

Quiz 5  
ECE 484/584/CS567 – Fall 2010  
Chapter 4

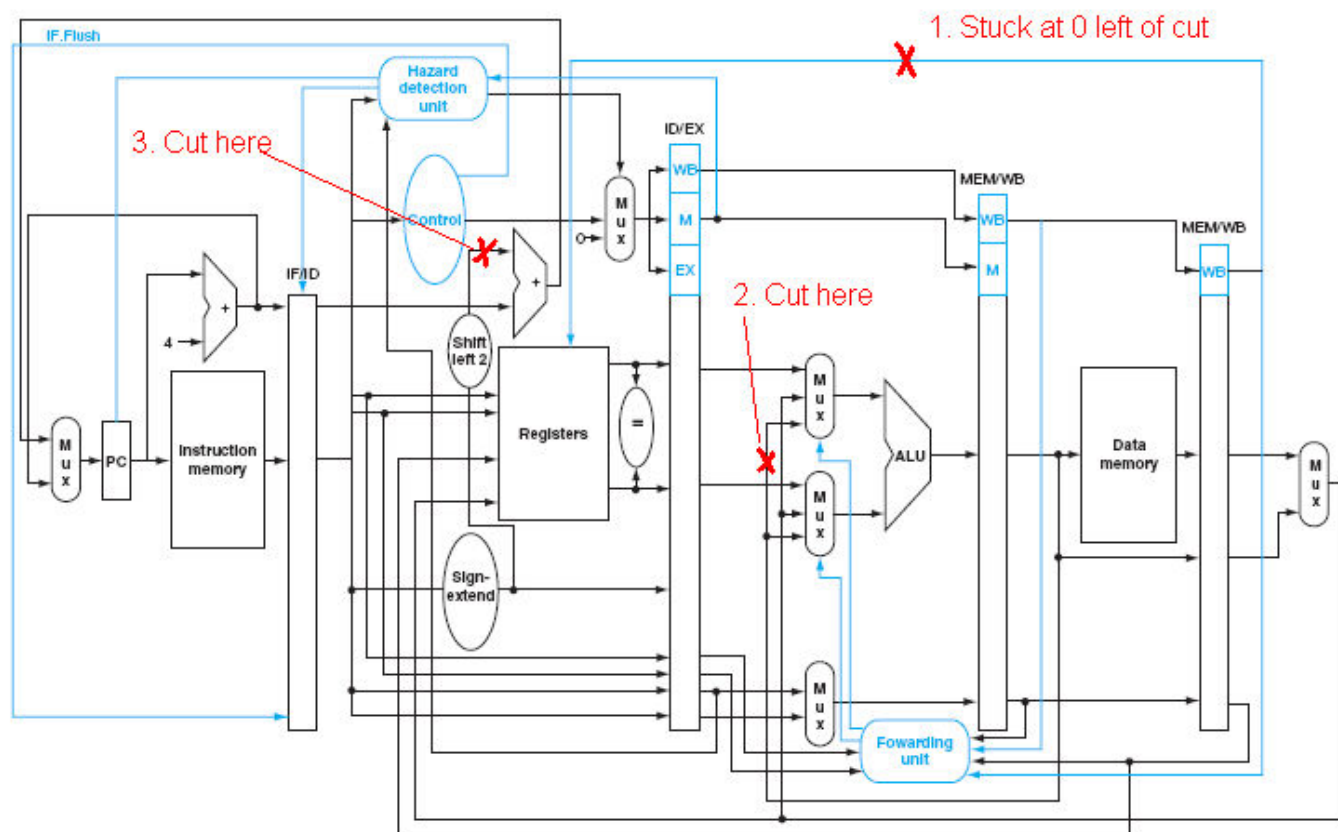
Name: \_\_\_\_\_

Student Number: \_\_\_\_\_

1) For the MIPS datapath shown below, several lines are marked with “X”. For each one:

- Describe in words the negative consequence of cutting **just this line** relative to the working, unmodified processor.
- Provide a snippet of MIPS assembly code that will fail
- Provide a snippet of MIPS assembly code that will still work

Grade points are equally split between 9 subproblems



(1) Cannot write to register file. This means that R-type and any instruction with write back to register file will fail. An example of code snippet that would fail is:

```
add $s1, $s2, $s3
```

An example of a code snippet that will not fail is:

```
sw $s1, 0($s2)
```

(2) Forwarding of the first operand fails. An example of code snippet that would fail is:

```
add $s1, $t0, $t1
```

```
add $s1, $s1, $s1
```

An example of code snippet that will not fail is:

```
add $s1, $t0, $t1
```

```
add $s1, $t2, $s1 # Here the second operand is forwarded correctly
```

(3) Jumping to a branch target does not work.

Example of code that fails:

```
addi $s1, $zero, 2
```

```
addi $s2, $zero, 2
```

```
beq $s1, $s2, exit
```

Code that will still work:

```
addi $s1, $zero, 10
```

```
addi $s2, $zero, 20
```

```
beq $s1, $s2, exit
```