```
3)
mysql> CREATE TABLE jbmanager(id INT NOT NULL, bonus INT NOT NULL
DEFAULT '0');
Query OK, 0 rows affected (0.01 sec)

mysql> ALTER TABLE jbmanager ADD FOREIGN KEY (id) REFERENCES
jbemployee(id);
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE jbemployee DROP FOREIGN KEY fk_emp_mgr;
Query OK, 25 rows affected (0.10 sec)
Records: 25  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE jbemployee DROP FOREIGN KEY fk_emp_mgr;
Query OK, 25 rows affected (0.10 sec)
Records: 25  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE jbemployee DROP KEY fk_emp_mgr;
Query OK, 0 rows affected (0.54 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> INSERT INTO jbmanager (id) SELECT emp1.id FROM jbemployee
emp1, jbemployee emp2, jbdept WHERE emp1.id = emp2.manager OR
jbdept.manager = emp1.id group by id;
Query OK, 12 rows affected (0.04 sec)
Records: 12  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE jbdept DROP FOREIGN KEY fk_dept_mgr;
Query OK, 19 rows affected (0.03 sec)
Records: 19  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE jbdept DROP KEY fk_dept_mgr;
Query OK, 0 rows affected (0.16 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE jbdept ADD FOREIGN KEY(manager) REFERENCES
jbmanager(id) ON DELETE SET NULL;
Query OK, 19 rows affected (0.05 sec)
Records: 19  Duplicates: 0  Warnings: 0

----------------------------------------------------
WRITTEN ANSWER:
We initilized the bonus value to 0 to avoid it being NULL, so we
can add and subtract from it.
-----------------------------------------------------

4)
mysql> UPDATE jbmanager, jbdept SET bonus = bonus + 10000 WHERE
jbdept.manager = jbmanager.id ;
```

```
Query OK, 11 rows affected (0.01 sec)
Rows matched: 11  Changed: 11  Warnings: 0

mysql> SELECT * FROM jbmanager;
+-----+-------+
| id  | bonus |
+-----+-------+
|  10 | 10000 |
|  13 | 10000 |
|  26 | 10000 |
|  32 | 10000 |
|  33 | 10000 |
|  35 | 10000 |
|  37 | 10000 |
|  55 | 10000 |
|  98 | 10000 |
| 129 | 10000 |
| 157 | 10000 |
| 199 |     0 |
+-----+-------+
12 rows in set (0.01 sec)

5)

mysql> CREATE TABLE jbcustomer(id INTEGER NOT NULL, name
VARCHAR(40) NOT NULL, address VARCHAR(40), city INTEGER(11) NOT
NULL, PRIMARY KEY(id), FOREIGN KEY(city) REFERENCES jbcity(id));
Query OK, 0 rows affected (8.25 sec)

mysql> CREATE TABLE jbaccount(id INTEGER NOT NULL, balance INTEGER
NOT NULL, owner INTEGER(11) NOT NULL, PRIMARY KEY(id), FOREIGN
KEY(owner) REFERENCES jbcustomer(id));
Query OK, 0 rows affected (0.02 sec)

mysql> CREATE TABLE jbtransaction(id INT NOT NULL DEFAULT '0',
date timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP, employee INT
NOT NULL, account INT NOT NULL, amount INT NOT NULL, PRIMARY
KEY(id), FOREIGN KEY(account) REFERENCES jbaccount(id), FOREIGN
KEY(employee) REFERENCES jbemployee(id));
Query OK, 0 rows affected (0.02 sec)

mysql> CREATE TABLE jbdeposit(id INTEGER(11), PRIMARY KEY(id),
FOREIGN KEY(id) REFERENCES jbtransaction(id));
Query OK, 0 rows affected (0.02 sec)

mysql> CREATE TABLE jbwithdrawal(id INTEGER(11), PRIMARY KEY(id),
FOREIGN KEY(id) REFERENCES jbtransaction(id));
Query OK, 0 rows affected (0.03 sec)

mysql> ALTER TABLE jbsale DROP FOREIGN KEY fk_sale_debit;
```

```
Query OK, 8 rows affected (0.02 sec)
Records: 8  Duplicates: 0  Warnings: 0

mysql> TRUNCATE TABLE jbsale;
Query OK, 0 rows affected (0.03 sec)

mysql> ALTER TABLE jbsale ADD FOREIGN KEY(debit) REFERENCES
jbtransaction(id);
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

Customer — id, address, name

N — **lives** — 1

Employee — salary, birthyear, id, name, startyear

Store — id

1 — **subdivided in** — N

1 — **located in** — N

Customer 1 — **Owns** — N **Account**

balance, id

1 — **responsible for** — N

Employee N — **manages** — N **Dept**

Manager (U)

1 — **head of** — N

Dept — name, floor, id

City — id, name, state

N — **located in** — 1

Account 1 — **transfers** — N **Transaction**

Transaction — id, sdate, amount

Manager — bonus

d

Deposit (U) **Sale** (U) **Withdrawal**

Parts — name, qoh, color, weight, id

Sale — quantity

M — **Item sold** — N

1 — **contains** — N

on shelf — N — 1

Supply

Supplier 1 — **ships** — N **Supply**

deliver — 1

Supplier — name, id

Supply — shipdate, quan

Item — name, qoh, id, price

Do not forget to add cardinalities: 1:N, N:M etc.