KLE TECHNOLOGICAL UNIVERSITY | Belagavi Campus

Creating Value, Leveraging Knowledge

DR. M. S. SHESHGIRI COLLEGE OF ENGINEERING AND TECHNOLOGY

GROUP-15

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Problem statement:

Write C program with three tasks,having task 1 waiting for an even from task three for a duration and flag bits of 0xf000 and 0x0003.

Under the Guidance of

Dr.Swati M

Guide Signature

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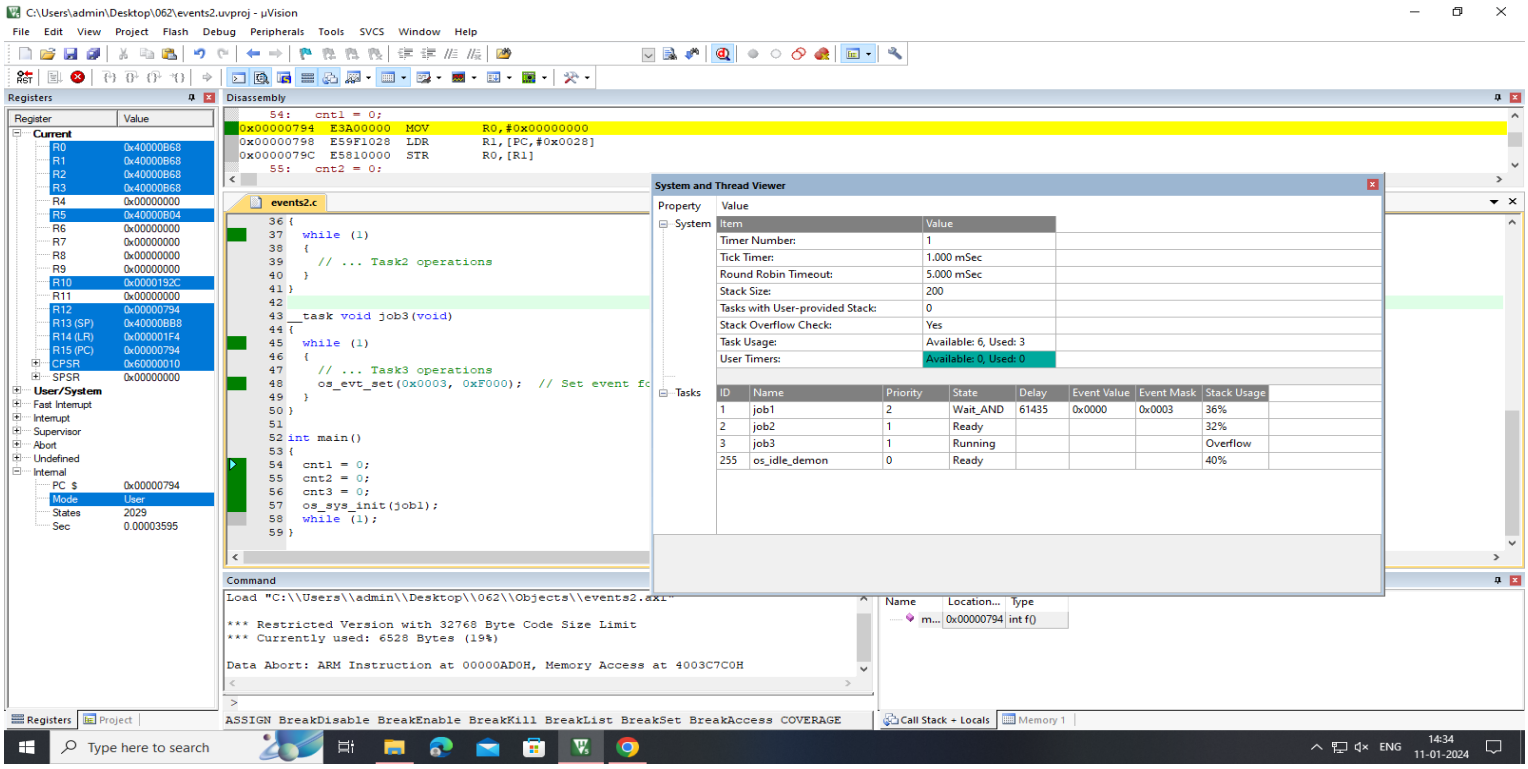
KLE Technological University's Dr. M. S. Sheshgiri College of Engineering and Technology, Belagavi

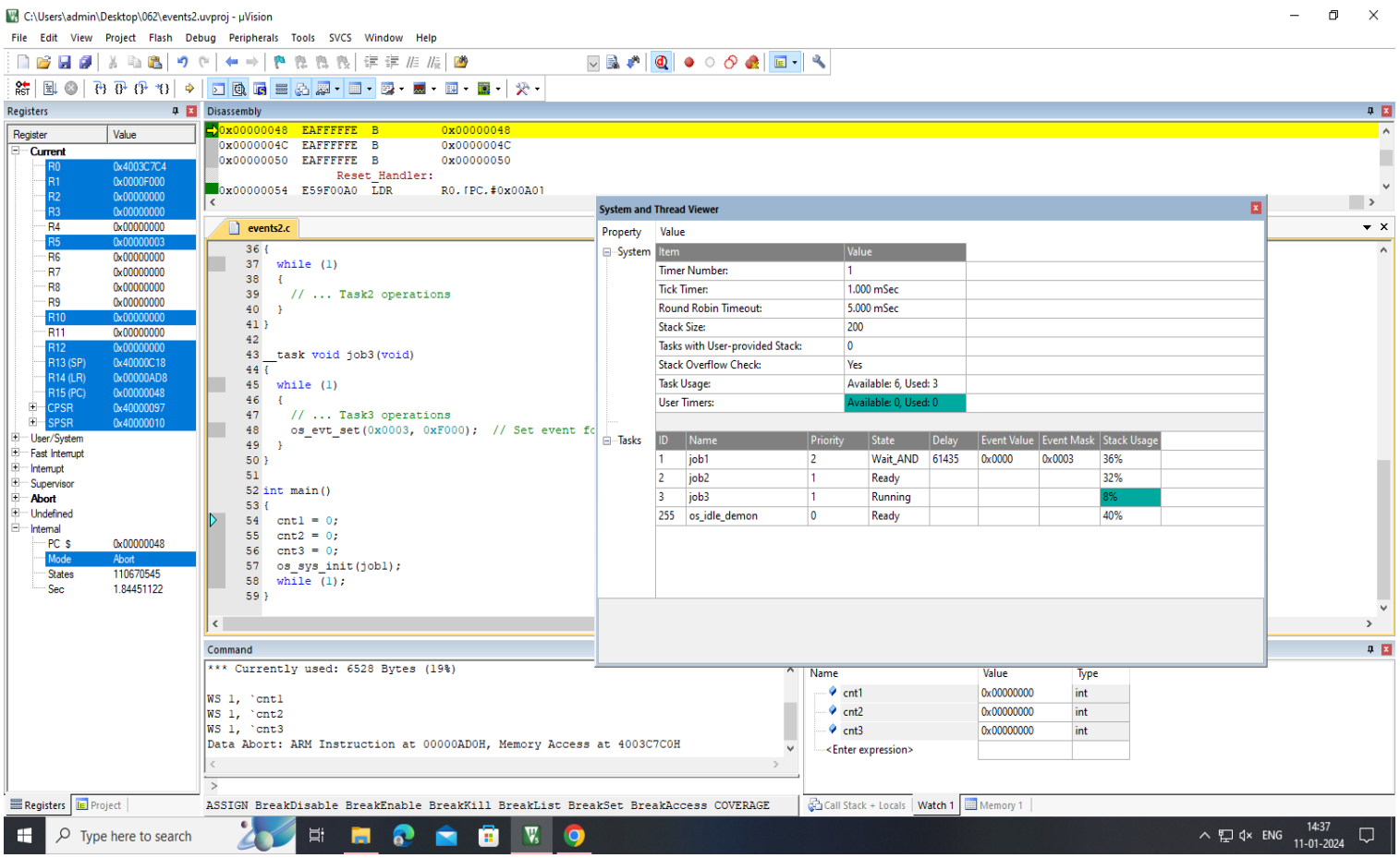
Code

```
#include <rtl.h>
#include <lpc21xx.h>
#include <stdio.h>

OS_TID tsk1, tsk2, tsk3;
OS_RESULT RE1, RE3;
```

```
int cnt1, cnt2, cnt3, i;

__task void job1(void);
__task void job2(void);
__task void job3(void);

__task void job1(void)
{
  os_tsk_prio_self(2);
  tsk1 = os_tsk_self();
  os_tsk_create(job2, 1);
  os_tsk_create(job3, 1);

  while (1)
  {
    RE1 = os_evt_wait_and(0x0003, 0xF000);  // Wait for event from task3, flags 0xF000 and 0x0003, for 10 ticks
    if (RE1 == OS_R_EVT)
    {
      for (i = 0; i < 15; i++)
      {
        cnt1++;
       // ... Task1 actions after receiving the event
      }
      os_dly_wait(0x03e8);
    }
  }
}

__task void job2(void)
{
  while (1)
  {
    // ... Task2 operations
  }
}

__task void job3(void)
{
  while (1)
  {
    // ... Task3 operations
    os_evt_set(0x0003, 0xF000);  // Set event for task1 with flags 0xF000 and 0x0003
  }
}

int main()
{
  cnt1 = 0;
  cnt2 = 0;
  cnt3 = 0;
  os_sys_init(job1);
  while (1);
}
```

Output


C:\Users\admin\Desktop\062\events2.uvproj - µVision
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
Registers
Register Value
Current
R0 0x40000B68
R1 0x40000B68
R2 0x40000B68
R3 0x40000B68
R4 0x00000000
R5 0x40000B04
R6 0x00000000
R7 0x00000000
R8 0x00000000
R9 0x00000000
R10 0x0000192C
R11 0x00000000
R12 0x00000794
R13 (SP) 0x40000BB8
R14 (LR) 0x000001F4
R15 (PC) 0x00000794
CPSR 0x60000010
SPSR 0x00000000
User/System
Fast Interrupt
Interrupt
Supervisor
Abort
Undefined
Internal
PC $ 0x00000794
Mode User
States 2029
Sec 0.00003595
Disassembly
54: cnt1 = 0;
0x00000794 E3A00000 MOV R0,#0x00000000
0x00000798 E59F1028 LDR R1,[PC,#0x0028]
0x0000079C E5810000 STR R0,[R1]
55: cnt2 = 0;
events2.c
36 {
37 while (1)
38 {
39 // ... Task2 operations
40 }
41 }
42
43 __task void job3(void)
44 {
45 while (1)
46 {
47 // ... Task3 operations
48 os_evt_set(0x0003, 0xF000); // Set event fc
49 }
50 }
51
52 int main()
53 {
54 cnt1 = 0;
55 cnt2 = 0;
56 cnt3 = 0;
57 os_sys_init(job1);
58 while (1);
59 }
System and Thread Viewer
Property Value
System
Item Value
Timer Number: 1
Tick Timer: 1.000 mSec
Round Robin Timeout: 5.000 mSec
Stack Size: 200
Tasks with User-provided Stack: 0
Stack Overflow Check: Yes
Task Usage: Available: 6, Used: 3
User Timers: Available: 0, Used: 0
Tasks
ID Name Priority State Delay Event Value Event Mask Stack Usage
1 job1 2 Wait_AND 61435 0x0000 0x0003 36%
2 job2 1 Ready 32%
3 job3 1 Running Overflow
255 os_idle_demon 0 Ready 40%
Command
Load "C:\\Users\\admin\\Desktop\\062\\Objects\\events2.axf"
*** Restricted Version with 32768 Byte Code Size Limit
*** Currently used: 6528 Bytes (19%)
Data Abort: ARM Instruction at 00000AD0H, Memory Access at 4003C7C0H
Name Location... Type
m... 0x00000794 int f()
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COVERAGE
Registers Project
Call Stack + Locals Memory 1
Type here to search
ENG 14:34 11-01-2024


C:\Users\admin\Desktop\062\events2.uvproj - µVision
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
Registers
Register Value
Current
R0 0x4003C7C4
R1 0x0000F000
R2 0x00000000
R3 0x00000000
R4 0x00000000
R5 0x00000003
R6 0x00000000
R7 0x00000000
R8 0x00000000
R9 0x00000000
R10 0x00000000
R11 0x00000000
R12 0x00000000
R13 (SP) 0x40000C18
R14 (LR) 0x00000AD8
R15 (PC) 0x00000048
CPSR 0x40000097
SPSR 0x40000010
User/System
Fast Interrupt
Interrupt
Supervisor
Abort
Undefined
Internal
PC $ 0x00000048
Mode Abort
States 110670545
Sec 1.84451122
Disassembly
0x00000048 EAFFFFFE B 0x00000048
0x0000004C EAFFFFFE B 0x0000004C
0x00000050 EAFFFFFE B 0x00000050
Reset_Handler:
0x00000054 E59F00A0 LDR R0,[PC,#0x00A0]
events2.c
36 {
37 while (1)
38 {
39 // ... Task2 operations
40 }
41 }
42
43 __task void job3(void)
44 {
45 while (1)
46 {
47 // ... Task3 operations
48 os_evt_set(0x0003, 0xF000); // Set event fc
49 }
50 }
51
52 int main()
53 {
54 cnt1 = 0;
55 cnt2 = 0;
56 cnt3 = 0;
57 os_sys_init(job1);
58 while (1);
59 }
System and Thread Viewer
Property Value
System
Item Value
Timer Number: 1
Tick Timer: 1.000 mSec
Round Robin Timeout: 5.000 mSec
Stack Size: 200
Tasks with User-provided Stack: 0
Stack Overflow Check: Yes
Task Usage: Available: 6, Used: 3
User Timers: Available: 0, Used: 0
Tasks
ID Name Priority State Delay Event Value Event Mask Stack Usage
1 job1 2 Wait_AND 61435 0x0000 0x0003 36%
2 job2 1 Ready 32%
3 job3 1 Running 8%
255 os_idle_demon 0 Ready 40%
Command
*** Currently used: 6528 Bytes (19%)
WS 1, `cnt1
WS 1, `cnt2
WS 1, `cnt3
Data Abort: ARM Instruction at 00000AD0H, Memory Access at 4003C7C0H
Name Value Type
cnt1 0x00000000 int
cnt2 0x00000000 int
cnt3 0x00000000 int
<Enter expression>
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COVERAGE
Registers Project
Call Stack + Locals Watch 1 Memory 1
Type here to search
ENG 14:37 11-01-2024