";
    int length = _strlen(string); // Call the _strlen function to get the length of the string
    // Store the result in memory
    int *result_ptr = (int*)0x20000000; // Example memory address
    *result_ptr = length;
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\422_Final_Project.axf"
BS \\422_Final_Project\../driver_keil.c\84
```

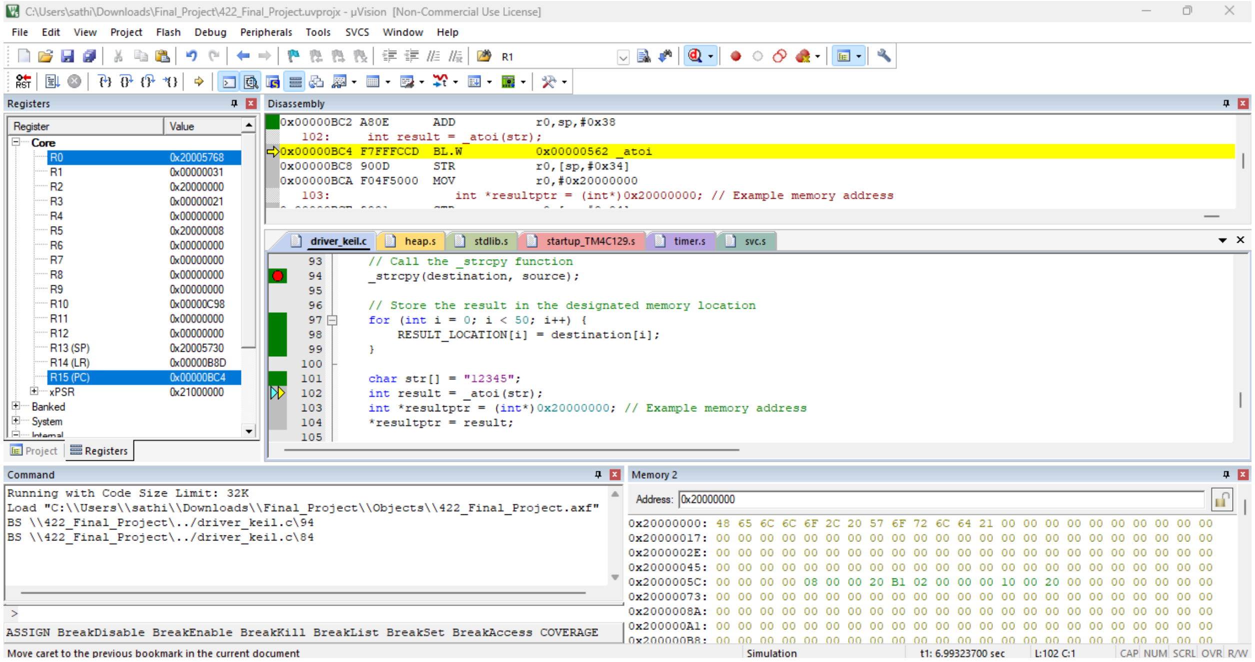
```
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COVERAGE
```

Address: 0x20000000

```
0x20000000: 39 30 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000017: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000002E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000045: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000005C: 00 00 00 00 08 00 00 20 B1 02 00 00 00 10 00 20 00 00 00 00 00 00 00
0x20000073: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000008A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200000A1: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200000B8: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

_strcpy

```
// Define source string
char source[] = "Hello, World!";

// Define destination string
char destination[50]; // Make sure it's large enough to hold the source string

// Call the _strcpy function
 _strcpy(destination, source);

 // Store the result in the designated memory location
for (int i = 0; i < 50; i++) {
    RESULT_LOCATION[i] = destination[i];
}
```



C:\Users\sathi\Downloads\Final_Project\422_Final_Project.uvprojx - µVision [Non-Commercial Use License]

Register	Value
Core	
R0	0x20005768
R1	0x00000031
R2	0x20000000
R3	0x00000021
R4	0x00000000
R5	0x20000008
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000C98
R11	0x00000000
R12	0x00000000
R13 (SP)	0x20005730
R14 (LR)	0x00000B8D
R15 (PC)	0x00000BC4
xPSR	0x21000000
Banked	
System	
Internal	

```
0x00000BC2 A80E      ADD           r0,sp,#0x38
   102:      int result = _atoi(str);
0x00000BC4 F7FFFCCD  BL.W          0x00000562 _atoi
0x00000BC8 900D      STR           r0,[sp,#0x34]
0x00000BCA F04F5000  MOV           r0,#0x20000000
   103:          int *resultptr = (int*)0x20000000; // Example memory address
```

driver_keil.c | heap.s | stdlib.s | startup_TM4C129.s | timer.s | svc.s

```
 93      // Call the _strcpy function
 94      _strcpy(destination, source);
 95
 96      // Store the result in the designated memory location
 97      for (int i = 0; i < 50; i++) {
 98          RESULT_LOCATION[i] = destination[i];
 99      }
100
101      char str[] = "12345";
102      int result = _atoi(str);
103      int *resultptr = (int*)0x20000000; // Example memory address
104      *resultptr = result;
105
```

```
Running with Code Size Limit: 32K
Load "C:\\Users\\sathi\\Downloads\\Final_Project\\Objects\\422_Final_Project.axf"
BS \\422_Final_Project\../driver_keil.c\94
BS \\422_Final_Project\../driver_keil.c\84
```

```
>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COVERAGE
```

Address: 0x20000000

```
0x20000000: 48 65 6C 6C 6F 2C 20 57 6F 72 6C 64 21 00 00 00 00 00 00 00 00 00 00
0x20000017: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000002E: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x20000045: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000005C: 00 00 00 00 08 00 00 20 B1 02 00 00 00 10 00 20 00 00 00 00 00 00 00
0x20000073: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x2000008A: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200000A1: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x200000B8: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Move caret to the previous bookmark in the current document | Simulation | t1: 6.99323700 sec | L:102 C:1 | CAP NUM SCRL OVR R/W