Department of Electronics and Communication

Real Time Operating System Lab

(22EECE302)

REVIEW-5

Team Number-: 12

Team Members

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Statement: Write a C programme to demonstrate the concept of mailbox.

Task1-Take data from serial port and save in mailbox

Task2-Take data from mailbox and display on seven segment display

Code:

```c
#include <rtl.h>

#include<stdio.h>

#include<lpc214x.h>

void init_serial(void);

os_mbx_declare (MsgBox, 100);          /* Declare an RTX mailbox  100 msgs with name MsgBox*/



_declare_box(mpool,20,32);   /* Reserve a memory for 32 blocks of 20 bytes  */

unsigned int cnt1,cnt2;

char arr1[20],arr2[20];

int i=0;



__task void task2 (void);



__task void task1 (void)

{

/* This task will send a count value. */

U32 *mptr;

os_tsk_create (task2, 0);
```

```c
os_mbx_init (MsgBox, sizeof(MsgBox));

mptr = _alloc_box (mpool);              /* Allocate a memory for the message */

while(1)

{

        while(!(cnt1==15))

                        {

                        cnt1++;


                        sprintf(arr1,"counter1 :%d",cnt1);

                        while (arr1[i] != '\0')

                        {       os_dly_wait(1);

                                while (!(U0LSR & 0x20));

                                U0THR = arr1[i];

                                i++;

                        }

                        i=0;

                        while (!(U0LSR & 0x20));

                        U0THR = '\n';

                         os_dly_wait(5);

                        }
```

```c
        if (cnt1==15)

            {

            mptr[0] = cnt1;

            cnt1=0;

            os_mbx_send (MsgBox, mptr, 0xffff);          /* Send the count value to a 'Mailbox' */

            os_dly_wait(100);


            }

        }

 }


__task void task2 (void)

{

 /* This task will receive a count. */

 U32 *rptr ;

 cnt2=0;

        while(1)

        {

        os_mbx_wait (MsgBox, (void*)&rptr, 0xffff);     / Wait for the message to arrive. */

    cnt2 = rptr[0];          /* copy the count value from task1 to cnt2  */
```

```c
while(!(cnt2==30))

{

            cnt2++;

            sprintf(arr2,"counter2 :%d",cnt2);

        os_dly_wait(2);

            while (arr2[i] != '\0')

            {

            while (!(U0LSR & 0x20));

            U0THR = arr2[i];

            i++;

            }

            i=0;

            while (!(U0LSR & 0x20));

            U0THR = '\n';

            os_dly_wait(100);

        }


        cnt2=0;

    }

}
```

```c
int main (void)

{

init_serial();

 _init_box (mpool, sizeof(mpool), sizeof(U32));

 os_sys_init(task1);

}



/*-------------------------------------------------------------------------

*     init_serial:  Initialize Serial Interface

 -------------------------------------------------------------------------/

void init_serial (void)

{

 PINSEL0 = 0X0000005;          // Enable RxD0 and TxD0

 U0LCR = 0x83;                 // 8 bits, no Parity, 1 Stop bit

 U0DLL = 0x61;                  // 9600 Baud Rate @ 15MHz VPB Clock

 U0LCR = 0x03;                 // DLAB = 0


}
```