CSE 231 Spring 1998 HW 3 Due Tues May26

Problems:

1. Consider the following code:

```
<s1>              a := 1
<s2>              b := 2
<s3>              c := a + b
<s4>              if (...) then go to L3
<s5>              d := a + b
<s6>              go to L4
<s7>      L3:     d := c + b
<s8>      L4:     b := a - d
<s9>              f := a * b
```

   (a) Give the distinct webs of the code.
   (b) Draw the interference graph for the program.
   (c) What is maxlive for this program?
   (d) Color the graph with a minimal number of colors. Have you achieved maxlive?

2. Consider the following LIL basic block:

```
<s1>              r1 := [r7+4](4)
<s2>              r2 := [r7+8](2)
<s3>              r3 := r2 + 2
<s4>              r4 := r1 + r2
<s5>              [r5](4) := r4
```

   Assume a 2 cycle execution time and 1 cycle latency for each load and store. All other operations execute in 1 cycle, and have 0 latency.

   (a) Draw the Dependence DAG for the block, showing all the nonzero latencies on the edges.
   (b) Compute the delay of each node.
   (c) Give a valid schedule for the DAG. How many cycles does it take to execute the schedule?