

BANK

| | | |
|-------|-------|---------------------|
| Bname | Baddr | <u>Routing_code</u> |
|-------|-------|---------------------|

BANK_BRANCH

| | | | |
|-------------|-------------|-----------------|---------------------|
| Branch_name | Branch_addr | <u>BranchNo</u> | <u>Routing_code</u> |
|-------------|-------------|-----------------|---------------------|

ACCOUNT

| | | | | |
|---------------|-------|---------|----------|--------------|
| <u>AcctNo</u> | Atype | Balance | BranchNo | Routing_code |
|---------------|-------|---------|----------|--------------|

LOAN

| | | | | | |
|---------------|-------|--------|---------------|----------|--------------|
| <u>LoanNo</u> | Ltype | Amount | Contract_date | BranchNo | Routing_code |
|---------------|-------|--------|---------------|----------|--------------|

CUSTOMER

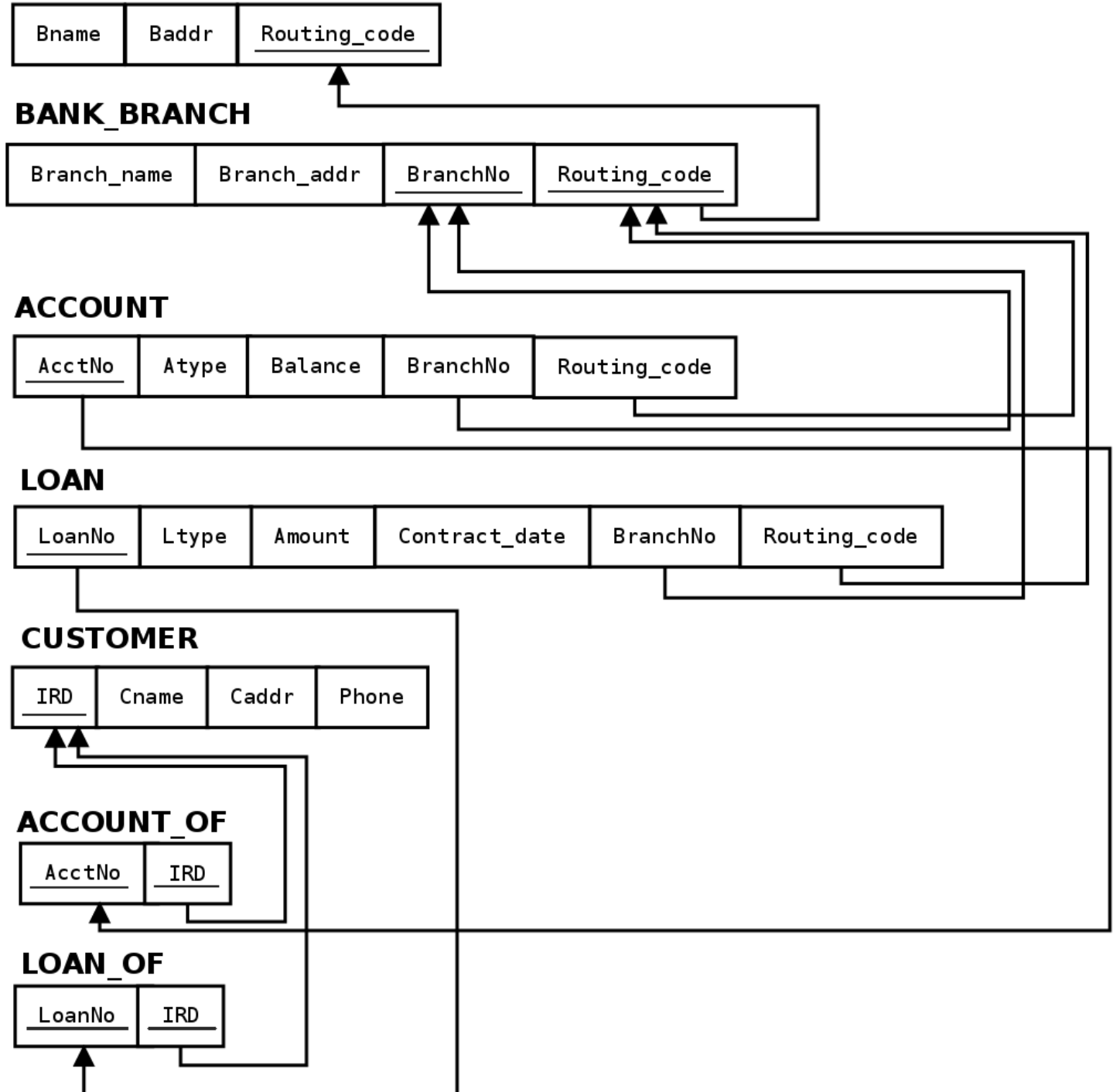
| | | | |
|------------|-------|-------|-------|
| <u>IRD</u> | Cname | Caddr | Phone |
|------------|-------|-------|-------|

ACCOUNT_OF

| | |
|---------------|------------|
| <u>AcctNo</u> | <u>IRD</u> |
|---------------|------------|

LOAN_OF

| | |
|---------------|------------|
| <u>LoanNo</u> | <u>IRD</u> |
|---------------|------------|



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DROP TABLE loan_of;
DROP TABLE account_of;
DROP TABLE customer;
DROP TABLE loan;
DROP TABLE account;
DROP TABLE bank_branch;
DROP TABLE bank;

--Create tables

--BANK TABLE
CREATE TABLE bank
    (bname          VARCHAR2(20)          NOT NULL UNIQUE,
     baddr          VARCHAR2(30),
     routing_code   CHAR(5)              PRIMARY KEY
     CONSTRAINT rc_num_len CHECK (REGEXP_LIKE(routing_code,
'[:digit:]]{5}'))
    );

--Insert bank values
INSERT INTO bank VALUES (      'Eastpac',          '32 Euston Road',
'57558');
INSERT INTO bank VALUES (      'Bank of Bankerton', '35 Regent Street',
'00128');
INSERT INTO bank VALUES (      'Peoples Bank ',    '1004 Park Lane',
'99147');
COMMIT;

--BANK_BRANCH TABLE
CREATE TABLE bank_branch
    (branch_name    VARCHAR2(20)          NOT NULL,
     branch_addr    VARCHAR(30),
     branchno       CHAR(2)              NOT NULL UNIQUE
     --check to make sure branch number is a 2 digit number
     CONSTRAINT br_num_len CHECK (REGEXP_LIKE(branchno,
'[:digit:]]{2}')),
     routing_code   CHAR(5) REFERENCES bank(routing_code),
     PRIMARY KEY (branchno, routing_code) );

--Insert branch values
INSERT INTO bank_branch VALUES ('Eastpac HQ',      '32 Euston Road',
'78', '57558');
INSERT INTO bank_branch VALUES ('Fleet Branch',    '34 Regent St',
'01', '00128');
INSERT INTO bank_branch VALUES ('Hobo Branch',     '21 Old Kent Road',
'03', '00128');
INSERT INTO bank_branch VALUES ('Trafalgar Branch', '122 Trafalgar Square',
'02', '00128');
INSERT INTO bank_branch VALUES ('Trafalgar Branch', '123 Trafalgar Square',
'26', '99147');
INSERT INTO bank_branch VALUES ('Railroad Branch', '8 Park Lane',    '27',
'99147');
COMMIT;

--CUSTOMER TABLE
CREATE TABLE customer

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        (ird          CHAR(9)          PRIMARY KEY
          --check that ird is an 8 or 9 digit number
          CONSTRAINT ird_num_len CHECK (REGEXP_LIKE(ird, '[:digit:]{8,9}')),
        cname         VARCHAR(20)      NOT NULL,
        caddr         VARCHAR(30),
        phone         CHAR(16)
          --check that phone is a viable phone number
          CONSTRAINT ph_num_check CHECK (REGEXP_LIKE(phone,
'+?([[:digit:]]){1,16}'))
        );
--Insert customer values
INSERT INTO customer VALUES('36328378', 'Scott Terrier', '34 Malborough St',
NULL);
INSERT INTO customer VALUES ('32352342', 'Meghan Terrier', '34 Malborough St',
'027 509 5789');
INSERT INTO customer VALUES('111111112', 'Jane Thimble', '5 Park Lane',
'278 5606');
INSERT INTO customer VALUES('900980987', 'Timmy Shoe', '12 Whitechapel
Rd', '+021 883 1555');
INSERT INTO customer VALUES('27958588', 'Neil Barrow', '45 Regent St',
'127 123 5432');
INSERT INTO customer VALUES('33300583', 'Boris Iron', '11 Coventry
Street', '+64 21 3081094');
INSERT INTO customer VALUES('123456781', 'Battleship Jones', '123 Park Lane',
NULL);
INSERT INTO customer VALUES('98723555', 'Otto Mobyl', '27 Malborough St',
'378 3789');
INSERT INTO customer VALUES('454540454', 'Patty Tops', '86 Vine Street',
'+65 335 1097');
INSERT INTO customer VALUES('23087920', 'Guy Monopoly', '1 Park Lane',
'+54 27 111 1111');

COMMIT;

--ACCOUNT TABLE
CREATE TABLE account
        (acctno          CHAR(5)          PRIMARY KEY,
          CONSTRAINT acct_num_check CHECK (REGEXP_LIKE(acctno,
'[:digit:]{5}')),
        atype           CHAR(10)          NOT NULL
          CONSTRAINT atype_check CHECK (atype IN ('savings', 'checking',
'investment')),
        balance         NUMBER(18,2)      NOT NULL,
        branchno        CHAR(2),          -- REFERENCES bank_branch(branchno),
        routing_code     CHAR(5),          -- REFERENCES
bank_branch(b_routing_code)
          CONSTRAINT account_fkey FOREIGN KEY (branchno, routing_code)
            REFERENCES bank_branch(branchno, routing_code)
        );
--Insert account values (acctno, atype, balance, branch_num, rcode

--Eastpac(57558) accounts
INSERT INTO account VALUES ( '11111', 'investment', 450123.00, '78',
'57558');
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INSERT INTO account VALUES ( '11112', 'checking', 101.54, '78',
'57558');

--Bankerton(00128) accounts
INSERT INTO account VALUES ( '04569', 'savings', 500.00, '01',
'00128');
INSERT INTO account VALUES ( '65445', 'checking', 2000.02, '03',
'00128');
INSERT INTO account VALUES ( '22053', 'checking', 27.59, '02',
'00128');
INSERT INTO account VALUES ( '22054', 'savings', 1000.00, '02',
'00128');
INSERT INTO account VALUES ( '09545', 'savings', 871.99, '01',
'00128');

--Peoples Bank(99147) accounts
INSERT INTO account VALUES ( '10840', 'checking', 217.13, '27',
'99147');
INSERT INTO account VALUES ( '58588', 'savings', 475.08, '27',
'99147');
INSERT INTO account VALUES ( '23346', 'savings', 3098.12, '26',
'99147');
INSERT INTO account VALUES ( '23347', 'investment', 10200.00, '26',
'99147');
INSERT INTO account VALUES ( '90562', 'savings', 950.4, '26',
'99147');
COMMIT;

--LOAN TABLE
CREATE TABLE loan
    (loanno          CHAR(3)          PRIMARY KEY,
     CONSTRAINT loan_num_check CHECK (REGEXP_LIKE(loanno,
'[:digit:]{3}')),
    ltype           CHAR(10)
     CONSTRAINT ltype_check CHECK (ltype IN ('car', 'home', 'personal')),
    amount          NUMBER(18,2),
    contract_date   DATE              NOT NULL,
    branchno        CHAR(2),--        REFERENCES bank_branch(branchno),
    routing_code    CHAR(5),--        REFERENCES bank_branch(b_routing_code)
     CONSTRAINT loan_fkey FOREIGN KEY (branchno, routing_code)
     REFERENCES bank_branch(branchno, routing_code)
    );

--Insert loans (number, atype, amount, date, branch, rcode)
--Timmy Shoe savings loan
INSERT INTO loan VALUES ('002', 'personal', 400, TO_DATE('18-08-2015', 'dd-mm-
YYYY'), '78', '57558');
--Battleship Jones investment loan
INSERT INTO loan VALUES ('354', 'home', 10000.00, TO_DATE('05-03-2001', 'dd-mm-
YYYY'), '26', '99147');
--Scott/Meghan joint loan
INSERT INTO loan VALUES ('042', 'car', 2500.00, TO_DATE('12-12-2010', 'dd-mm-
YYYY'), '01', '00128');

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```
--Boris loan
INSERT INTO loan VALUES ('012', 'personal', 2000.00, TO_DATE('03-02-2009', 'dd-
mm-yyyy'), '03', '00128');

--ACCOUNT_OF TABLE
CREATE TABLE account_of
    (acctno      CHAR(5)          REFERENCES account(acctno),
     ird         CHAR(9)          REFERENCES customer(ird),
     PRIMARY KEY (acctno, ird)
    );

--Insert account-customer relationships
INSERT INTO account_of VALUES ('11111', '23087920');
INSERT INTO account_of VALUES ('11112', '23087920');
INSERT INTO account_of VALUES ('04569', '36328378');
INSERT INTO account_of VALUES ('04569', '32352342');
INSERT INTO account_of VALUES ('65445', '33300583');
INSERT INTO account_of VALUES ('22053', '98723555');
INSERT INTO account_of VALUES ('90562', '111111112');
INSERT INTO account_of VALUES ('23346', '123456781');
INSERT INTO account_of VALUES ('23347', '123456781');
INSERT INTO account_of VALUES ('22054', '27958588');
INSERT INTO account_of VALUES ('09545', '454540454');
INSERT INTO account_of VALUES ('10840', '900980987');
INSERT INTO account_of VALUES ('58588', '900980987');
COMMIT;

--LOAN_OF TABLE
CREATE TABLE loan_of
    (loanno      CHAR(3)          REFERENCES loan(loanno),
     ird         CHAR(9)          REFERENCES customer(ird),
     PRIMARY KEY (loanno, ird)
    );

--Timmy Shoe
INSERT INTO loan_of VALUES ('002', '900980987');
--Battleship Jones
INSERT INTO loan_of VALUES ('354', '123456781');
--Scott joint
INSERT INTO loan_of VALUES ('042', '36328378');
--Meghan joint
INSERT INTO loan_of VALUES ('042', '32352342');
--Boris
INSERT INTO loan_of VALUES ('012', '33300583');
```

```
--Query 1
-- List the customer name, bank name and loan amount for every customer who has
-- taken out a loan
SELECT cname, bname, amount
FROM customer c, bank b, loan l, loan_of lo
WHERE c.ird = lo.ird AND
      b.routing_code = l.routing_code AND
      l.loanno = lo.loanno
ORDER BY cname;

--Query 2
-- Give the name and address of every customer who lives on Park Lane
SELECT cname, caddr address
FROM customer
WHERE caddr LIKE '%Park Lane%';

--Query 3
-- Give the contract date, amount and loan type for each loan taken out from
-- the Bank of Bankerton
SELECT ltype, amount, TO_DATE(contract_date, 'dd-mon-yyyy') AS loan_date
FROM loan
ORDER BY contract_date;

--Query 4
-- Print the name and sum of each branch whose accounts sum to
-- less than $10,000.
SELECT branch_name, SUM(balance)
FROM bank_branch b, account a
WHERE b.branchno = a.branchno
GROUP BY b.branch_name
HAVING SUM(balance) < 10000
ORDER BY SUM(balance);

--Query 5
-- List the customers who have accounts with more than $10,000 in them
SELECT cname, ird
FROM customer
WHERE ird IN
      (SELECT ird FROM account a, account_of ao
       WHERE a.acctno = ao.acctno
       GROUP BY ird
       HAVING SUM(balance) > 10000);

--Query 6
-- List all the accounts from customers who live on Malborough Street
SELECT DISTINCT acctno, c.cname, atype
FROM account, customer c
WHERE acctno IN
      (SELECT acctno
       FROM account_of ao
       WHERE ao.ird = c.ird AND
             c.caddr LIKE '%Malborough%')
ORDER BY acctno;
```

```
--Query 7
-- Count the number of accounts in each branch
SELECT b.routing_code AS Bank, bb.branchno, b.bname, bb.branch_name, COUNT(*) AS
Num_Acc
FROM account a, bank_branch bb, bank b
WHERE b.routing_code = bb.routing_code AND
a.branchno IN bb.branchno
GROUP BY b.bname, b.routing_code, bb.branchno, bb.branch_name
ORDER BY COUNT(*);
```

SQL> @q01.sql

| CNAME | BNAME | AMOUNT |
|------------------|-------------------|--------|
| Battleship Jones | Peoples Bank | 10000 |
| Boris Iron | Bank of Bankerton | 2000 |
| Meghan Terrier | Bank of Bankerton | 2500 |
| Scott Terrier | Bank of Bankerton | 2500 |
| Timmy Shoe | Eastpac | 400 |

SQL> @q02.sql

| CNAME | ADDRESS |
|------------------|---------------|
| Jane Thimble | 5 Park Lane |
| Battleship Jones | 123 Park Lane |
| Guy Monopoly | 1 Park Lane |

SQL> @q03.sql

| LTYPE | AMOUNT | LOAN_DATE |
|----------|--------|-----------|
| home | 10000 | 05-MAR-01 |
| personal | 2000 | 03-FEB-09 |
| car | 2500 | 12-DEC-10 |
| personal | 400 | 18-AUG-15 |

SQL> @q04.sql

| BRANCH_NAME | SUM(BALANCE) |
|-----------------|--------------|
| Railroad Branch | 692.21 |
| Fleet Branch | 1371.99 |
| Hobo Branch | 2000.02 |

SQL> @q05.sql

| CNAME | IRD |
|------------------|-----------|
| Guy Monopoly | 23087920 |
| Battleship Jones | 123456781 |

SQL> @q06.sql

| ACCTN | CNAME | ATYPE |
|-------|----------------|----------|
| 04569 | Meghan Terrier | savings |
| 04569 | Scott Terrier | savings |
| 22053 | Otto Mobyl | checking |

SQL> @q07.sql

| BANK | BR | BNAME | BRANCH_NAME | NUM_ACC |
|-------|----|-------------------|-------------|---------|
| 00128 | 03 | Bank of Bankerton | Hobo Branch | 1 |

| | | | | |
|-------|----|-------------------|------------------|---|
| 57558 | 78 | Eastpac | Eastpac HQ | 2 |
| 00128 | 01 | Bank of Bankerton | Fleet Branch | 2 |
| 00128 | 02 | Bank of Bankerton | Trafalgar Branch | 2 |
| 99147 | 27 | Peoples Bank | Railroad Branch | 2 |
| 99147 | 26 | Peoples Bank | Trafalgar Branch | 3 |

6 rows selected.

SQL> spool off