⓪ INSIDE RESET HANDLER

SET PROPER BIT OF SYSTEM HANDLER CONTROL
AND STATE REGISTER TO ENABLE USAGE FAULT

LEAVE OTHER BITS UNTOUCHED

THEN, CALL CDP ...

USAGE FAULT IS TRIGGERED

① NOW WE ARE INSIDE THE USAGE FAULT HANDLER

WHY WAS IT CALLED?

MANY POSSIBLE REASONS

CHECK IF IT WAS BECAUSE OF A
SUPERVISOR CALL (SVC)

(= CDP ...)

THIS INFO IS INSIDE THE
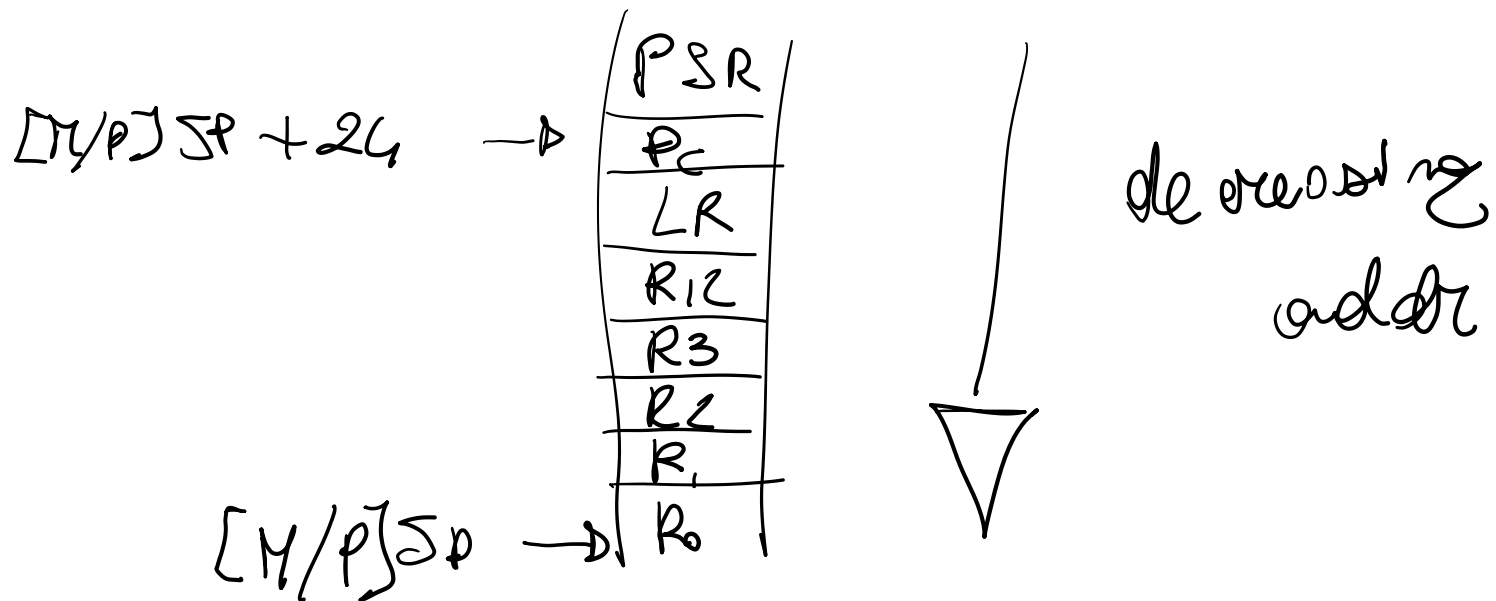USAGE FAULT REG.

⟶ CHECK PROPER BIT

② WHEN WE ENTER A HANDLER,
A PUSH {R0-R3, R12, LR*, PC} IS
DONE AUTOMATICALLY. WHERE?

MSP   PSP

THIS INFO IS CONTAINED IN LR (THE NEW LR,
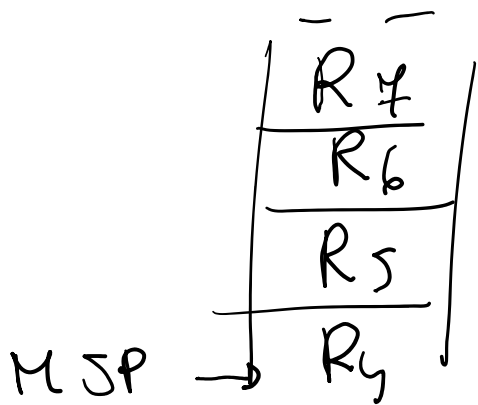NOT LR* !)

READ PC INSIDE THE RIGHT STACK

[M/P]SP +24 ⟶

PSR
PC
LR
R12
R3
R2
R1

[M/P]SP ⟶ R0

decreasing addr

CHECK IF IT RESPECTS THE FORMAT
(IF IT DOES, IT'S A FL. P. CONV.)

③ PC IN STACK POINTS TO THE INSTR. THAT CAUSED THE FAULT (CDP).

so   PC = PC +4   INSIDE   the STACK

④ DO A PUSH {R4-R11} TO RESPECT AAPCS.

INSIDE HANDLERS, (MSP) IS AUTOMATICALLY USED

R7
R6
R5

MSP ⟶ R4

DECODE THE CDP INSTR.
(IT WAS POINTED TO BY PC
BEFORE ADDING 4)
WHAT ARE THE SOURCE
AND DEST. ?

FOR INSTANCE:

$$dest = 11 \longrightarrow C_3 \longrightarrow R_7$$

$$op_1 = 00 \longrightarrow C_0 \longrightarrow R_4$$

$$op_2 = 10 \longrightarrow C_2 \longrightarrow R_6$$

TO READ OP 1:

ACCESS $[MSP + 0 \cdot 4] = [MSP]$

TO READ OP 2:

ACCESS $[MSP + 2 \cdot 4] = [MSP + 8]$

ECC

⑤ DO THE CONV. AND SAVE INTO THE STACK INSIDE THE POSITION CORRESPONDING TO DEST

IF $DEST = C_3 \longrightarrow [MSP + 3 \cdot 4]$

⑥ POP {R4-R11} (AA CPS)

BX LR TO RETURN