KLE TECH KLE TECHNOLOGICAL UNIVERSITY | Belagavi Campus
Creating Value, Leveraging Knowledge
DR. M. S. SHESHGIRI COLLEGE OF ENGINEERING AND TECHNOLOGY

GROUP-08

Review - 01

NAME	USN
Anusha Karki	02FE21BEC010
Audumbar Kalbhairav	02FE21BEC015
Manjunath Balekundri	02FE21BEC048
Mansi Dandin	02FE21BEC049

Under the Guidance of Prof. Vidyadhar Dodamani
Guide Signature :

Problem statement:

Round-robin --- Write a C program to demonstrate the concept of ROUND ROBIN task switching mechanisms for 3 tasks.
1st Task- Seven segment-- 0 to 9
2nd Task- DC motor anti-clockwise
3rd Task- UART 11 to 20 respectively.

Code:

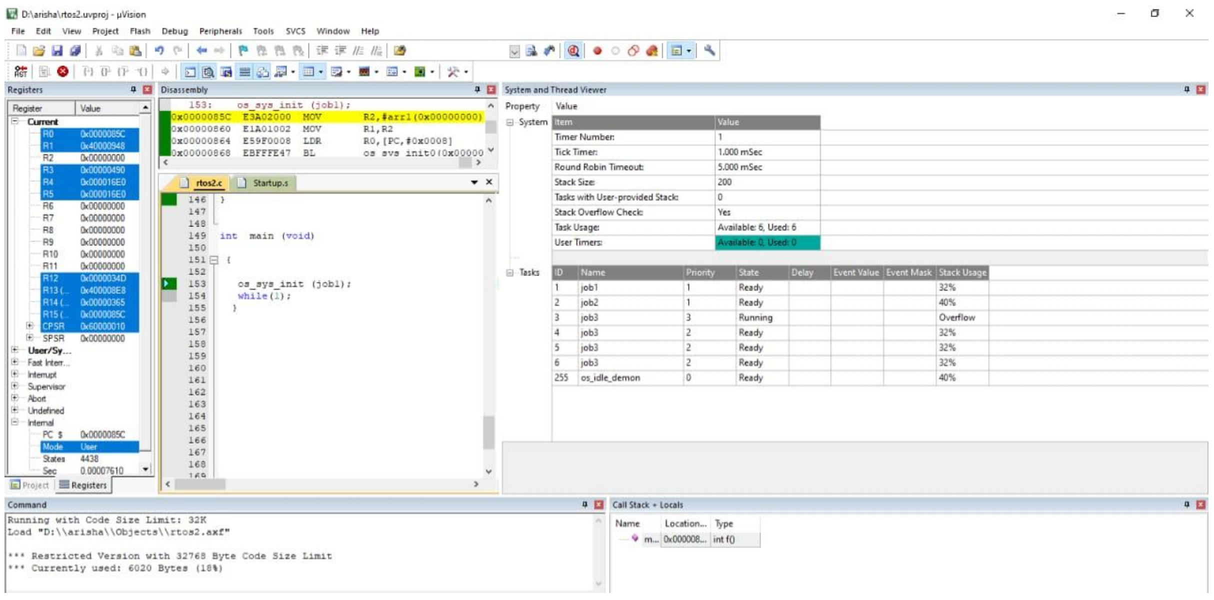
```
 #include <lpc21xx.h>

#include <rtl.h>

#include <stdio.h>


void sev(void);

void lcd(void);

void cmd(unsigned int);

void data(unsigned int);
void delay(unsigned int);

void delay1(void);


void serial(void);

unsigned char mg;/**/


void init_serial(void);

unsigned int counter1, i;

char arr1[20];


void uart_init(void);

unsigned int b;

unsigned char *ptr;

unsigned char arr[] = "11 12 13 14 15 16 17 18 19 20";

unsigned int Disp[16] = {0X003F0000, 0X00060000, 0X005B0000, 0X004F0000,
0X00660000,

                         0X006D0000, 0X007D0000, 0X00070000, 0X007F0000, 0X006F0000};

void clock_wise(void);


unsigned int j=0;

__task void job1 (void);


__task void job2 (void);


__task void job3 (void);
__task void job1 (void)
{

  os_tsk_create (job2, 0);   /* Create task 2 and mark it as ready */

                /* loop forever */
while(1)
{
    sev()  ;

}

}


__task void job2 (void)
{
 os_tsk_create(job3,2);
IO0DIR= 0X00000900;
IO0SET= 0X00000100;
 while(1)
 {
 clock_wise();
 for(j=0;j<400000;j++);
 for(j=0;j<400000;j++);

             sev();
}

}




void sev(void)

{

            while(1)

{

uart_init();

ptr = arr;

while(*ptr != '\0' )

{

U0THR = *ptr++;

while(!(U0LSR & 0x20)==0x20);

for ( b=0; b<=600; b++);

}

for ( b=0; b<=60000; b++);

for ( b=0; b<=60000; b++);

for ( b=0; b<=60000; b++);

for ( b=0; b<=60000; b++);

job3();

}



}
```

```
__task void job3 (void)

{

            os_tsk_prio_self(3);

    IODIR0 = 0x0ff0000;

    IOSET0 = 0xf0000000;

    for (i = 0; i < 10; i++) {

        IOSET0 = Disp[i];

        delay1();


        IOCLR0 = 0x00ff0000;

                                delay1();


                                delay1();


                                delay1();


    }

                        job2();


}







void uart_init(void)

{

            PINSEL0 = 0x00000005;
```

```
  U0LCR = 0x83;

  U0DLL = 0x61;

  U0LCR = 0x03;

  U0IER = 0x01;

}



void delay1(void)

{

unsigned long int j;

for(j=0;j<65000;j++);


}



            void clock_wise(void)

{

IO0CLR = 0x00000100;

 for(j=0;j<1000000;j++);

             for(j=0;j<1000000;j++);

             for(j=0;j<1000000;j++);

             for(j=0;j<1000000;j++);

 IO0SET = 0X00000900;

for(j=0;j<1000000;j++);

for(j=0;j<1000000;j++);

for(j=0;j<1000000;j++);

}
```

```
int  main (void)

 {

   os_sys_init (job1);
   while(1);
  }
```

OUTPUT:



D:\arisha\rtos2.uvproj - µVision

Registers

Register	Value
Current	
R0	0x0000085C
R1	0x40000948
R2	0x00000000
R3	0x00000490
R4	0x000016E0
R5	0x000016E0
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000000
R11	0x00000000
R12	0x0000034D
R13 (...	0x400008E8
R14 (...	0x00000365
R15 (...	0x0000085C
CPSR	0x60000010
SPSR	0x00000000
User/Sy...	
Fast Interr...	
Interrupt	
Supervisor	
Abort	
Undefined	
Internal	
PC $	0x0000085C
Mode	User
States	4438
Sec	0.00007610

Disassembly

```
   153:     os_sys_init (job1);
0x0000085C  E3A02000  MOV       R2,#arr1(0x00000000)
0x00000860  E1A01002  MOV       R1,R2
0x00000864  E59F0008  LDR       R0,[PC,#0x0008]
0x00000868  EBFFFE47  BL        os sys init0(0x00000
```

rtos2.c | Startup.s

```
}


int  main (void)

 {

   os_sys_init (job1);
   while(1);
  }
```

System and Thread Viewer

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: 6
User Timers:	Available: 0, Used: 0

Tasks

ID	Name	Priority	State	Delay	Event Value	Event Mask	Stack Usage
1	job1	1	Ready				32%
2	job2	1	Ready				40%
3	job3	3	Running				Overflow
4	job3	2	Ready				32%
5	job3	2	Ready				32%
6	job3	2	Ready				32%
255	os_idle_demon	0	Ready				40%

Command

```
Running with Code Size Limit: 32K
Load "D:\\arisha\\Objects\\rtos2.axf"

*** Restricted Version with 32768 Byte Code Size Limit
*** Currently used: 6020 Bytes (18%)
```

Call Stack + Locals

Name	Location...	Type
m...	0x000008...	int f()

Flash Magic - NON PRODUCTION USE ONLY
Flash Magic Terminal - COM5, 9600
ARM7 LPC2148 EVALUATION BOARD
TMI-ALS-SDA-ARM7-10
22
LPC2148 BB V-1.1
OLED
LCD
LED Display
GAS
PIR
GAS/PIR
TMI ALS
mail@tmisystems.in