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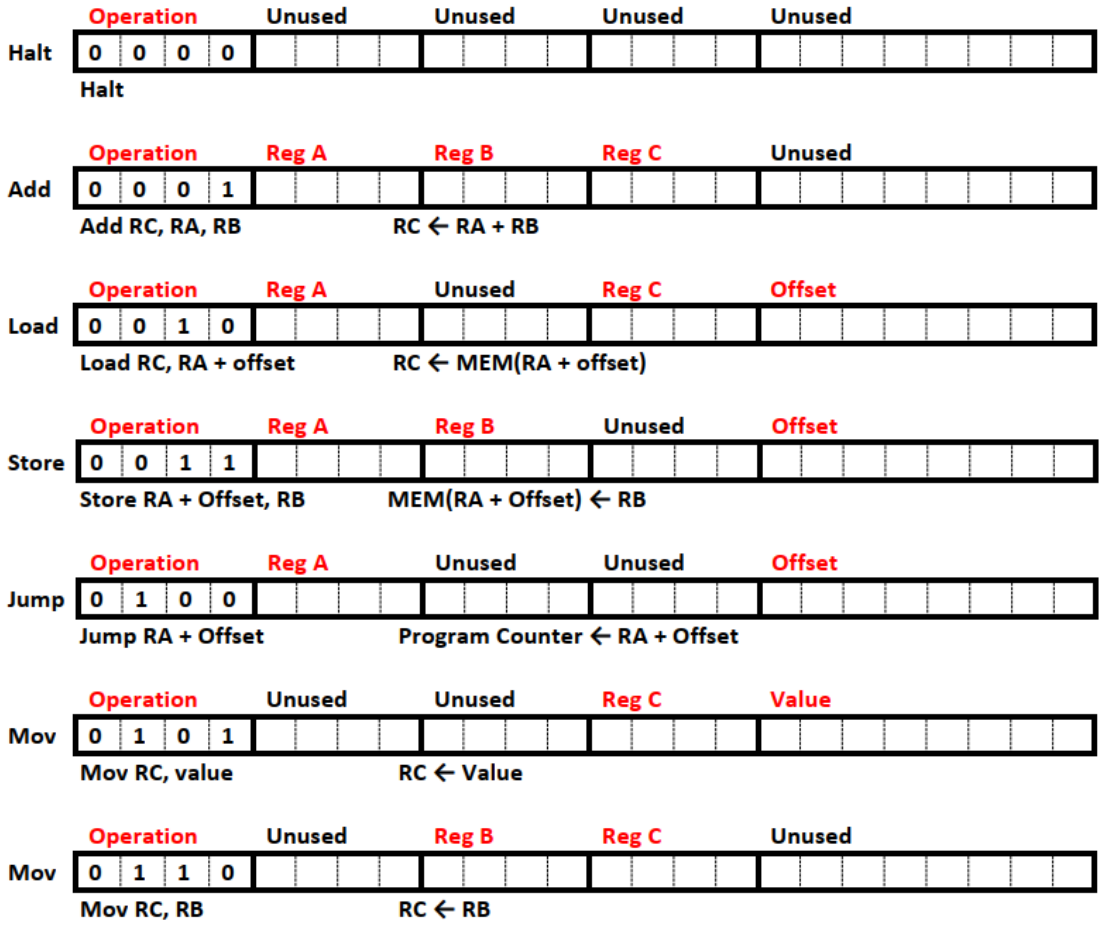
Assignment 1

The following figure lists the format for each instruction of our simplified computer.



Translate the following programs into instructions stored in memory (in hexadecimal format).

- **Program test 1**

mov r1, 1	r1 <- 1	500101
mov r2, 2		500202
mov r3, r2		602300
add r3, r1, r2		112300
halt		000000

- **Program test 2: mov, load**

mov r5, 1		500501
load r6, r5 + 4		250604

halt		000000

- **Program test 3: mov, store, load**

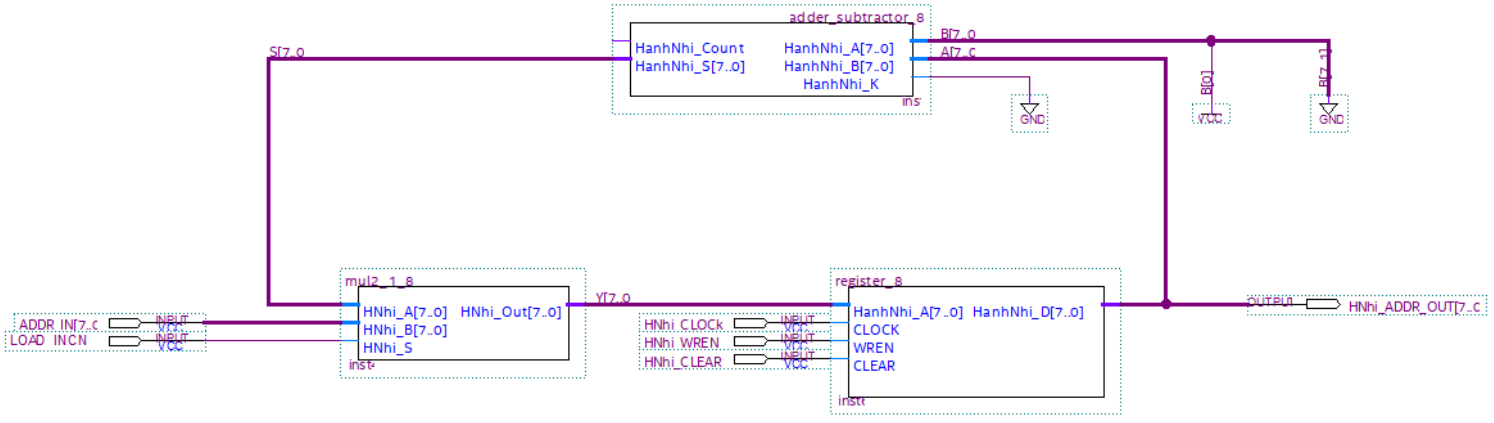
mov r5, 1		500501
mov r6, FF		5006FF
store r5 + 4, r6		356004
load r7, r5 + 4		250704
halt		000000

- **Program test 4: jump**

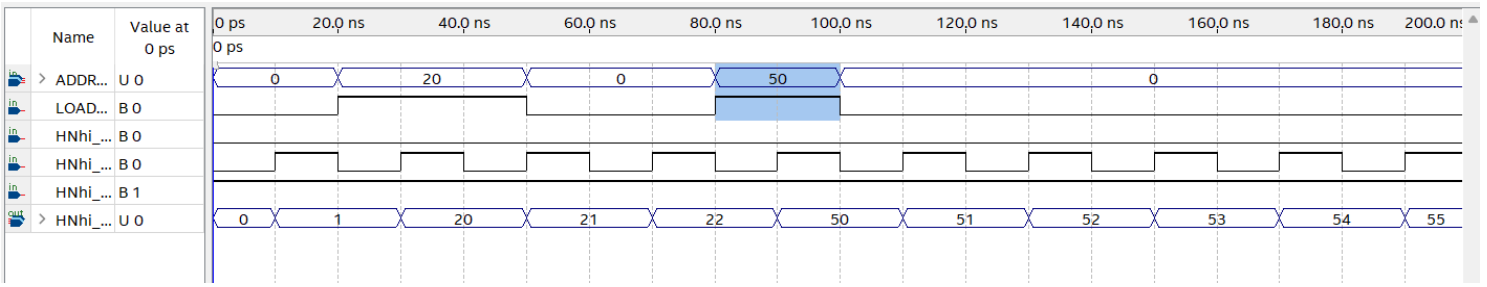
Address 0: Mov r4, 7		500407
Address 1: Jump r4 + 3		440003
Address 2: add r3, r1, r2		112300
Address 3: halt		000000
Address 10: Mov r1, 1		500101
Address 11: Mov r2, 2		500202
Address 12: Mov r5, 1		500501
Address 13: Jump r5 + 1		450001

Assignment 2

1. **Design the logic diagram to implement the program counter.**

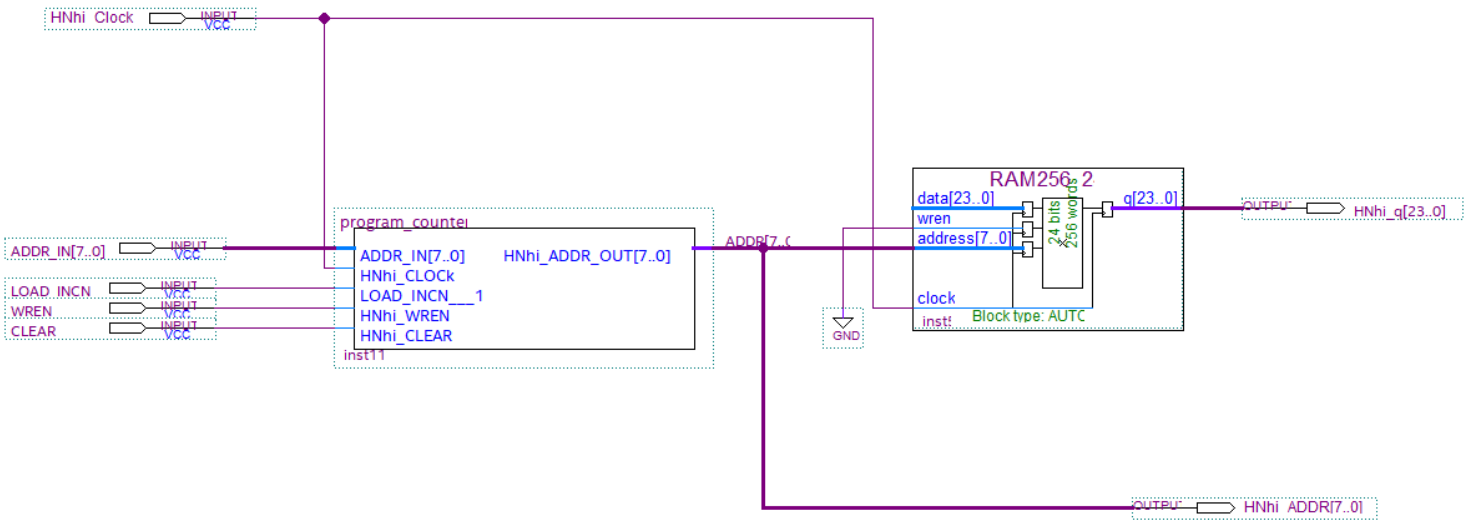


2. Simulate the circuit and check the result.

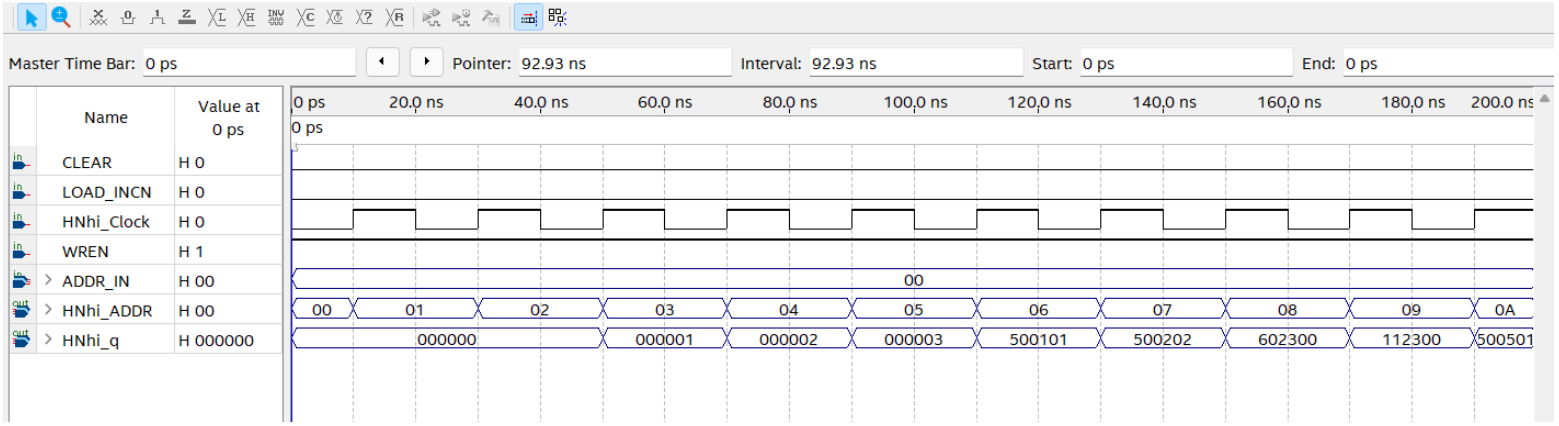


Assignment 3

1. Design the logic diagram to implement the program counter.

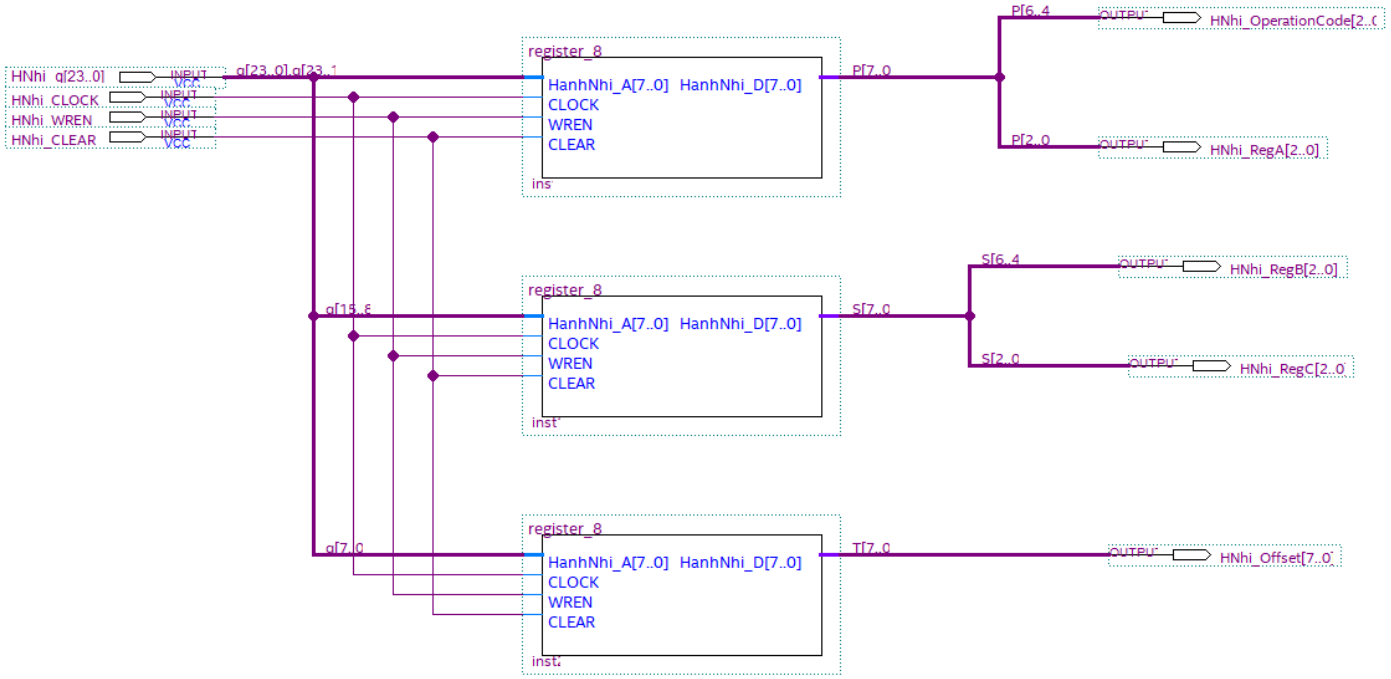


2. Simulate the circuit and check the result.

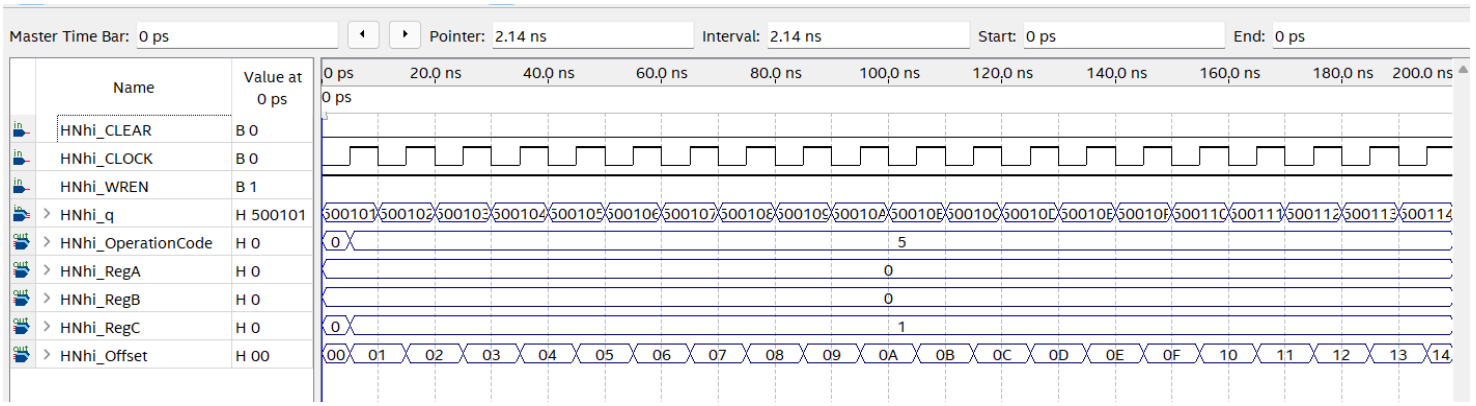


Assignment 4

1. **Design the logic diagram to implement the program counter.**

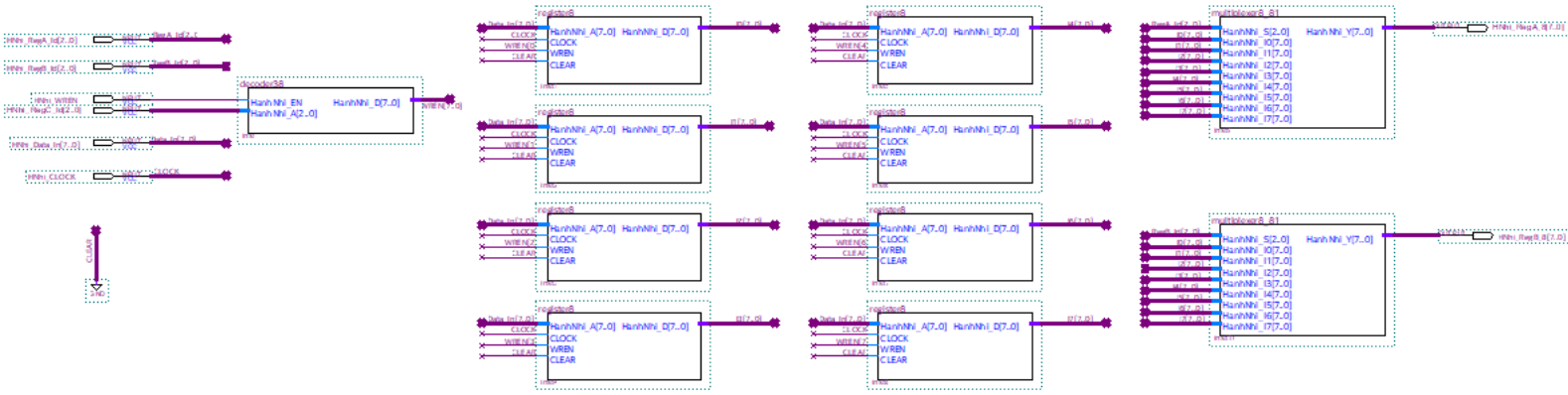


2. **Simulate the circuit and check the result.**



Assignment 5

1. **Design the logic diagram to implement the program counter.**



2. Simulate the circuit and check the result.