

Birzeit University
Electrical and Computer Engineering Department
Computer Architecture - ENCS 437

Quiz# 3

Name

ID:

Sect:

Consider the following piece of code:

```
ADDI F1, F0, #10
L1: ADDI F1, F1, #-1
    BEQZ F1, END    -- Branch 1
    ADDI F12, F0, #2
L2: ADDI F12, F12, #-1
    BNEZ F12, L2    -- Branch 2
    J    L1
END: ...
```

Assume R0 stores 0. For each branch, how many correct predictions will occur if we use the following prediction schemes? Explain your answers.

- 1-bit predictor initialized to **T** (taken) without branch history table.

Branch 1: 2 miss (first and last), 8 hit
Branch 2: 18 miss (alternating between NT,T)

- 1-bit predictor initialized to **T** (taken) with branch history table.

Branch 1: 2 miss (first and last), 8 hit
Branch 2: 17 miss, 1 Hit (first time)

- 2-bit predictor initialized to **10** (taken) with branch history table.

Branch 1: 2 miss (first and last), 8 hit
Branch 2: 9 miss, 9 hit