Hadassah Academic College
Department of Computer Science

Advanced Computer Architecture Exercise 2

All questions related to the following code fragment:

```
       ADDI R2, R0, #0x1000          ;  R2 <– 0x1000
L1:    LW R20, 4000(R2)
       ADD R1, R2, R0
L2:    SUBI R1, R1, #0x0004
       LW R10, 4000(R1)
       SGT R4, R10, R20
       BEQZ R4, L3
       SW 4000(R1), R20
       SW 4000(R2), R10
       ADD R20, R10, R0
L3:    BNEZ R1, L2
       SUBI R2, R2, #0x0004
       BNEZ R2, L1
STOP:  ADD R31, R20, R29
```

In assembly programs, the symbol ; indicates a comment. Everything on a line following ; is ignored.

1. For each row, briefly describe the action of the instruction, as in the example.
2. How many times does the instruction at label L2 run?
3. Briefly explain what the code fragment does.
4. For each row, indicate the pipeline stall (if present) caused by the previous line, and briefly explain the cause and the number of clock cycles in each stall.