Quiz (Transactions and Locks)

Instructions: For each problem, you must perform all of the following tasks correctly in order to get credit.

1. Circle all SQL commands that block.
2. Write an X through all commands that error.
3. If a command causes a deadlock, write `DEADLOCK` and stop the problem.
4. Write the output of each `SELECT` statement.

You will be allowed to use a computer and access the internet, but you will not be allowed to connect to postgres and run postgres commands. The quiz will be worth 8 points.

Problem 1:

Session 1

```
1  CREATE TABLE t ( a INT );
2
3  BEGIN;
4  LOCK TABLE t IN SHARE MODE;
5
6
7
8  LOCK TABLE u IN ROW EXCLUSIVE MODE;
9
10
11 COMMIT;
```

Session 2

```
1
2  CREATE TABLE u ( a INT );
3
4
5  BEGIN;
6  LOCK TABLE u IN
7  SHARE ROW EXCLUSIVE MODE;
8
9  LOCK TABLE t IN
10 ROW EXCLUSIVE MODE;
11
12 COMMIT;
```

Problem 2:

Session 1

```
1  CREATE TABLE t (
2      a INT PRIMARY KEY
3      DEFERRABLE INITIALLY DEFERRED
4      );
5  BEGIN ISOLATION LEVEL
6  REPEATABLE READ;
7  INSERT INTO t VALUES (5);
8
9
10 INSERT INTO t VALUES (6);
11 SELECT count(*) FROM t;
12
13
14 COMMIT;
```

Session 2

```
1
2
3
4
5
6
7
8  BEGIN;
9  INSERT INTO t VALUES (6);
10
11
12 INSERT INTO t VALUES (5);
13 ABORT;
```

Problem 3:

Session 1

```
1  CREATE TABLE t ( a INT );
2  INSERT INTO t VALUES (9);
3  INSERT INTO t VALUES (10);
4  BEGIN;
5
6  UPDATE t SET a = a+1;
7
8  COMMIT;
```

Session 2

```
1
2
3
4
5  BEGIN;
6
7  DELETE FROM t WHERE a=10;
8
9  SELECT count(*) FROM t;
10 COMMIT;
```

Problem 4:

Session 1

```
1  CREATE TABLE t (a INT PRIMARY KEY);
2
3
4
5
6  BEGIN;
7  INSERT INTO t VALUES (1);
8  INSERT INTO t VALUES (2);
9  INSERT INTO u VALUES (2);
10
11
12
13 SELECT count(*) FROM t;
14
15 INSERT INTO t VALUES (3);
16 COMMIT;
17
18
19
20 SELECT count(*) FROM t;
```

Session 2

```
1
2  CREATE TABLE u (
3      b INT REFERENCES t(a)
4      DEFERRABLE INITIALLY DEFERRED
5      );
6
7
8
9
10 BEGIN ISOLATION LEVEL
11 REPEATABLE READ;
12 INSERT INTO u VALUES (3);
13
14 INSERT INTO u VALUES (1);
15
16
17 UPDATE u SET b=5;
18 COMMIT;
19 SELECT count(*) FROM t;
```