MSP430X port - basic checkpointing design documentation

David Garriou, Jean-Luc Béchennec

November 20, 2019

1 MSP430X startup sequence

The MSP430X startup sequence is as follow:

1. After a reset, the `tpl_reset_handler` executes (see `tpl_startup.S` file). It:
   (a) stops the watchdog timer;
   (b) disables the interrupts;
   (c) sets up the stack;
   (d) calls `tpl_continue_reset_handler` C function.
2. `tpl_continue_reset_handler` (see `tpl_startup.c` file) does:
   (a) initialization of the .bss section to 0 (uninitialized variables);
   (b) initialization of the .data section by copying the initial values from FRAM (initialized variables);
   (c) clock setup by calling `tpl_set_mcu_clock`;
   (d) initialization of the MPU;
   (e) a call to `main`.
3. `main` is responsability of the user but usually it:
   (a) initializes application level devices;
   (b) calls `StartOS`.
4. `StartOS`:
   (a) calls `tpl_init_machine` that calls;
      i. `tpl_init_machine_generic` that calls:

A. `tpl_init_mpu` which is not implemented yet.

ii. `tpl_init_machine_specific` that calls:

A. `tpl_set_systick_timer`.

(b) calls `tpl_start_os` that does a system call to `tpl_start_os_service`.

... to be continued