Open: book, notes, assembler/disassembler, previous quizzes, Internet. But, do not discuss the quiz with anyone except the professor until after everybody's work is submitted and the due date has passed. Please submit in Teams Assignments.

Given the instruction `add r8, r9, #0x4C`, that r8 contains 0xFACE and r9 contains 0xBEEF, label the single-cycle processor below taken from Figure 7.17 of your book with

- All control signals (X if don't care; for non-MUXes use meaningful name, e.g. add, eor, etc. for ALUControl; don't forget RegSrc; active-high)
- All relevant datapath values (e.g., if ALUFlags aren't used, you can leave them unlabeled) except PC-related values and control unit Instr inputs
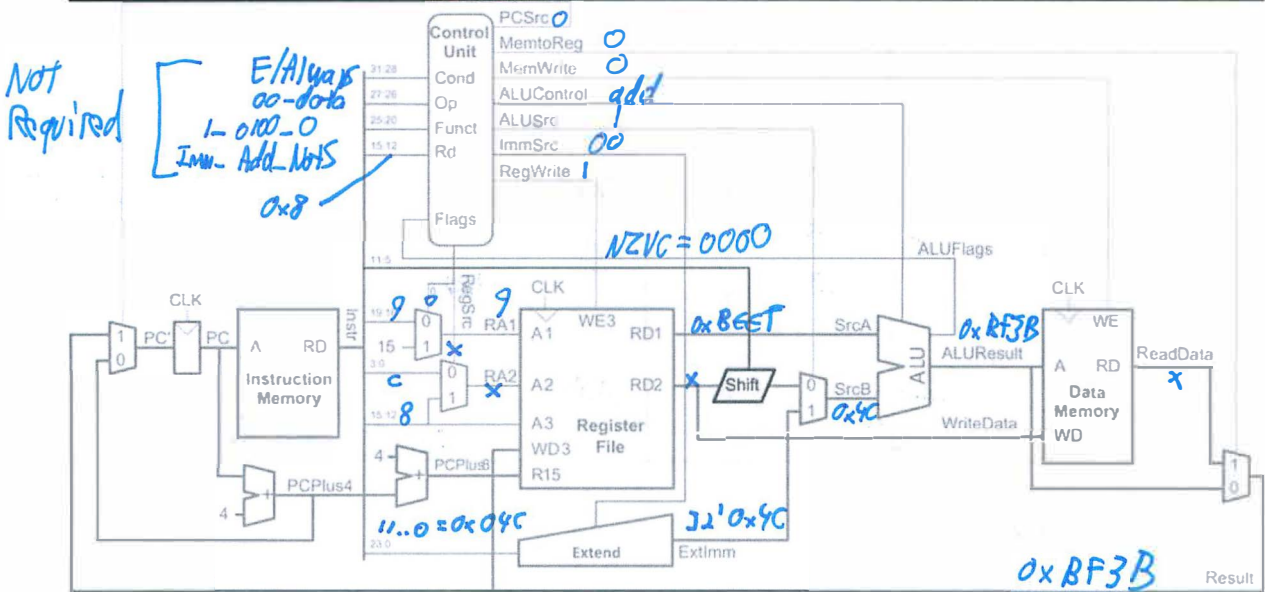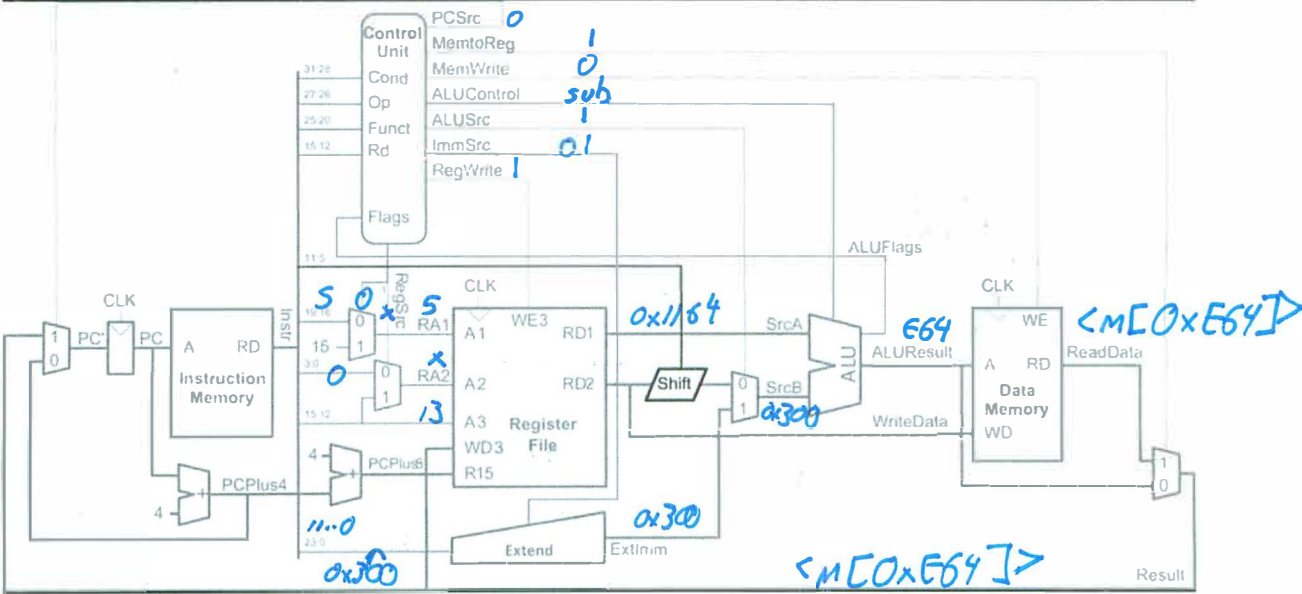

$$add \quad r8, r9, \#0x4C$$
$$Rd \quad Rn \quad Imm8$$

$$ALU: \quad 0x\ BEEF$$
$$0x\ \quad 4C$$
$$\overline{0000\_BF3B}$$

Given the instruction `ldr r13, [r5,#-0x300]`, that r5 contains 0x1164, and that r13 contains 0x2C04, label the single-cycle processor below taken from Figure 7.17 of your book with

- All control signals (X if don't care; for non-MUXes use meaningful name, e.g. add, eor, etc. for ALUControl; don't forget RegSrc; active-high)
- All relevant datapath values (e.g., if ALUFlags aren't used, you can leave them unlabeled) except PC-related values and control unit Instr inputs
- If you need an unknown register or memory value, indicate it with angle brackets, e.g., <r10> for the unknown value of r10, or <m[0x1C00]> for the unknown, 32-bit word stored in memory starting at 0x1C00.

ALU: 0x1164
     -0x 300
    ─────────
    0000 _0E64