Asterix

by Andreas Engberg - 2000/08/03

Asterix

A real-time operating system with support for:

- Periodic / aperiodic tasks
- Signals and semaphores
- Communication via wait&lock-free channels
- Deadline-monitoring
- …(to be continued)

Asterix - Schedule

config.obx:

```
SYSTEMMODE = NORMAL;
RAM = 1000;
MODE mode_1{
    RESOLUTION = 10000;

    TASKS
    WAIT&LOCKFREE CHANNELS
    SIGNALS
    SEMAPHORES
};
```

Asterix - Schedule (cont'd)

Tasks (periodic):

```
   HARD_TASK PERIODIC T1{
        PERIOD_TIME = 50;
        OFFSET = 0;
        DEADLINE = 50;
        PRIORITY = 99;
        STACK = 30;
        ROUTINE = taskname;
*       ARGUMENTS = "1";
*       ERR_ROUTINE = t1_error;
   };

*) Optional
```

Asterix - Schedule (cont'd)

Tasks (aperiodic):

```
HARD_TASK APERIODIC T2{
     ACTIVATOR = sig1;
     OFFSET = 0;
     DEADLINE = 50;
     PRIORITY = 99;
     STACK = 30;
     ROUTINE = t2_code;
};
```

Asterix - Schedule (cont'd)

Tasks (w&lf):

```
   WAITFREE w1{
        WRITER = T1;
        READER = T2;
*       NUM_BUF = 3;
        TYPE = ”uint16”;
   };


*) Optional
```

Asterix - Schedule (cont’d)

Tasks (signals):

```
SIGNAL sig1{
     USER = T1;
     USER = T2;
};
```

Asterix - Schedule (cont'd)

Tasks (semaphores):

```
SEMAPHORE sem1{
     USER = T1;
     USER = T2;
};
```

Asterix - Taskroutines

Taskroutine

```
#include <os_tasks.h> /* IMPORTANT */

void taskname(void *parameter)
{

   ...

}
```

Asterix - Taskroutines

Idletask

```
#include <os_tasks.h> /* IMPORTANT */

void Idletask(void *parameter)
{
   ...
}
```

Asterix - General

Datatypes

Name	Type
int8	8-bit signed
uint8	8-bit unsigned
int16	16-bit signed
uint16	16-bit unsigned
int32	32-bit signed
uint32	32-bit unsigned

Systemcalls :

```
void raiseSignal(sigid_t signal);

buffertype_t *getReadPointerWF( bufferid_t wf_channel );
buffertype_t *getWritePointerWF( bufferid_t wf_channel );
void writeChannel( buffertype_t *write_pointer_wf, uint16 value,
     bufferid_t wf_channel);

void getSemaphore(semid_t semaphore);
void releaseSemaphore(semid_t semaphore);

taskid_t self( void );

ticks_t getTicks( void );
```

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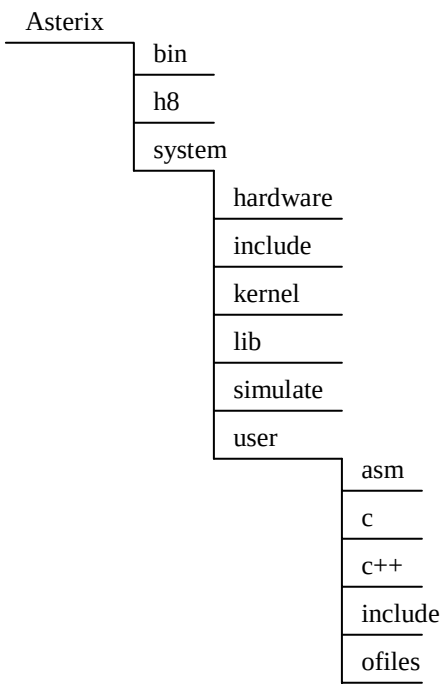
Asterix - Hardware

I/O

- Motors <rcx_motor.h>
- Sensors < rcx_sensor.h>
  - Light
  - Pressure
- LCD < rcx_display.h>
- Buttons < rcx_button.h>

Asterix

Filestructure:



- compile.bat
  - Build an Asterixsystem
- dl.bat
  - Download