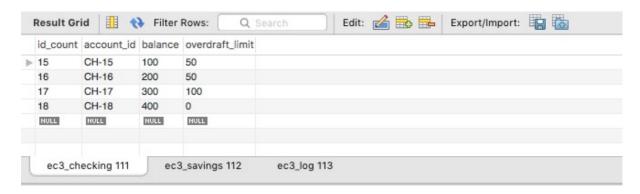
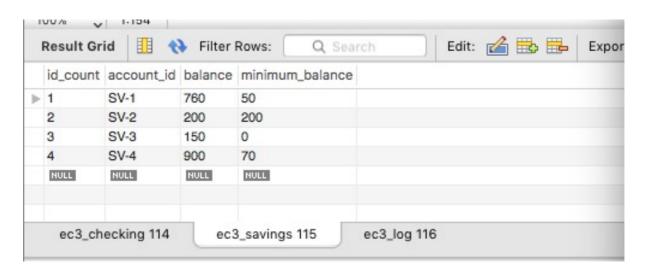
Huibo Zhao hz2480 COMS4111 SEC003 EC3 Dec.12th.2017

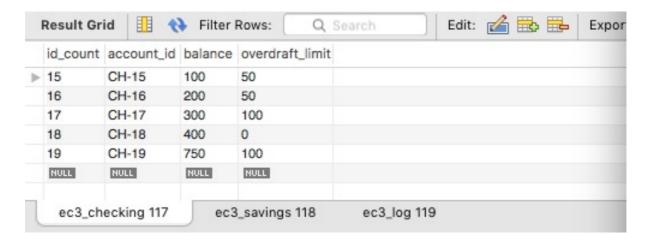
The code is in the appendix, which is at the end of this document.

Here is the initial checking and saving table:

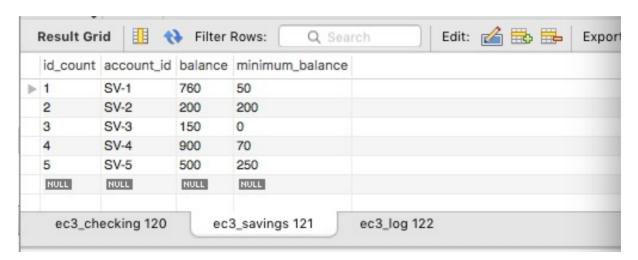




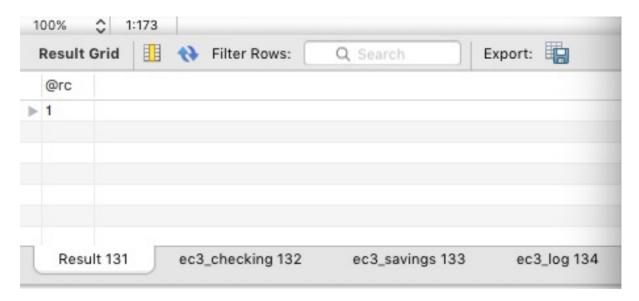
After Test 1:

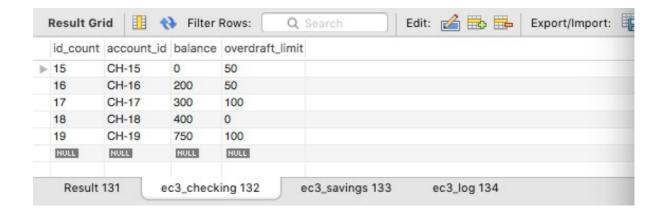


After Test 2:



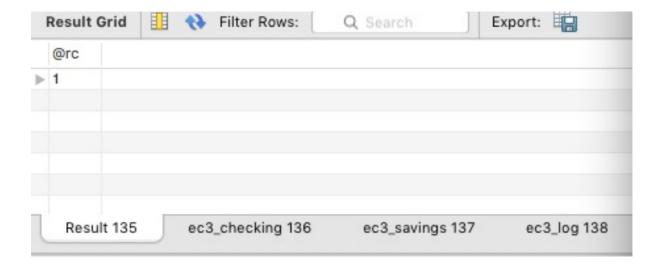
After Test 3:

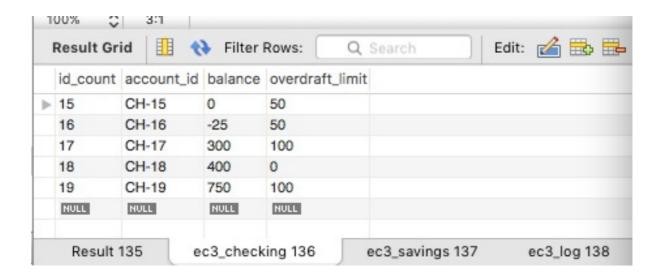


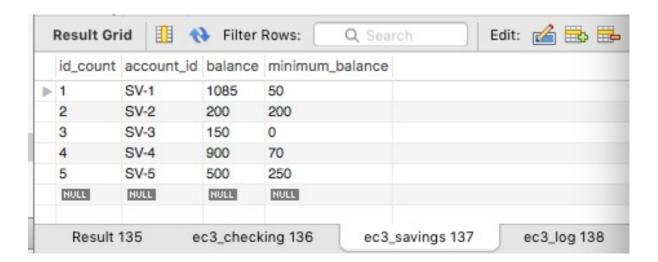


Þ	1	SV-1	860	50			
	2	SV-2	200	200			
	3	SV-3	150	0			
	4	SV-4	900	70			
	5	SV-5	500	250			
	NULL	NULL	NULL	NULL			
	Result 131		c3_check	ing 132 ec3	savings 133	ec3_log 134	

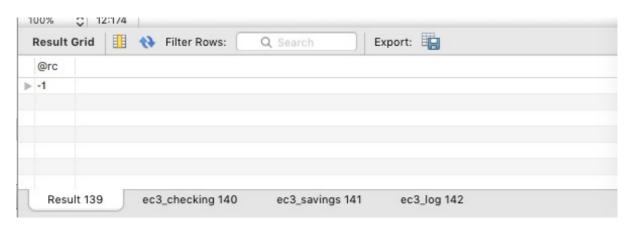
After test 4:





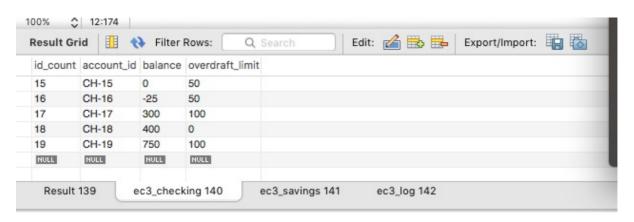


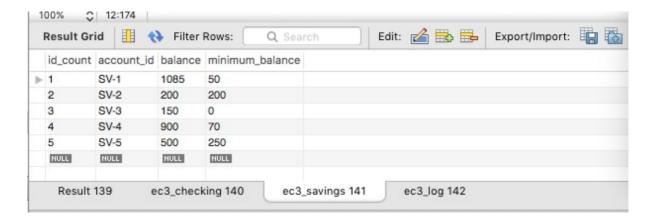
After test 5:

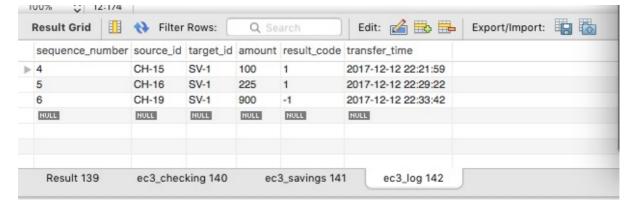


Tables have no change.

Final result:







```
Appendix:
DROP TABLE IF EXISTS 'ec3_checking';
CREATE TABLE 'ec3 checking' (
'id_count' int(11) NOT NULL AUTO_INCREMENT,
'account id' varchar(12) DEFAULT NULL,
'balance' float NOT NULL,
'overdraft limit' float NOT NULL,
PRIMARY KEY ('id_count'),
UNIQUE KEY 'id_count_UNIQUE' ('id_count')
) ENGINE=InnoDB AUTO_INCREMENT=14 DEFAULT CHARSET=utf8;
DROP TABLE IF EXISTS 'ec3_savings';
CREATE TABLE 'ec3_savings' (
'id_count' int(11) NOT NULL AUTO_INCREMENT,
'account id' varchar(12) DEFAULT NULL,
'balance' float NOT NULL,
'minimum_balance' float NOT NULL,
PRIMARY KEY ('id count').
UNIQUE KEY 'id count UNIQUE' ('id count')
) ENGINE=InnoDB AUTO INCREMENT=1 DEFAULT CHARSET=utf8;
DROP TABLE IF EXISTS 'ec3 log';
CREATE TABLE 'ec3 log' (
'sequence number' int(11) NOT NULL AUTO INCREMENT,
'source id' varchar(12) DEFAULT NULL,
'target id' varchar(12) DEFAULT NULL,
'amount' float DEFAULT NULL,
'result code' int DEFAULT NULL,
`transfer_time` timestamp,
PRIMARY KEY ('sequence_number')
) ENGINE=InnoDB AUTO_INCREMENT=4 DEFAULT CHARSET=utf8;
DROP TRIGGER IF EXISTS 'trigger_insert_checking';
DELIMITER $$
CREATE TRIGGER 'trigger insert checking'
 BEFORE INSERT ON 'ec3_checking' FOR EACH ROW
BEGIN
      IF NOT EXISTS (select * from 'ec3_checking') THEN
            SET New.account id = "CH-14";
      ELSE
            SET New.account_id = CONCAT("CH-",(select max(id_count) from
'ec3 checking')+1);
```

```
end if;
END $$
DELIMITER;
DROP TRIGGER IF EXISTS 'trigger_insert_saving';
DELIMITER $$
CREATE TRIGGER 'trigger_insert_saving'
 BEFORE INSERT ON 'ec3_savings' FOR EACH ROW
BEGIN
      IF NOT EXISTS (select * from 'ec3_savings') THEN
             SET New.account id = "SV-1":
      ELSE
             SET New.account_id = CONCAT("SV-",(select max(id_count) from
'ec3 savings')+1);
      end if:
END $$
DELIMITER;
DROP PROCEDURE IF EXISTS 'transfer_commit';
DELIMITER $$
CREATE PROCEDURE `transfer_commit` (source_id VARCHAR(12),target_id
VARCHAR(12),
amount float, OUT rc int)
BEGIN
      DECLARE temp_balance float;
      IF source id LIKE "CH-%" THEN
             IF ((select balance from 'ec3_checking' where 'account_id' = source_id) -
amount) >
      (-1.0 * (select overdraft_limit from 'ec3_checking' where 'account_id' = source_id))
THEN
     # Debit the balance in the source account
     SET temp balance = (select balance from 'ec3 checking' where 'account id' =
source_id);
                    update 'ec3_checking' set balance = temp_balance - amount where
account id = source id;
                    # Increase the balance in the target account
     IF target_id LIKE "CH-%" THEN
                          SET temp balance = (select balance from 'ec3 checking'
where `account_id` = target_id);
                          update `ec3_checking` set balance = temp_balance + amount
where account_id = target_id;
     END IF;
```

```
IF target_id LIKE "SV-%" THEN
                           SET temp balance = (select balance from 'ec3 savings'
where `account_id` = target_id);
                           update `ec3_savings` set balance = temp_balance + amount
where account_id = target_id;
      END IF;
      # Write a log record containing the source account id,
      # target account id, amount and an rc=1 to the log table
      INSERT INTO 'ec3_log' ('source_id', 'target_id', 'amount', 'result_code')
                           VALUES (source_id,target_id,amount,1);
                     SET rc = 1;
              ELSE
      INSERT INTO 'ec3 log' ('source id', 'target id', 'amount', 'result code')
                           VALUES (source_id,target_id,amount,-1);
                    SET rc = -1;
             END IF:
      ELSEIF source_id LIKE "SV-%" THEN
             IF ((select balance from 'ec3_savings' where 'account_id' = source_id) -
amount) >
      (1.0 * (select minimum balance from 'ec3 savings' where 'account id' =
source_id)) THEN
      # Debit the balance in the source account
      SET temp_balance = (select balance from 'ec3_savings' where 'account id' =
source_id);
                    update 'ec3_savings' set balance = temp_balance - amount where
account_id = source_id;
                     # Increase the balance in the target account
      IF target_id LIKE "CH-%" THEN
                           SET temp_balance = (select balance from 'ec3_checking'
where `account_id` = target_id);
                           update 'ec3 checking' set balance = temp balance + amount
where account id = target id;
      END IF:
                    IF target_id LIKE "SV-%" THEN
                           SET temp_balance = (select balance from 'ec3_savings'
where `account_id` = target_id);
                           update `ec3_savings` set balance = temp_balance + amount
where account id = target id;
      END IF;
      # Write a log record containing the source account id,
      # target account id, amount and an rc=1 to the log table
```

```
INSERT INTO 'ec3_log' ('source_id', 'target_id', 'amount', 'result_code')
                           VALUES (source_id,target_id,amount,1);
                    SET rc = 1;
             ELSE
     INSERT INTO 'ec3_log' ('source_id', 'target_id', 'amount', 'result_code')
                           VALUES (source_id,target_id,amount,-1);
                    SET rc = -1:
             END IF:
      END IF;
END $$
DELIMITER;
# load initial data
INSERT INTO 'ec3_checking' (balance,overdraft_limit) VALUES (0,0);
INSERT INTO 'ec3 checking' (balance, overdraft limit) VALUES (100,50);
INSERT INTO 'ec3_checking' (balance, overdraft_limit) VALUES (200,50);
INSERT INTO 'ec3_checking' (balance, overdraft_limit) VALUES (300,100);
INSERT INTO 'ec3 checking' (balance, overdraft limit) VALUES (400,0);
DELETE FROM 'ec3_checking' where id_count = 14;
INSERT INTO 'ec3 savings' (balance, minimum balance) VALUES (760,50);
INSERT INTO 'ec3_savings' (balance,minimum_balance) VALUES (200,200);
INSERT INTO 'ec3 savings' (balance, minimum balance) VALUES (150,0):
INSERT INTO 'ec3_savings' (balance,minimum_balance) VALUES (900,70);
# test 1
INSERT INTO 'ec3 checking' (balance, overdraft limit) VALUES (750,100);
# test 2
INSERT INTO 'ec3_savings' (balance, minimum_balance) values(500, 250);
# test 3
call transfer_commit("CH-15", "SV-1",100,@rc);
select @rc:
# test 4
call transfer_commit("CH-16", "SV-1",225,@rc);
select @rc;
*/
# test 5:
call transfer_commit("CH-19", "SV-1",900,@rc);
```

```
#call transfer_commit("V-15", "SV-1",100,@rc);
#select @rc;

select * from `ec3_checking`;
select * from `ec3_savings`;
select * from `ec3_log`;
```