**Date Submitted:**

**------------------------------------------------------------------------------------**

**Task 01:**

Youtube Link: https://www.youtube.com/watch?v=tic7BTnif2Q

**Modified Code:**

/\*

\* ======== hello.c ========

\*/

/\* XDC Module Headers \*/

/\* TI-RTOS Header files \*/

**#include** <xdc/std.h>

**#include** <ti/sysbios/BIOS.h>

**#include** <ti/sysbios/knl/Task.h>

**#include** <ti/drivers/GPIO.h>

/\* Example/Board Header files \*/

**#include** "Board.h"

**void** **myDelay**(**int** count);

/\* Could be anything, like computing primes \*/

**#define** FakeBlockingSlowWork() myDelay(12000000)

**#define** FakeBlockingFastWork() myDelay(2000000)

Task\_Struct workTask;

/\* Make sure we have nice 8-byte alignment on the stack to avoid wasting memory \*/

**#pragma** DATA\_ALIGN(workTaskStack, 8)

**#define** STACKSIZE 1024

**static** uint8\_t workTaskStack[STACKSIZE];

**void** **doUrgentWork**(**void**)

{

**GPIO\_write**(Board\_GPIO\_LED1, Board\_GPIO\_LED\_OFF);

FakeBlockingFastWork(); /\* Pretend to do something useful but time-consuming \*/

**GPIO\_write**(Board\_GPIO\_LED1, Board\_GPIO\_LED\_ON);

}

**void** **doWork**(**void**)

{

**GPIO\_write**(Board\_GPIO\_LED0, Board\_GPIO\_LED\_OFF);

FakeBlockingSlowWork(); /\* Pretend to do something useful but time-consuming \*/

**GPIO\_write**(Board\_GPIO\_LED0, Board\_GPIO\_LED\_ON);

}

Void **workTaskFunc**(UArg arg0, UArg arg1)

{

**while** (1) {

/\* Do work \*/

doWork();

/\* Wait a while, because doWork should be a periodic thing, not continuous.\*/

myDelay(24000000);

}

}

/\*

\*

\*/

/\* ======== main ========

\*

\*/

**int** **main**(**void**)

{

Board\_initGeneral();

**GPIO\_init**();

/\* Set up the led task \*/

Task\_Params workTaskParams;

Task\_Params\_init(&workTaskParams);

workTaskParams.stackSize = STACKSIZE;

workTaskParams.priority = 2;

workTaskParams.stack = &workTaskStack;

Task\_construct(&workTask, workTaskFunc, &workTaskParams, NULL);

/\* Start kernel. \*/

BIOS\_start();

**return** (0);

}

/\*

\* ======== myDelay ========

\* Assembly function to delay. Decrements the count until it is zero

\* The exact duration depends on the processor speed.

\*/

**\_\_asm**(" .sect \".text:myDelay\"\n"

" .clink\n"

" .thumbfunc myDelay\n"

" .thumb\n"

" .global myDelay\n"

"myDelay:\n"

" subs r0, #1\n"

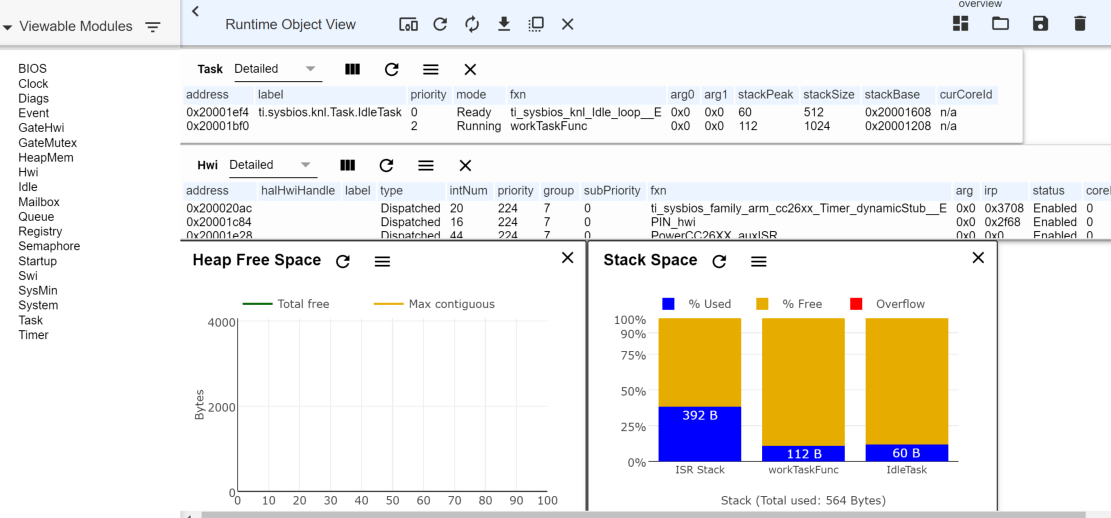
" bne.n myDelay\n"

" bx lr\n");

**------------------------------------------------------------------------------------**

**Task 02:**

Youtube Link: https://www.youtube.com/watch?v=tic7BTnif2Q



**Modified Code:**

**Task 03:**

Youtube Link:

**Modified Code:**

/\*

\* ======== hello.c ========

\*/

/\* XDC Module Headers \*/

/\* TI-RTOS Header files \*/

**#include** <xdc/std.h>

**#include** <ti/sysbios/BIOS.h>

**#include** <ti/sysbios/knl/Task.h>

**#include** <ti/drivers/GPIO.h>

/\* Example/Board Header files \*/

**#include** "Board.h"

**void** **myDelay**(**int** count);

/\* Could be anything, like computing primes \*/

**#define** FakeBlockingSlowWork() myDelay(12000000)

**#define** FakeBlockingFastWork() myDelay(2000000)

Task\_Struct workTask;

/\* Make sure we have nice 8-byte alignment on the stack to avoid wasting memory \*/

**#pragma** DATA\_ALIGN(workTaskStack, 8)

**#define** STACKSIZE 1024

**static** uint8\_t workTaskStack[STACKSIZE];

**void** **doUrgentWork**(**void**)

{

**GPIO\_write**(Board\_GPIO\_LED1, Board\_GPIO\_LED\_OFF);

FakeBlockingFastWork(); /\* Pretend to do something useful but time-consuming \*/

**GPIO\_write**(Board\_GPIO\_LED1, Board\_GPIO\_LED\_ON);

}

**void** **doWork**(**void**)

{

**GPIO\_write**(Board\_GPIO\_LED0, Board\_GPIO\_LED\_OFF);

FakeBlockingSlowWork(); /\* Pretend to do something useful but time-consuming \*/

**GPIO\_write**(Board\_GPIO\_LED0, Board\_GPIO\_LED\_ON);

}

Void **workTaskFunc**(UArg arg0, UArg arg1)

{

**while** (1) {

/\* Do work \*/

doWork();

/\* Wait a while, because doWork should be a periodic thing, not continuous.\*/

Task\_sleep(500);

}

}

/\*

\*

\*/

/\* ======== main ========

\*

\*/

**int** **main**(**void**)

{

Board\_initGeneral();

**GPIO\_init**();

/\* Set up the led task \*/

Task\_Params workTaskParams;

Task\_Params\_init(&workTaskParams);

workTaskParams.stackSize = STACKSIZE;

workTaskParams.priority = 2;

workTaskParams.stack = &workTaskStack;

Task\_construct(&workTask, workTaskFunc, &workTaskParams, NULL);

/\* Start kernel. \*/

BIOS\_start();

**return** (0);

}

/\*

\* ======== myDelay ========

\* Assembly function to delay. Decrements the count until it is zero

\* The exact duration depends on the processor speed.

\*/

**\_\_asm**(" .sect \".text:myDelay\"\n"

" .clink\n"

" .thumbfunc myDelay\n"

" .thumb\n"

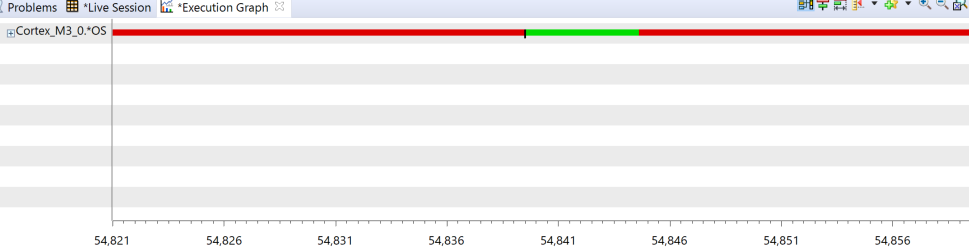
" .global myDelay\n"

"myDelay:\n"

" subs r0, #1\n"

" bne.n myDelay\n"

" bx lr\n");



**Task 04:**

Youtube Link:

**Modified Code:**

/\*

\* ======== hello.c ========

\*/

/\* XDC Module Headers \*/

/\* TI-RTOS Header files \*/

**#include** <xdc/std.h>

**#include** <ti/sysbios/BIOS.h>

**#include** <ti/sysbios/knl/Task.h>

**#include** <ti/drivers/GPIO.h>

/\* Example/Board Header files \*/

**#include** "Board.h"

**void** **myDelay**(**int** count);

/\* Could be anything, like computing primes \*/

**#define** FakeBlockingSlowWork() myDelay(12000000)

**#define** FakeBlockingFastWork() myDelay(2000000)

Task\_Struct workTask;

Task\_Struct urgentTask;

/\* Make sure we have nice 8-byte alignment on the stack to avoid wasting memory \*/

**#pragma** DATA\_ALIGN(workTaskStack, 8)

**#define** STACKSIZE 1024

**static** uint8\_t workTaskStack[STACKSIZE];

**static** uint8\_t urgentTaskStack[STACKSIZE];

**#pragma** DATA\_ALIGN(urgentTaskStack, 8)

**void** **doUrgentWork**(**void**)

{

**GPIO\_write**(Board\_GPIO\_LED1, Board\_GPIO\_LED\_OFF);

FakeBlockingFastWork(); /\* Pretend to do something useful but time-consuming \*/

**GPIO\_write**(Board\_GPIO\_LED1, Board\_GPIO\_LED\_ON);

}

**void** **doWork**(**void**)

{

**GPIO\_write**(Board\_GPIO\_LED0, Board\_GPIO\_LED\_OFF);

FakeBlockingSlowWork(); /\* Pretend to do something useful but time-consuming \*/

**GPIO\_write**(Board\_GPIO\_LED0, Board\_GPIO\_LED\_ON);

}

Void **workTaskFunc**(UArg arg0, UArg arg1)

{

**while** (1) {

/\* Do work \*/

doWork();

/\* Wait a while, because doWork should be a periodic thing, not continuous.\*/

Task\_sleep(500);

}

}

Void **urgentTaskFunc**(UArg arg0, UArg arg1)

{

**while** (1) {

/\* Do work \*/

doUrgentWork();

/\* Wait a while, because doWork should be a periodic thing, not continuous.\*/

Task\_sleep(50);

}

}

/\*

\*

\*/

/\* ======== main ========

\*

\*/

**int** **main**(**void**)

{

Board\_initGeneral();

**GPIO\_init**();

/\* Set up the led task \*/

Task\_Params workTaskParams;

Task\_Params\_init(&workTaskParams);

workTaskParams.stackSize = STACKSIZE;

workTaskParams.priority = 2;

workTaskParams.stack = &workTaskStack;

Task\_construct(&workTask, workTaskFunc, &workTaskParams, NULL);

Task\_Params urgentTaskParams;

Task\_Params\_init(&urgentTaskParams);

urgentTaskParams.stackSize = STACKSIZE;

urgentTaskParams.priority = 1;

urgentTaskParams.stack = &urgentTaskStack;

Task\_construct(&urgentTask, urgentTaskFunc, &urgentTaskParams, NULL);

/\* Start kernel. \*/

BIOS\_start();

**return** (0);

}

/\*

\* ======== myDelay ========

\* Assembly function to delay. Decrements the count until it is zero

\* The exact duration depends on the processor speed.

\*/

**\_\_asm**(" .sect \".text:myDelay\"\n"

" .clink\n"

" .thumbfunc myDelay\n"

" .thumb\n"

" .global myDelay\n"

"myDelay:\n"

" subs r0, #1\n"

" bne.n myDelay\n"

" bx lr\n");