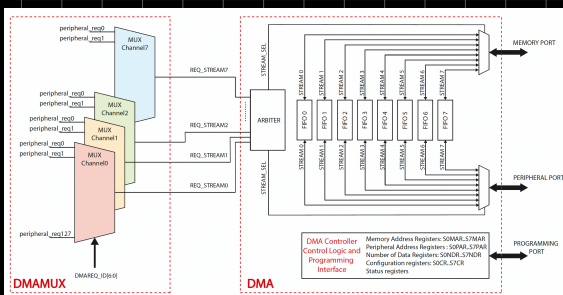
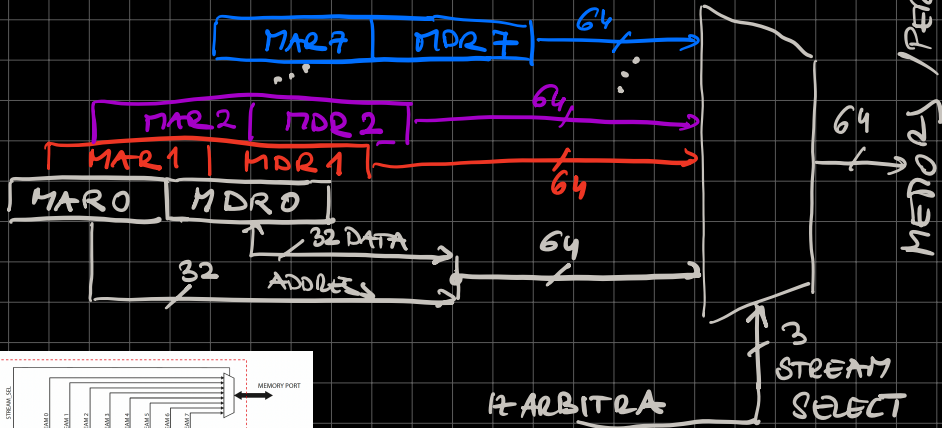
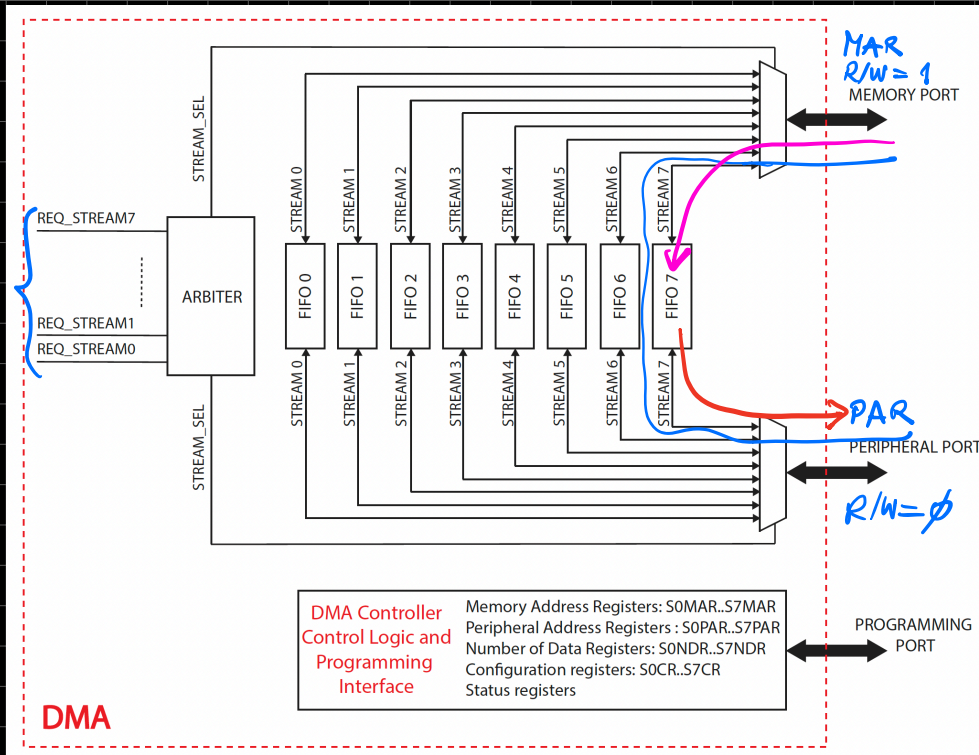


DMA krmilnik v Cortex M7

ZAHTEVE ZA PROMENE



Ti 128/1 multiplexerji izbirajo, katere v/1 naprava bo uporabljal nek stream

Kako je DMA krmilnik viden iz CPE?

→ viden je kot 4 registri: ⇒ za vsak stream je en četvorček registrov:

MAR → memory address register
- v tem registru se hrani nastavi pomnilnik

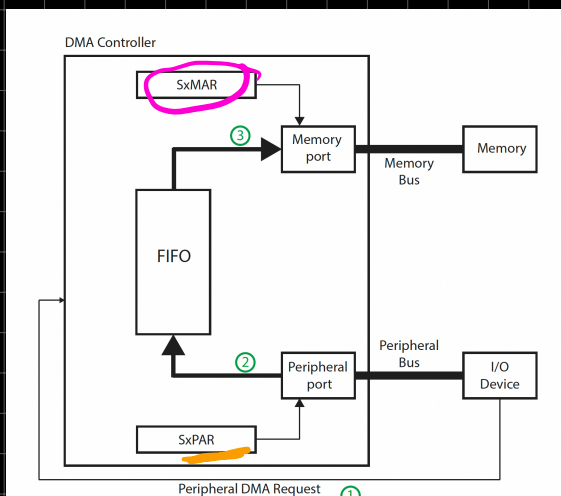
PAR → peripheral address register
→ v tem registru hranimo nastavi periferne naprave

NDTR → Number of Data Transfer Register
→ pove, kolikš podatek se prenese v enem DMA prenosu

CR → Configuration Register
→ vsebuje brite, ki določajo, kdaj DMA stream deluje in ali je aktiven

Pomnilniški
prejetniški registri

Polek prenosa po enem stream-u iz periferne naprave v pomnilnik:



1. CPE nastavi nastavi nastavi nastavbo v MAR
2. CPE nastavi nastavbo v PAR
3. CPE nastavi število besed, ki jih moramo prenesti z enim DMA prenosom, v NDTR register
4. CPE v CR nastavi, kdaj se bo prenos izvrnil (smer prenosa)
5. CPE "zapravi" DMA prenos in pri njem ne sodeluje

Nastavitev DMA krmilnika v PAAL:

```
/* DMA controller clock enable */
__HAL_RCC_DMA1_CLK_ENABLE();

/* Configure DMA request hdma_memtomem_dma1_stream2 on DMA1_Stream2 */
hdma_memtomem_dma1_stream2.Instance = DMA1_Stream2;
hdma_memtomem_dma1_stream2.Init.Request = DMA_REQUEST_MEM2MEM;
hdma_memtomem_dma1_stream2.Init.Direction = DMA_MEMORY_TO_MEMORY;
hdma_memtomem_dma1_stream2.Init.PeriphInc = DMA_PINC_ENABLE;
hdma_memtomem_dma1_stream2.Init.MemInc = DMA_MINC_ENABLE;
hdma_memtomem_dma1_stream2.Init.PeriphDataAlignment = DMA_PDATAALIGN_BYTE;
hdma_memtomem_dma1_stream2.Init.MemDataAlignment = DMA_MDATAALIGN_BYTE;
hdma_memtomem_dma1_stream2.Init.Mode = DMA_NORMAL;
hdma_memtomem_dma1_stream2.Init.Priority = DMA_PRIORITY_LOW;
hdma_memtomem_dma1_stream2.Init.FIFOMode = DMA_FIFOMODE_ENABLE;
hdma_memtomem_dma1_stream2.Init.FIFOThreshold = DMA_FIFO_THRESHOLD_FULL;
hdma_memtomem_dma1_stream2.Init.MemBurst = DMA_MBURST_SINGLE;
hdma_memtomem_dma1_stream2.Init.PeriphBurst = DMA_PBURST_SINGLE;
HAL_DMA_Init(&hdma_memtomem_dma1_stream2);
```

Uporaba DMA krmilnika

```
HAL_DMA_Start(&hdma_memtomem_dma1_stream2, (uint32_t)srcvec, (uint32_t)dstvec, N);
HAL_DMA_PollForTransfer(&hdma_memtomem_dma1_stream2, HAL_DMA_FULL_TRANSFER, HAL_MAX_DELAY);
```

Start prenosa: CPE dzhvina DMA request esp

CPE preveri statusi registeru DMA,
če se je prenos zeključil