DEBUG APPLICATION PROJECT FROM EXTERNAL MEMORY

IAR EW FOR ARM

MAR 25 2026

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AGENDA

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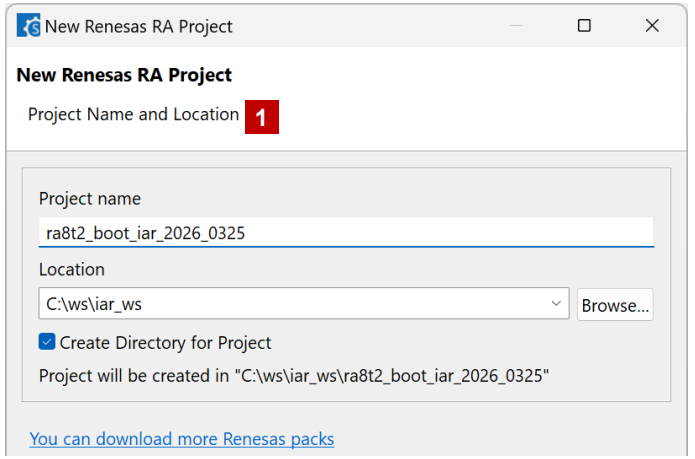
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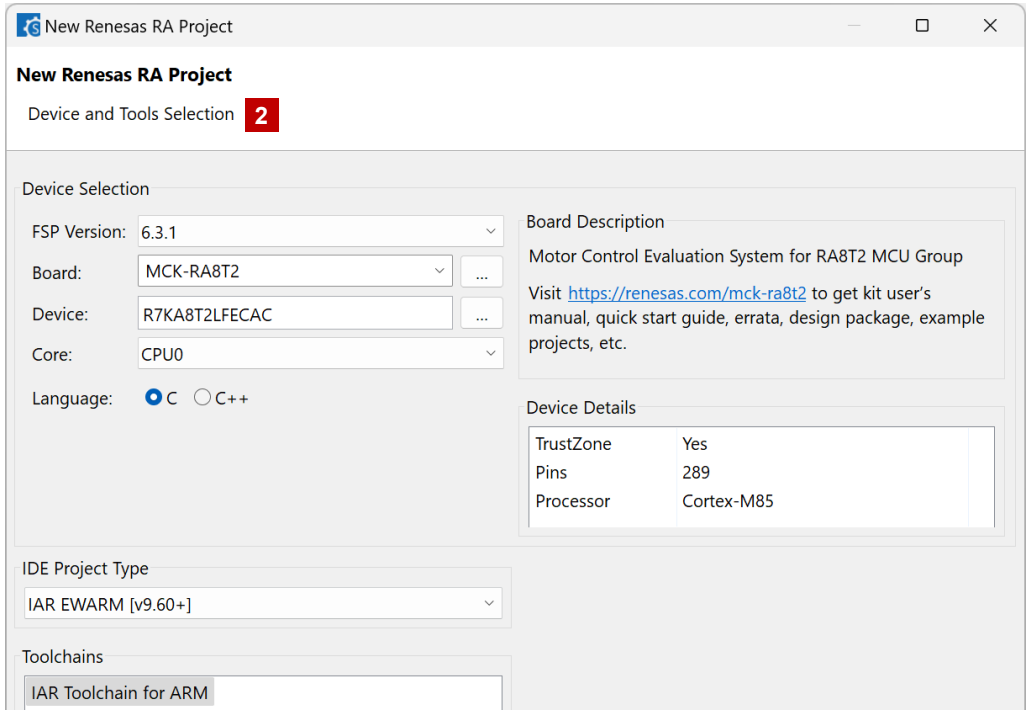
CREATE A BOOTLOADER PROJECT

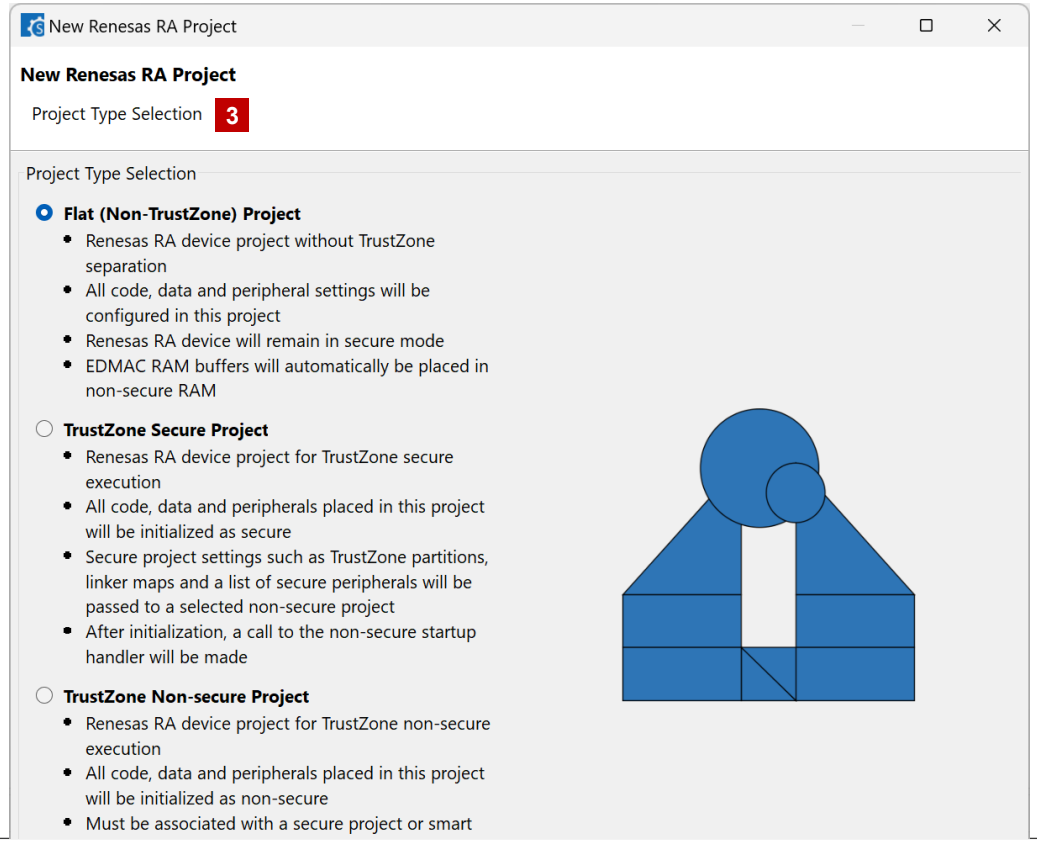
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CREATE A BOOTLOADER PROJECT

- Create a bootloader project



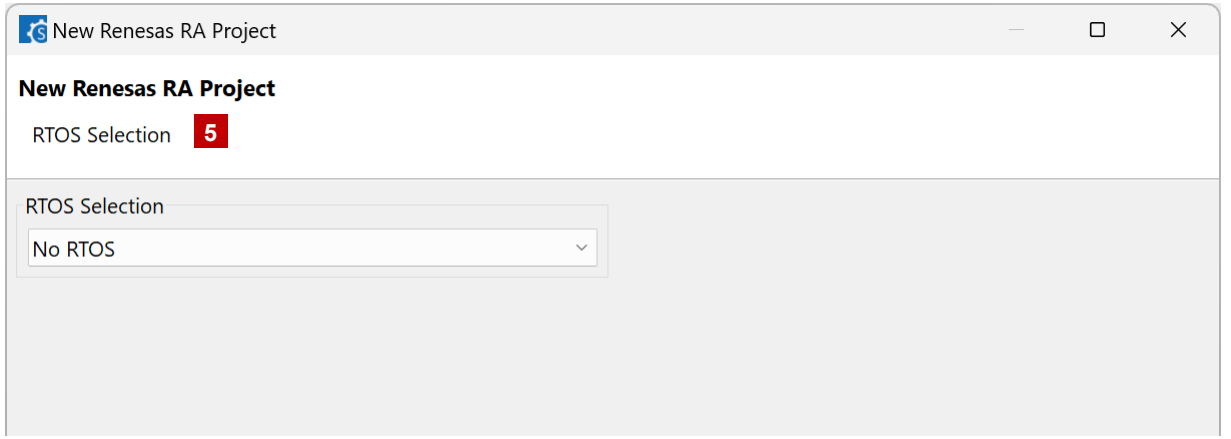


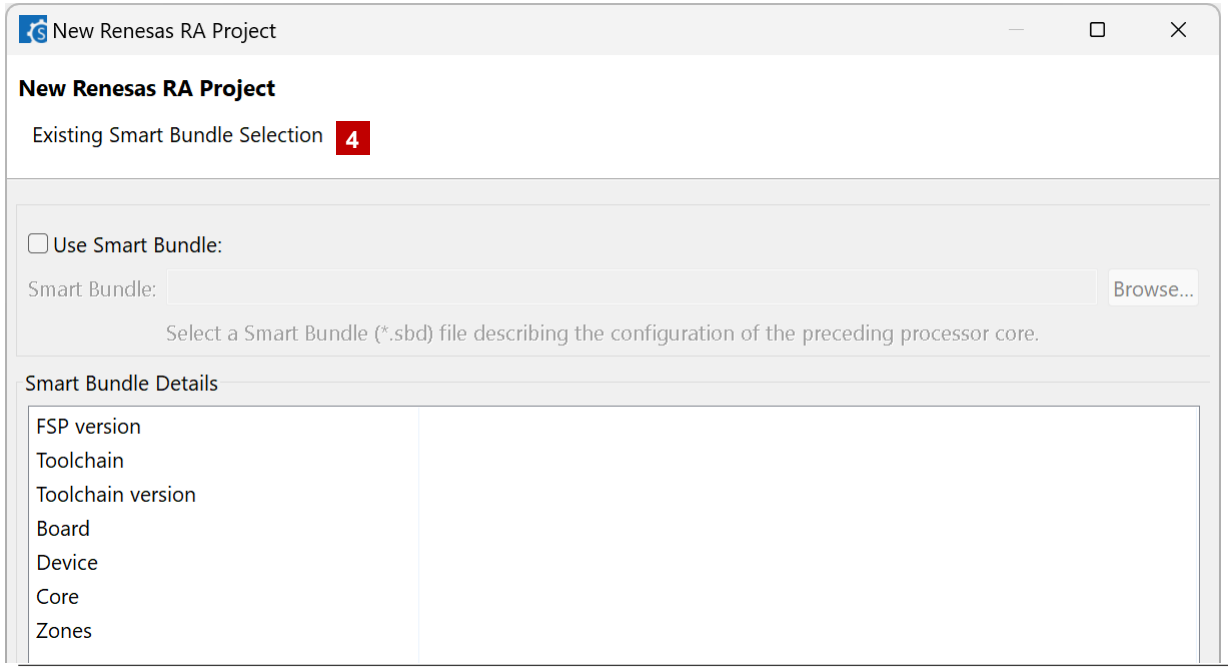


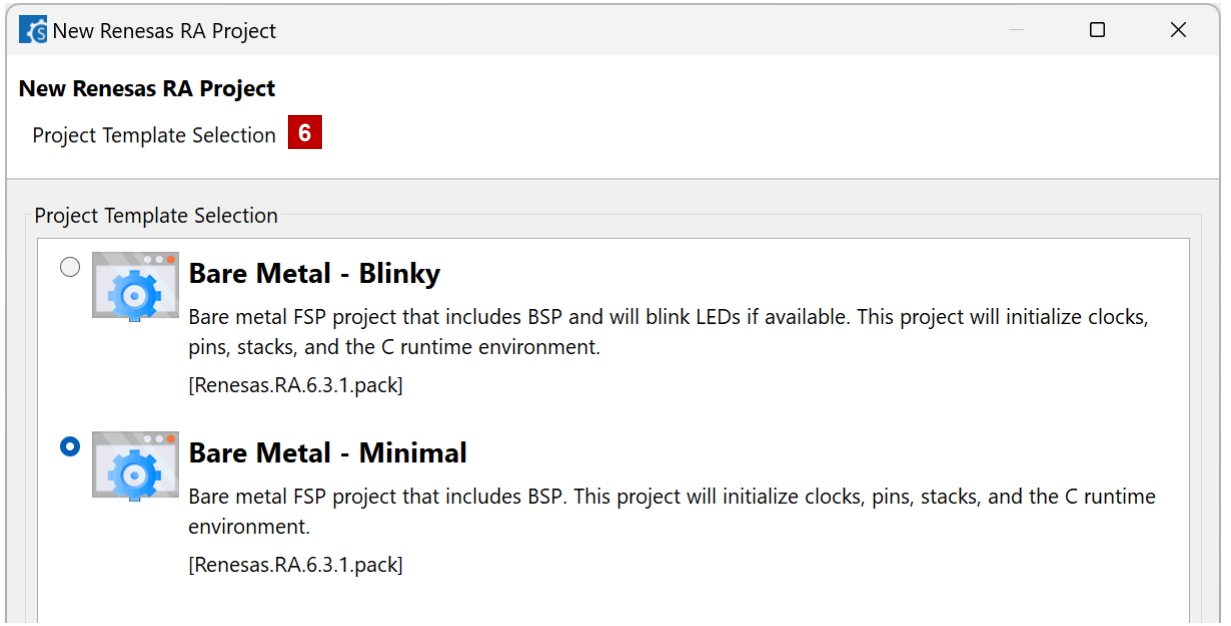
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CREATE A BOOTLOADER PROJECT (CONT)

- Create a bootloader project



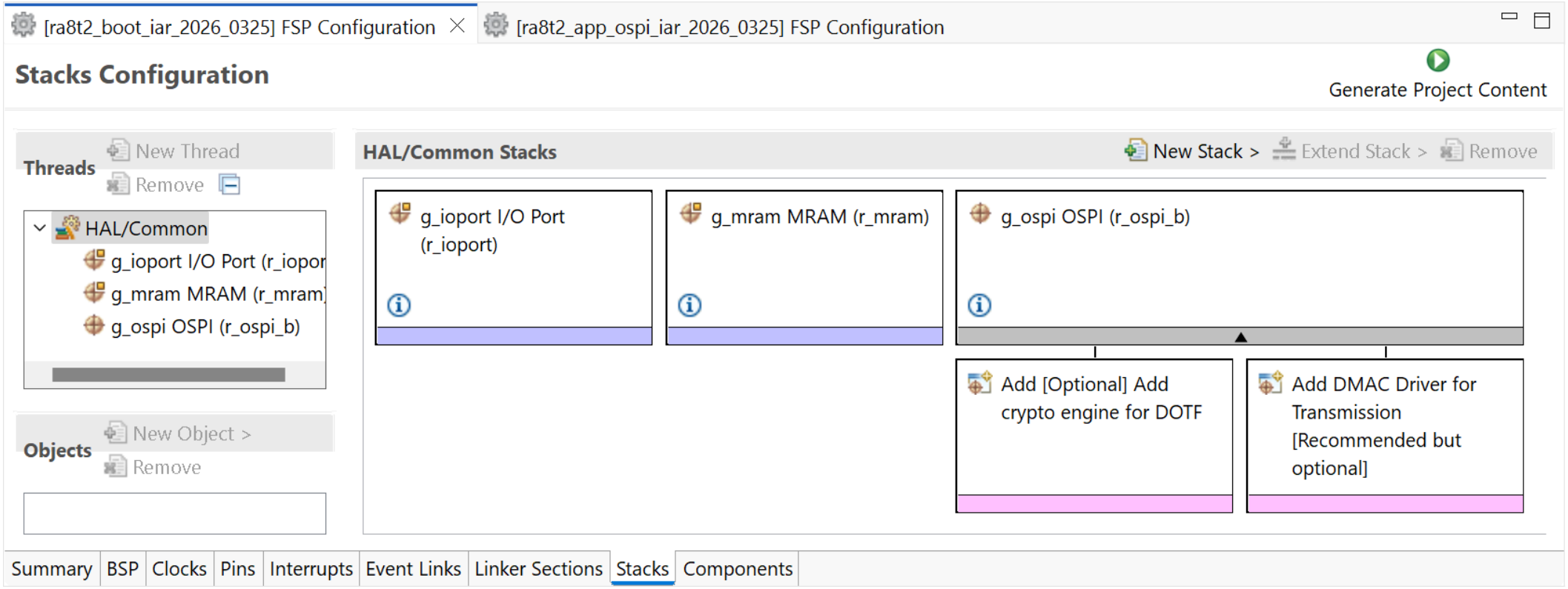




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ADD STACKS IN FSP

- Add drives in FSP >> Stacks
  - r_mram
  - r_ospi_b, configure the driver according to the device's datasheet



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UPDATE SOURCE CODE

- Add function declarations and definitions related to jumping to app
  - `void RM_MCUBOOT_PORT_BootApp (struct boot_rsp * rsp) __attribute__((used));`
  - `int rm_mcuboot_cleanup (void);`
  - `int flash_on_chip_cleanup (void);`
  - `static void start_app(uint32_t pc, uint32_t sp) RM_MCUBOOT_PORT_NAKED_FUNCTION;`
- Invoke jump function in hal_entry

ospi_b_ep.c | hal_entry.c | ospi_b_ep.h | startup.c | bsp_delay.c

handle_error

```
 98  void hal_entry(void)
 99  {
100      volatile fsp_err_t err = FSP_SUCCESS;
101
102      struct boot_rsp rsp;
103
104      memset(&rsp, 0, sizeof(rsp));
105
106      /* Initialize OSPI driver module and Flash device in SPI mode */
107      err = ospi_b_init();
108      if(FSP_SUCCESS != err)
109      {
110          handle_error(err, "ospi_b_init FAILED\r\n");
111      }
112
113      rsp.br_image_off = APP_IMAGE_START_ADDRESS;
114      rsp.br_hdr->ih_hdr_size = 0;
115
116      /* Enter the application. */
117      RM_MCUBOOT_PORT_BootApp(&rsp);
```

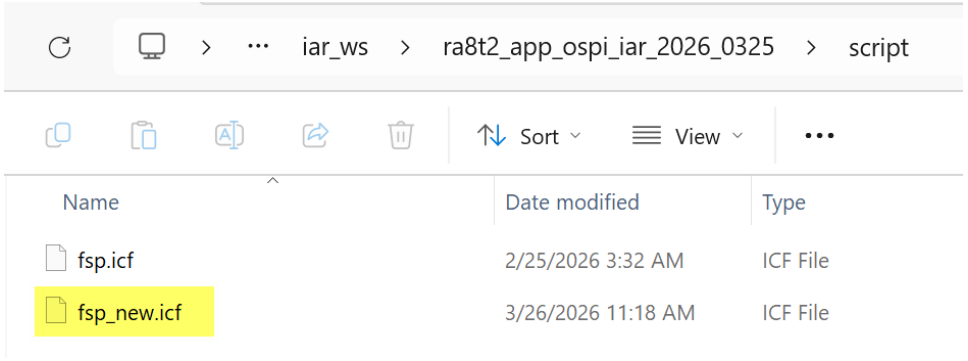
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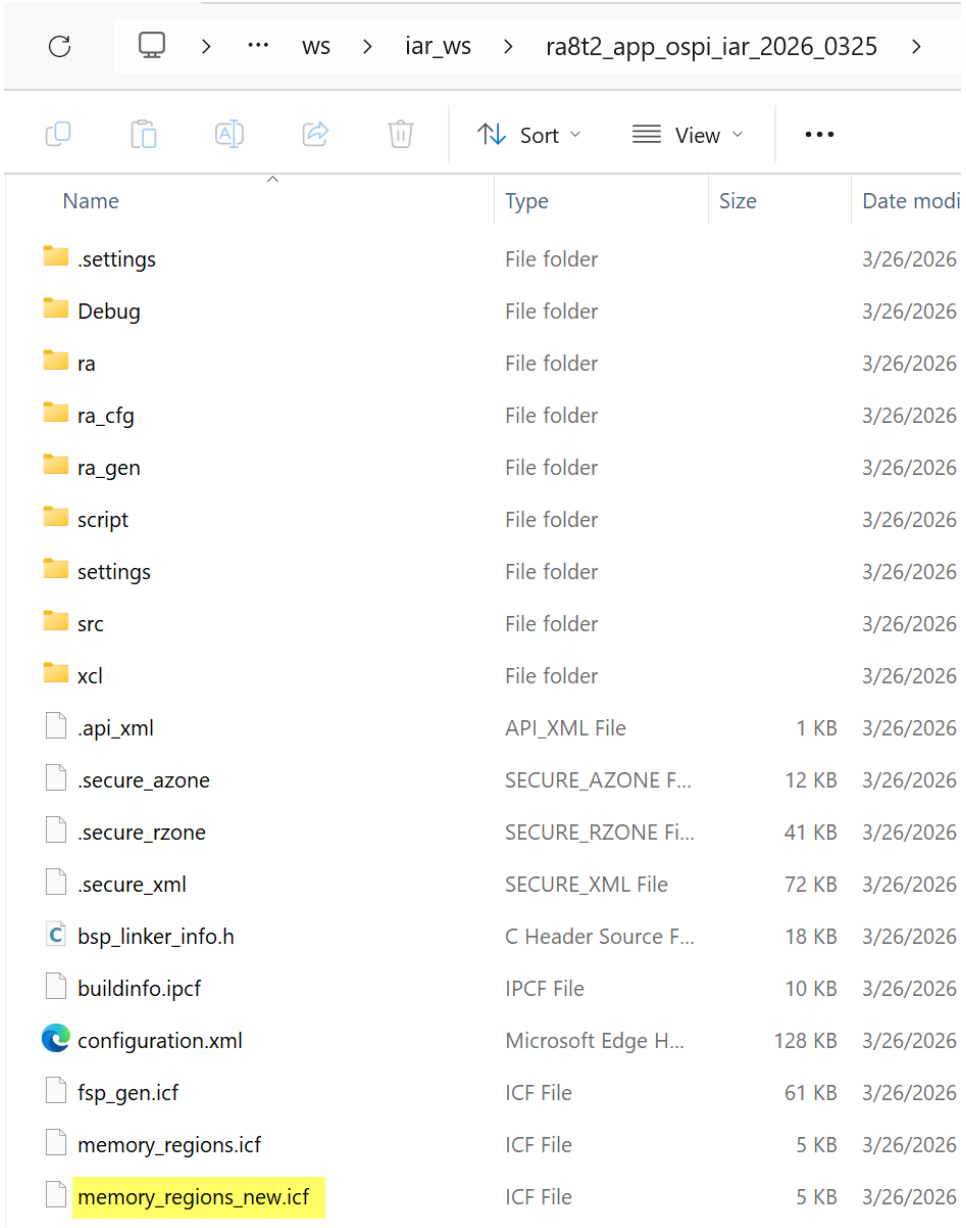
CREATE AN APPLICATION PROJECT AND UPDATE LINKER SCRIPT FILES

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CREATE AN APPLICATION PROJECT

- Create an application project according to the use case
- Make copies of below files at the same folder
  - Debug\memory_regions_new.lld
  - script\fsp_new.lld





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UPDATE THE LINK START ADDRESS

- memory_regions_new.lld

```
/* generated memory regions file - do not edit */
define symbol RAM_START = 0x22000000;
define symbol RAM_LENGTH = 0x001d4000;
define symbol FLASH_START = 0x78000000;
define symbol FLASH_LENGTH = 0x00100000;
define symbol DATA_FLASH_START = 0x27000000;
define symbol DATA_FLASH_LENGTH = 0x00000000;
```

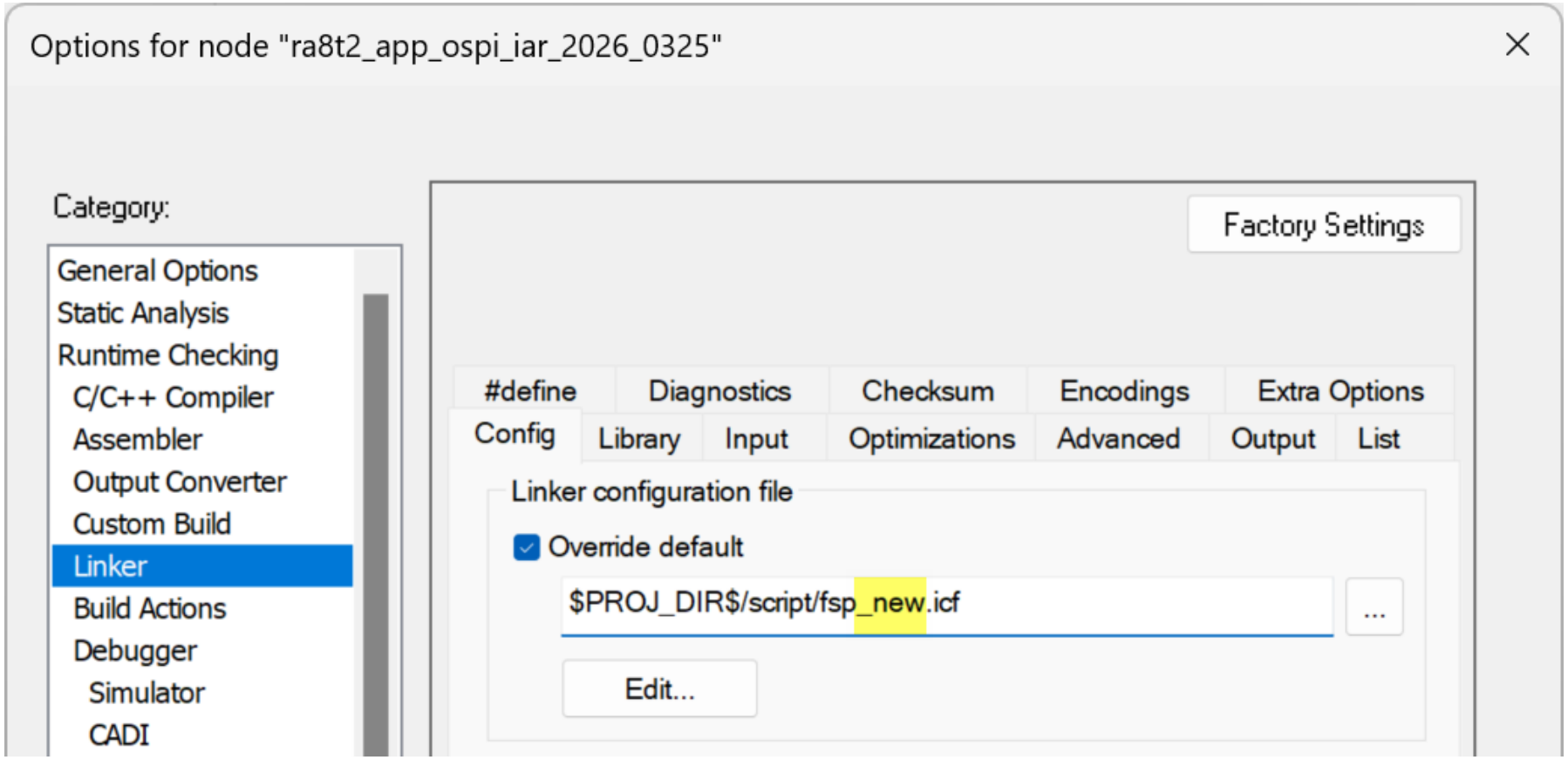
- fsp_new.lld

```
include "memory_regions_new.icf";
include "fsp_gen.icf";
```

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UPDATE THE LINKER CONFIGURATION

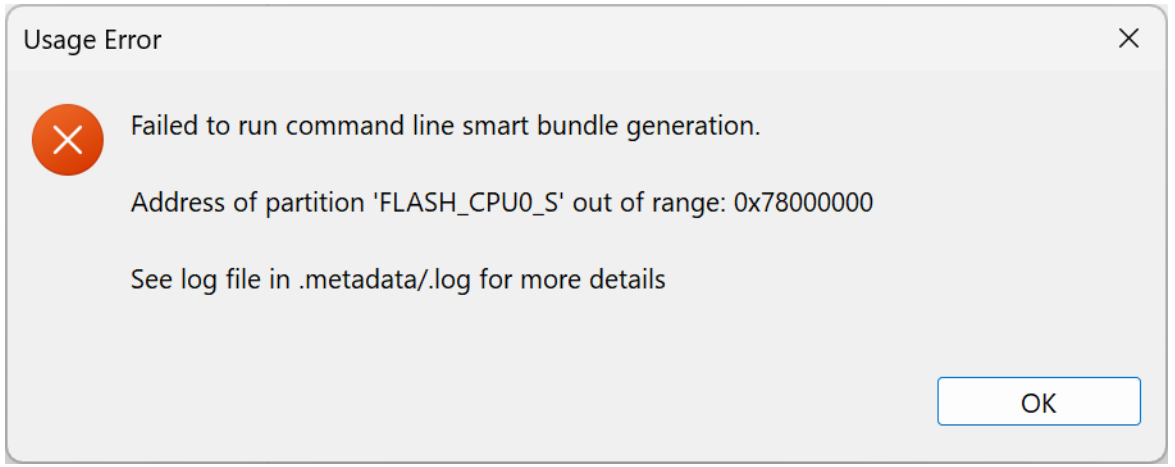
- Update the linker configuration
  - Options >> Linker >> Config >> fsp_new.icf



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BUILD THE APPLICATION PROJECT

- Build the application project and confirm the start address of hex/srec file
- Ignore the error regarding address of partition out of range



ra8t2_app_ospi_2026_0324.srec

```
1  S020000072613874325F6170705F6F7370695F323032365F
2  S30902C9F040FFFFFFFFFF
3  S30902C9F044EFFFFFFF0B
4  S30902C9F0C0FFFFFFFD81
5  S30902C9F0C4FFFFFFFF7B
6  S30902C9F120000000001A
7  S30902C9F1240000000016
8  S3157800000000040022C1070078C1060078CB07007883
9  S3157800010CB070078CB070078CB070078CB0700783A
10 S3157800020000000000000000000000CB07007808
11 S3157800030CB0700780000000CB070078CB07007864
12 S3157800004040F6E840C7F60000018002954D040F60B
13 S3157800005014 5B40F2884540F6000643F6FA7944682 0
```

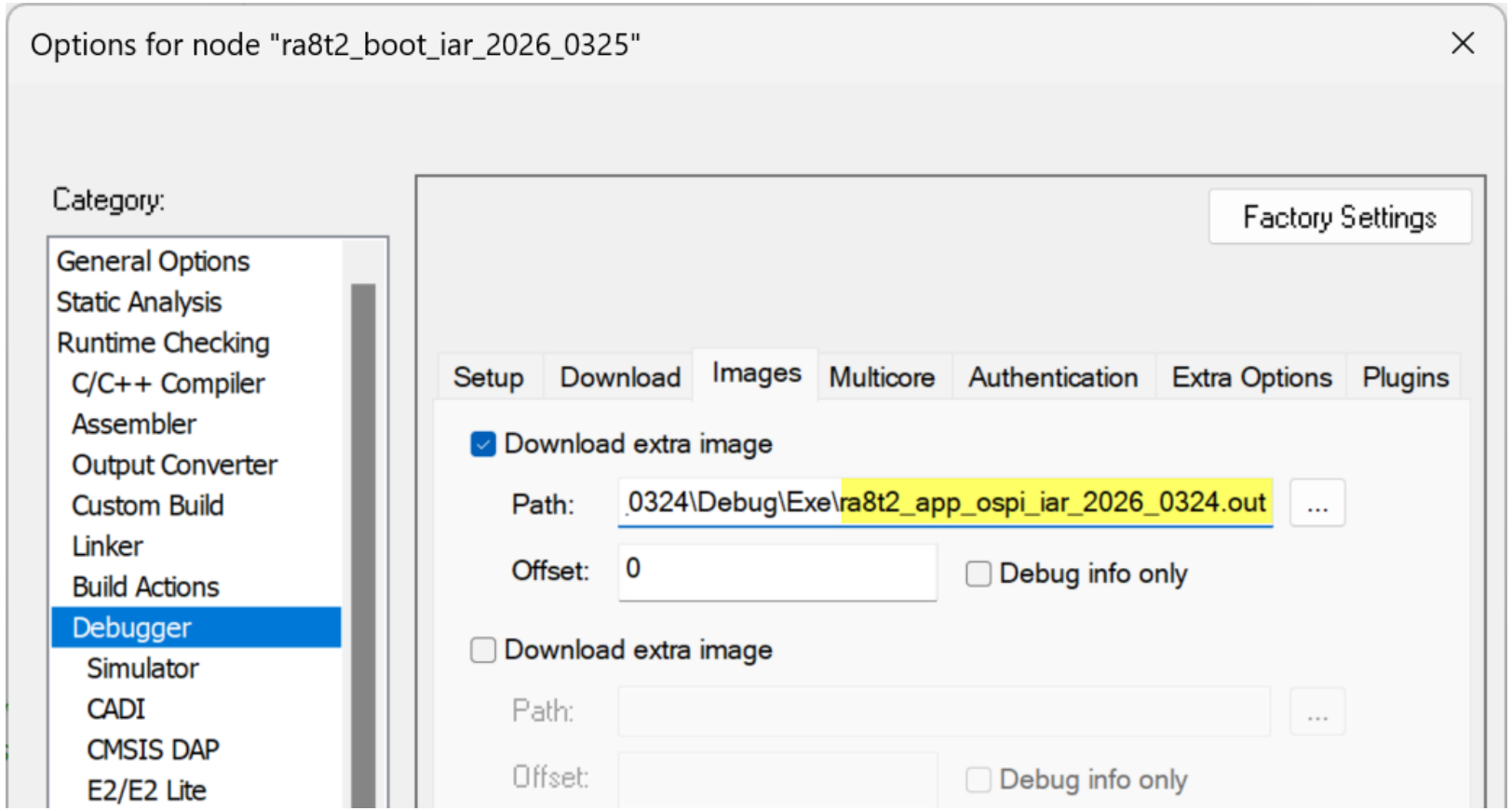
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DEBUG THE APPLICATION PROJECT

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UPDATE THE DEBUG CONFIGURATION

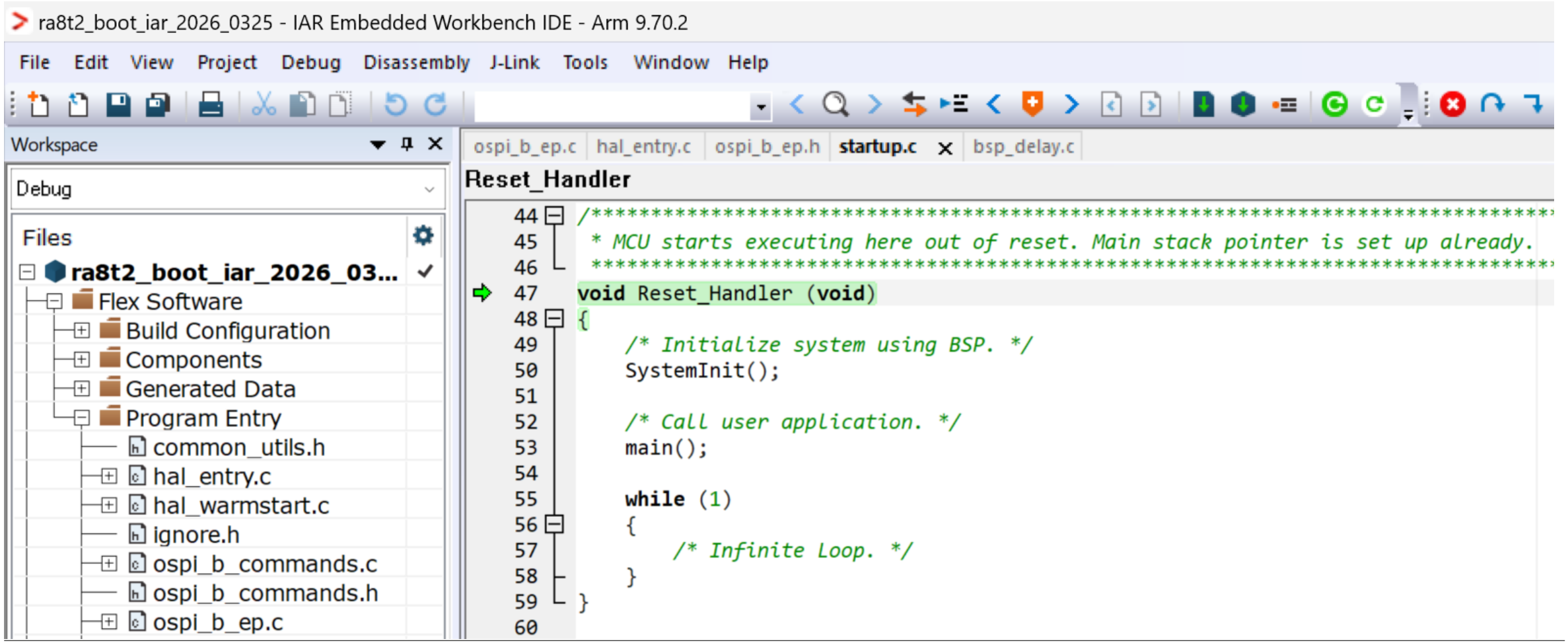
- Add the ***.out of application to the bootloader project Options >> Debugger >> Image >> Download extra image



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DEBUG THE BOOTLOADER PROJECT

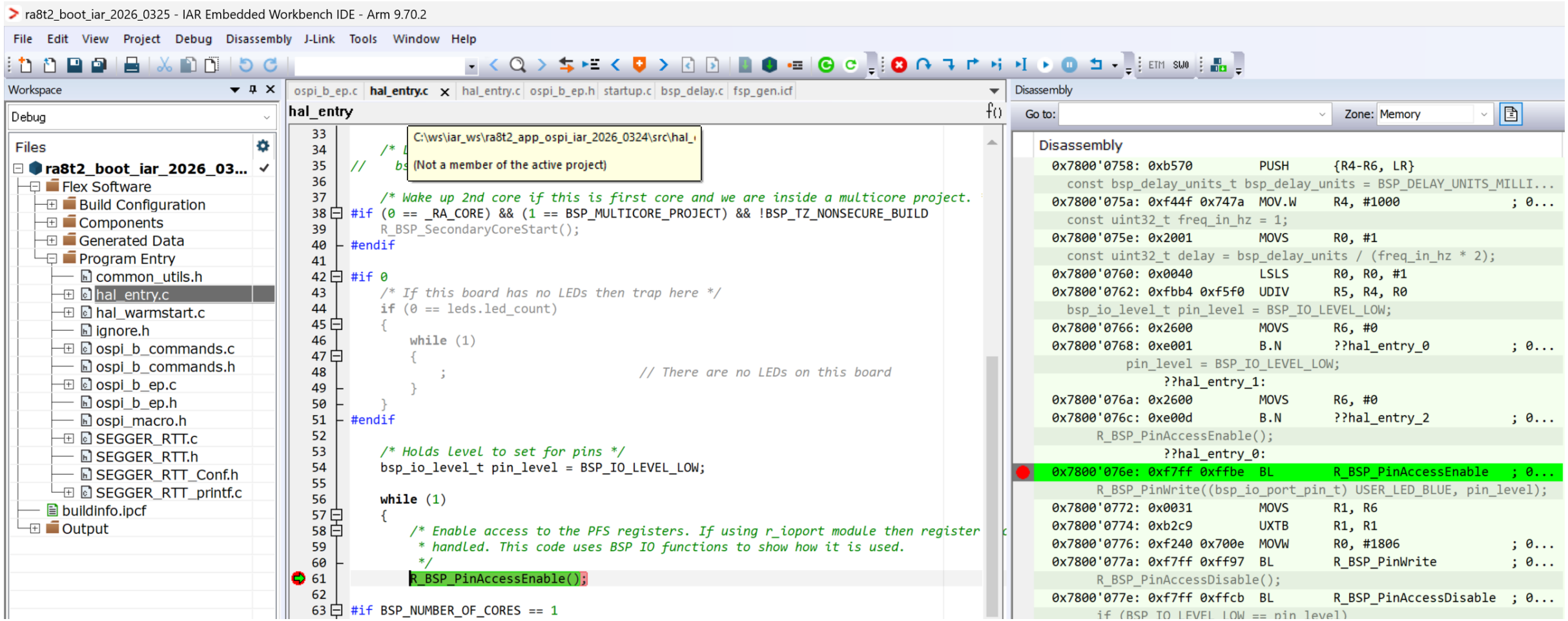
- The code starts from the reset vector of the bootloader project.



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DEBUG THE APPLICATION PROJECT

- The PC pauses at the breakpoint in the application project.



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