Chapters 3-4 Review Test

1 1 point

Which instructions have the signal RegWrite = 0

- [ ] STUR
- [ ] CBZ
- [ ] LDUR
- [ ] AND

2 1 point

Which instructions have the signal MemWrite = 0

- [ ] STUR
- [ ] CBZ
- [ ] LDUR
- [ ] BL

3 1 point

Which instructions have the signal MemWrite = 1

- [ ] STUR
- [ ] CBZ
- [ ] LDUR
- [ ] AND

4 1 point

Which instructions have the signal ALUSrc = 1

- [ ] STUR
- [ ] ANDI
- [ ] LDUR
- [ ] AND

5 1 point

Which instructions have the signal MemRead = 1

- [ ] STUR
- [ ] CBZ
- [ ] LDUR
- [ ] ORR

6 1 point

Which instructions have the signal Reg2Loc = 1

- [ ] STUR
- [ ] CBZ
- [ ] LDUR
- [ ] AND

7 1 point

Which instructions have the signal RegWrite = 1

- [ ] STUR
- [ ] CBZ
- [ ] LDUR
- [ ] AND

8 9 points

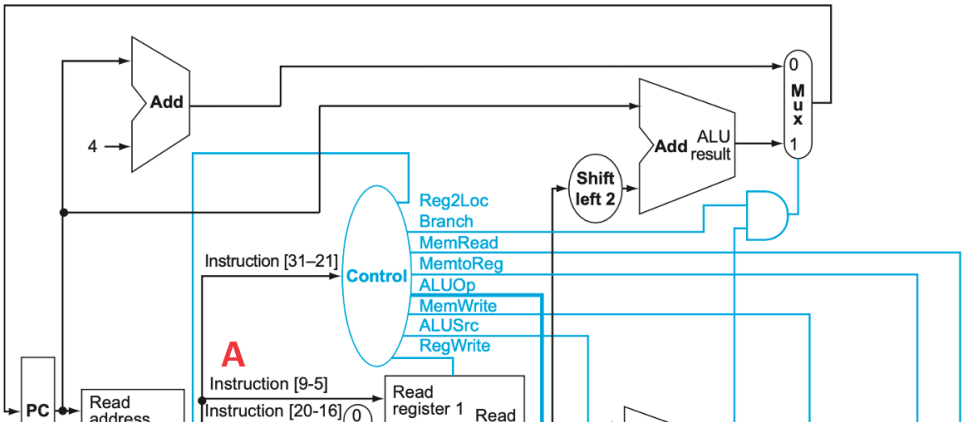
Match the Hazard with the cause and possible solution

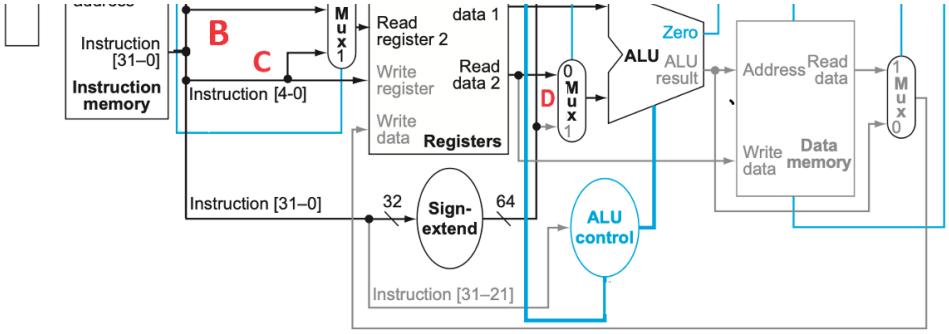
Data Example	
Data Cause	
Data Solution	
Structure Cause	
Structure Example	
Control Cause	
Control Example	
Structure Solution	
Control Solution	

Possible answers

- Rewrite code to take the 'false' path as frequently as possible
- Instruction cannot execute because data that are needed to execute the instruction are not yet available.
- A CBZ takes the 'true' path and skips over the immediately following instructions
- Have two different kinds of memory
- An R-Type instruction (ADD X1, X2, X3) uses a register that an LDUR instruction has not retrieved the value from memory (LDUR X1, [X19, #24])
- When an instruction cannot execute because the hardware does not support the combination of instructions that are set to execute.
- One type of memory used for Instruction and Data - Fetch and Data access can not happen at the same time
- Occurs when the pipeline makes incorrect branch prediction decisions, resulting in instructions entering the pipeline that must be discarded.
- Reorder lines of code if possible or add in some NOPs

9 1 point





Given this line of code, how will the Signal flags be set?

SUBI X10 X3 999

Signal Flags

Reg2Loc

ALUSrc

ALUOp

ALU Control

Branch

MemRead

MemWrite

MemToReg

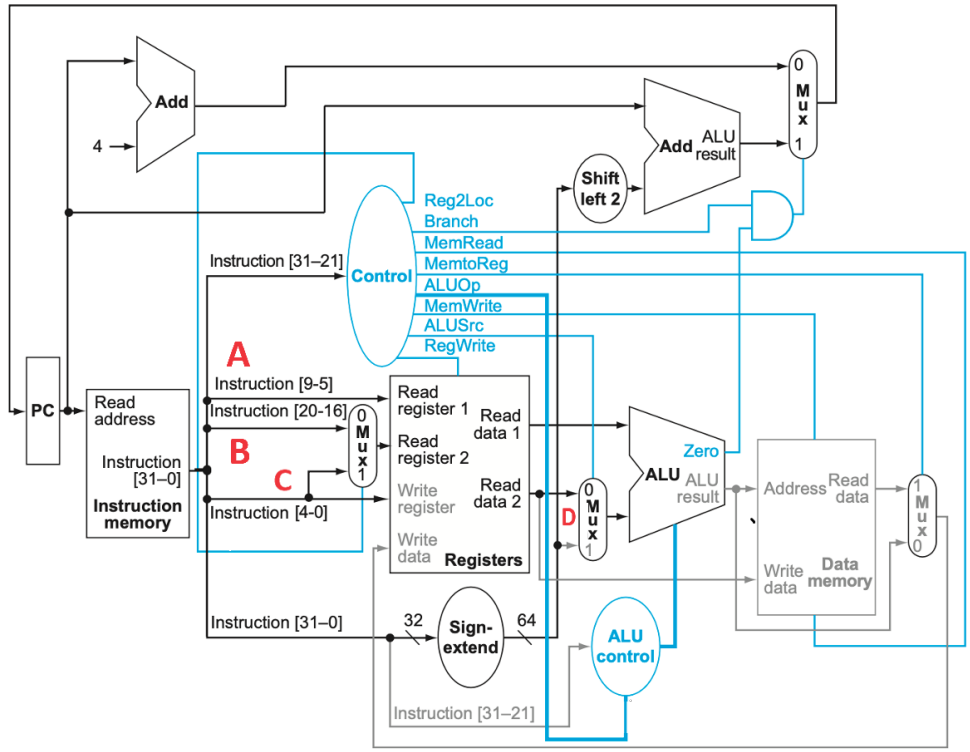
RegWrite

What Type of Instruction
(R, I, CB, D)

Specify the Value used at the following checkpoints

Checkpoint	Value
A - Reg 1	
B - Reg 2	
C - alt Reg 2	
D - ALU Src	

10 1 point



Given this line of code, how will the Signal flags be set?

SUBI	X10	X3	999

Signal Flags

Reg2Loc	
ALUSrc	
ALUOp	
ALU Control	
Branch	
MemRead	
MemWrite	
MemToReg	
RegWrite	

What Type of Instruction (R, I, CB, D)	

Specify the Value used at the following checkpoints

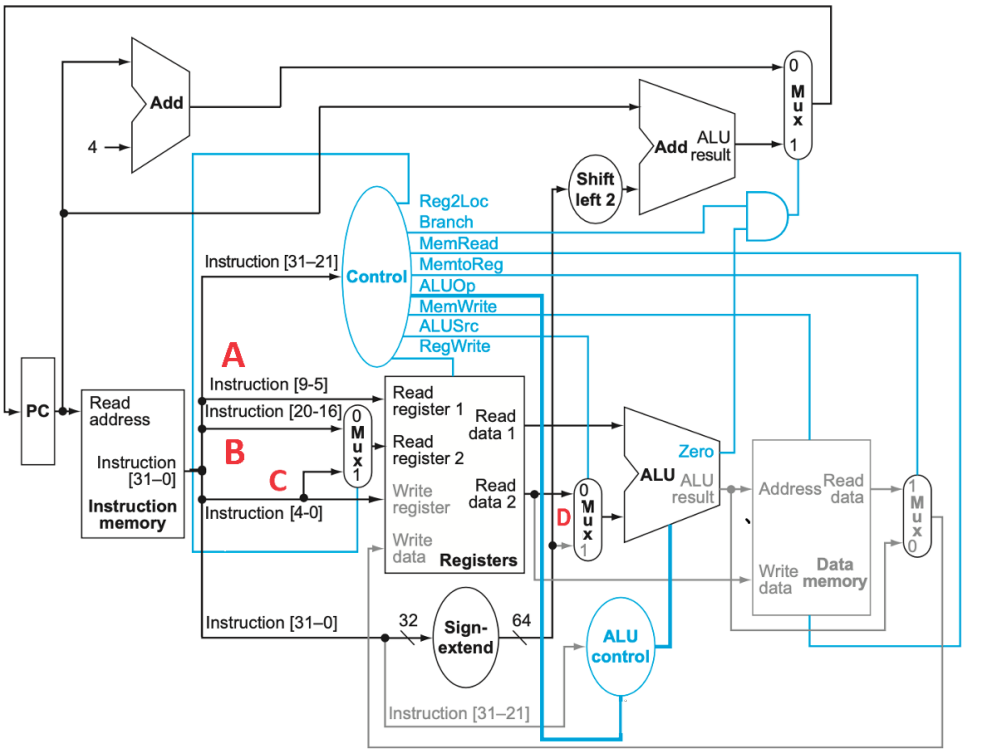
Checkpoint	Value
A - Reg 1	

B - Reg 2

C - alt Reg 2

D - ALU Src

11 1 point



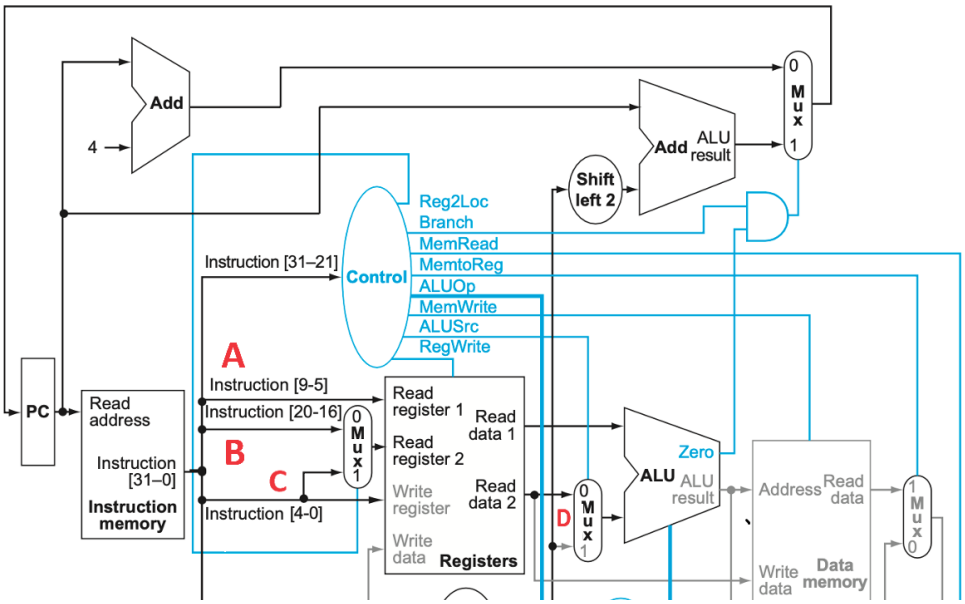
Given this line of code, how will the Signal flags be set?

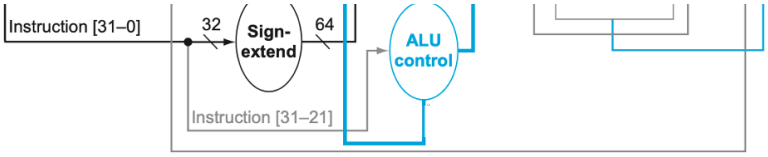
CBZ X12 Loop_top

Signal Flags	Value
Reg2Loc	
ALUSrc	
ALUOp	

ALU Control	
MemRead	
MemWrite	
MemToReg	
RegWrite	
What Type of Instruction (R, I, CB, D)	
Specify the Value used at the following checkpoints	
Checkpoint	Value
A - Reg 1	
B - Reg 2	
C - alt Reg 2	
D - Src 2	

12 1 point





Given this line of code, how will the Signal flags be set?

ORRI X7 X1 xFF

Signal Flags	Value
Reg2Loc	
ALUSrc	
ALUOp	
ALU Control	
MemRead	
MemWrite	
MemToReg	
RegWrite	

What Type of Instruction (R, I, CB, D)

Specify the Value used at the following checkpoints

Checkpoint	Value
A - Reg 1	
B - Reg 2	
C - alt Reg 2	
D - Src 2	
Write Register	

13 1 point

Convert Decimal to 32-bit FP. Trailing Zeros are not required on the Fraction

Decimal #	Sign bit	Exponent	Fraction
-4.75	1	10000001	0011
-12.5			
25.0			
79.125			
80.09375			

14 1 point

Convert hex to 16-bit binary. Put a space between each group of 4 bits
for example:
0x048C 0000 0100 1000 1100
0x019F 0000 0001 1001 1111

Hex	16-bit Binary
0xCE63	
0x1F41	

15 1 point

Convert to FP binary Do NOT include trailing 0s on the fractional portion	
-0.875000	
Integer	Binary
What is the sign bit?	
How much did you need to move the decimal? Remember: Pos to the left. Neg to the right	
What is the decimal value of the Bias	
What is the binary value of the Bias	
What then is the significant (digits to the right of	

the decimal)	
What is the full binary value of the FP #. **Including** trailing 0s	
Sign Exponent Significand	
What is the HEX value of the number ALL CAPS	

16 1 point

Convert to FP binary Do not include Trailing 0s in the Fractional portion	
27.359375	
Integer	Fraction
	010111

What is the sign bit?	
How much did you need to move the decimal? Remember: Pos to the left. Neg to the right	
What is the decimal value of the Bias	
What is the binary value of the Bias	
What then is the significant (digits to the right of the decimal)	1011010111
What is the full binary value of the FP #. No trailing 0s	
Sign Exponent Significant	
What would the HEX value of the number? In ALL CAPS. This will be an 8 digit HEX number	