EXAMPLE 1

Instruction Memory's file: 5th_fig421_MemEx1/inst.rom

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

Description: A simple sequence of five "add" instructions with no hazards.

ADD r1,r1,r2
ADD r3,r0,r2
ADD r4,r0,r2
ADD r5,r0,r2
ADD r6,r0,r2

ADD r1,r1,r2 – type R instruction
opcode = 0 rs = 1 rt = 2 rd = 1 sh = 0 func = 32
000000 00001 00010 00001 00000 100000
0x00220820

ADD r3,r0,r2 – type R instruction
opcode = 0 rs = 0 rt = 2 rd = 3 sh = 0 func = 32
000000 00000 00010 00011 00000 100000
0x00021820

ADD r4,r0,r2 – type R instruction
opcode = 0 rs = 0 rt = 2 rd = 4 sh = 0 func = 32
000000 00000 00010 00100 00000 100000
0x00022020

ADD r5,r0,r2 – type R instruction
opcode = 0 rs = 0 rt = 2 rd = 5 sh = 0 func = 32
000000 00000 00010 00101 00000 100000
0x00022820

ADD r6,r0,r2 – type R instruction
opcode = 0 rs = 0 rt = 2 rd = 6 sh = 0 func = 32
000000 00000 00010 00110 00000 100000
0x00023020

The hexadecimal code example is:

ADD r1,r1,r2 – 0x00220820
ADD r3,r0,r2 – 0x00021820
ADD r4,r0,r2 – 0x00022020
ADD r5,r0,r2 – 0x00022820
ADD r6,r0,r2 – 0x00023020

Calculations check (with linear initial register values):

ADD r1,r1,r2 – r1 = 3
ADD r3,r0,r2 – r3 = 2
ADD r4,r0,r2 – r4 = 2
ADD r5,r0,r2 – r5 = 2
ADD r6,r0,r2 – r6 = 2