Q7

Due Oct 14, 2018 at 11:59pm **Points** 90 **Questions** 5
Available Oct 13, 2018 at 12pm - Oct 14, 2018 at 11:59pm 1 day
Time Limit 15 Minutes

This quiz is no longer available as the course has been concluded.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	11 minutes	75 out of 90

Score for this quiz: **75** out of 90
Submitted Oct 14, 2018 at 11:37pm
This attempt took 11 minutes.

Question 1

5 / 20 pts

Identify all dependences in the following code with involved instruction numbers and register names.

1: LD R1, 45(R2)

2: DADD R5, R6, R7

3: DSUB. R8, R5, R7

4: OR. R8, R1, R7

Your Answer:

1. R1

2. R5

3. R5, R8

4. R1, R8

Data dependence: 1 and 4 via R1; 2 and 3 via R5

Name (or output) dependence: 3 and 4 via R8

Question 2

15 / 15 pts

The following instruction sequence result in a stall in the 5-stage MIPS pipeline. Is that statement true or false?

```
LD     R1, 45(R2)
DADD   R5, R6, R7
DSUB.  R8, R6, R7
OR.    R9, R1, R7
```

- True
- False

Correct!

LD write to register file in the first half of a pipeline cycle, while OR reads the register file in the second half of the same pipeline cycle. So there is no conflict.

Question 3

15 / 15 pts

In following instruction sequence:

Load R2, #60(R3)

Subtract R9, R2, #30

data hazard can be fully eliminated by forwarding (T/F).

- ○ True
- ◉ False

Correct!

Question 4

15 / 15 pts

What are the three types of pipeline hazards?

Your Answer:

1. Structural
2. Data
3. Control

Structural, data, control/branch)

Question 5

25 / 25 pts

What are the three data hazards? Also identify causes of those data hazards.

Your Answer:

1. RAR - Read After Write: Caused by “dependence”. Subsequent instruction has actual need for data produced by earlier instruction

2. WAR - Write After Read: Called “anti-dependence”. Can’t occur in in-order pipelines (e.g., our simple MIPS pipeline).

3. WAW - Write After Write: Called “output dependence”. Can’t occur in in-order pipelines (e.g., our simple MIPS pipeline).

Hazard	Data dependence cause
RAW	true data dependence
WAW	output dependence
WAR	anti dependence

Quiz Score: **75** out of 90