## Assembler-level computer sketch (All registers and memory locations are 4 bytes wide)

|       | Regis | ter bank |          |                          | Stack            |            | Data memory      |
|-------|-------|----------|----------|--------------------------|------------------|------------|------------------|
| R0    | -3r   |          | A1       | 0x00001 <mark>077</mark> | rsbs r3, r3, #0  | 0x000007F  | ldr r3, [sp, #4] |
| R1    |       |          | A2       |                          | ldr r3, [sp, #4] |            |                  |
| R2    |       |          | A3       | :                        |                  |            |                  |
| R3    |       |          | A4       |                          |                  | <b>↓</b>   |                  |
| R4    |       |          | V1       |                          | str r0, [sp, #4] |            |                  |
| R5    |       |          | V2       |                          |                  |            |                  |
| R6    |       |          | V3       |                          |                  |            |                  |
| R7    |       |          | V4       | /WR                      |                  |            |                  |
| R8    |       |          | V5       |                          |                  |            |                  |
| R9    |       |          | V6       | S/SB                     |                  |            |                  |
| R10   |       |          | V7       | //SL                     |                  |            |                  |
| R11   |       |          | V8       | /FP                      |                  |            |                  |
| R12   |       |          | IP       |                          |                  |            |                  |
| R13   |       |          | SF       | •                        |                  |            |                  |
| R14   |       |          | LR       |                          |                  |            |                  |
| R15   |       |          | PC       |                          |                  |            |                  |
|       |       |          |          |                          | :<br>:           |            |                  |
|       |       |          |          |                          |                  |            |                  |
| SPR [ | l14   |          |          |                          |                  |            |                  |
|       | 117   |          |          |                          |                  |            |                  |
|       |       |          |          |                          |                  |            |                  |
|       |       |          |          |                          |                  |            |                  |
| 0     |       | ,        | 0        | 0                        |                  |            |                  |
| U     | '     |          | 0        |                          |                  |            |                  |
| N     |       | ,<br>,   | <br>C    | V                        |                  |            |                  |
|       |       |          |          |                          | <u> </u>         |            |                  |
|       |       |          |          |                          |                  |            |                  |
| IR    |       |          |          |                          |                  |            |                  |
| _     |       |          | <u> </u> |                          |                  |            |                  |
| MAR   |       |          |          | 0x00001000               |                  |            |                  |
|       |       |          | _        |                          |                  |            |                  |
| MDR [ |       |          | - 1      |                          |                  | 0x00000000 | 1                |

COMMENTS:

· · · · · Processor · · · · · ·