

Answers for Session 2

Group 00:

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Ex. 2.8:

a) JPR : Jump with register, JP is immediate

JP needs a program counter read

JP:

- Read Programm counter and extend signed immediate value
- relative jump
- add offset to read program counter using ALU
- write back to program counter

JPR:

- read the register
- jump to the address which is stored in the read register by overwriting the program counter

b) (there is no subui)

c) forwarding from executing or write back

Ex. 4.16:

a) 417 cycles

b) NOP is translated to JP with register and immediate value

c) Yes we can see __A, __B and __C in TestData.DM. The first value indicates a stack pointer value (STACK_START). It is so large because it indicates the start of the stack segment.

Ex. 5.18:

a) First memory access is a read. We read the stack pointer out of the data segment

With DMEM_REQ_OUT we signal that we want to read or write Data. Before the signal/ at the same time we have to init following signals:

- DMEM_ADDR_OUT: The address from where we want to read (Data segment 0010000)
- DMEM_DATA_IN: The data we read (17EFFF aka stack pointer)
- DMEM_WMODE_OUT and DMEM_EMODE_OUT: 11 and 0. So we read an unsigned word
- DMEM_ACK_IN: Goes down when we signal our request with DMEM_REQ_OUT and goes up, when there is a result at DMEM_DATA_IN