Exercise 1: Figure 1-1 is a simple matrix-multiplication program.

```c
for (i=0; i<n; i++)
    for (j=0; j<n; j++)
        c[i][j] = 0.0;
for (i=0; i<n; i++)
    for (j=0; j<n; j++)
        for (k=0; k<n; k++)
            c[i][j] = c[i][j] + a[i][k]*b[k][j];
```

Figure 1-1

a) Translate the program into three-address statements. Assume matrices are stored in row-major order.
b) Construct the flow graph for your code from a)
c) Identify the loops in your flow graph from b)

Exercise 2: Construct the DAG for the basic block

```
d = b * c
e = a + b
b = b * c
a = e - d
```

Exercise 3: Simplify the three-address code of Exercise 2, assuming

a) Only a is live on exit from the block
b) a, b and c are live on exit from the block