EXAMPLE 2

Instruction Memory's file: 5th_fig460_MemEx2/inst.rom

This Mips pipeline implementation can handle data hazards and cannot handle branchs.

The user should set initial register values (linear). No data values are required.

Description: A simple sequence of three "add" instructions with PIPE EXE data hazard.

ADD r2,r1,r3
ADD r3,r2,r1 //EXE HAZARD
ADD r1,r3,r2 //EXE HAZARD

ADD r2,r1,r3 – type R instruction

opcode = 0	rs = 1	rt = 3	rd = 2	sh = 0	func = 32
000000	00001	00011	00010	00000	100000

0x00231020

ADD r3,r2,r1 – type R instruction

opcode = 0	rs = 2	rt = 1	rd = 3	sh = 0	func = 32
000000	00010	00001	00011	00000	100000

0x00411820

ADD r1,r3,r2 – type R instruction

opcode = 0	rs = 3	rt = 2	rd = 1	sh = 0	func = 32
000000	00011	00010	00001	00000	100000

0x00620820

The hexadecimal code example is:

ADD r2,r1,r3 – 0x00231020
ADD r3,r2,r1 – 0x00411820
ADD r1,r3,r2 – 0x00620820

Calculations check (with linear initial register values):

ADD r2,r1,r3 – r2 = 4
ADD r3,r2,r1 – r3 = 5
ADD r1,r3,r2 – r1 = 9