CSCI 516 - Fundamental Concepts in Computing and Machine Organization Homework Assignment 5

Due on 11/15/2022 (11:55 PM)

Questions

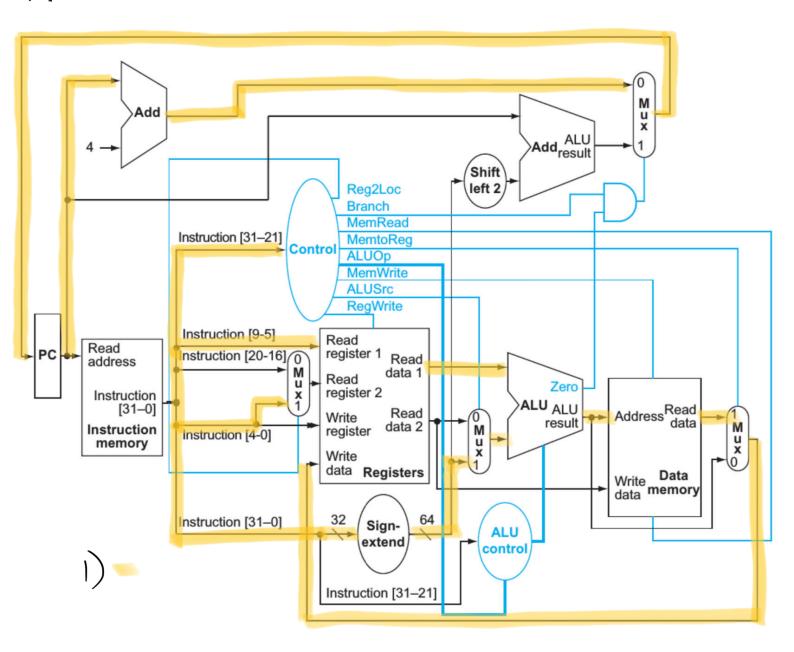
Given the data path of the processing unit, Trace the path for: ADD X1, X1, X2; and LDUR X2, [X27, #8];

- 1. Highlight the data paths which are triggered when performing instruction above (use a figure for each instruction individually)
- 2. Label all the control signals needed for performing the instructions.

ADD X1, X1, X2; 0 M Add Add ALU result Shift left 2 Reg2Loc **Branch** MemRead Instruction [31-21] MemtoReg Control ALUOp MemWrite **ALUSrc** RegWrite Instruction [9-5] Read Read register 1 Read nstruction [20-16] address Read register 2 Instruction ALU ALU [31-0]Address Read Read Write result M Instruction data 2 M u x register Instruction [4-0] ux 0 Write data Registers Data Write Data data memory 64 nstruction [31-0] Sign-ALU extend control Instruction [31-21

2) Control Signals Needed:
- Reg Dst Branch
- Reg Write
- ALUOP1

LDUR X2, [x27, #8]:



2) Control Signals Needed:

- ALUSRC
- Mem to Reg Reg Write Mem Read