A2A Sample Solution Run


```
SQL> --========================== START RUN ======================================---
SQL> -- Running mlib_initialSchemaInsert.sql
SQL> set echo off
SQL> ------------- Task 1.1 Create Tables ----------------------------------------
SQL> @T1-ml-schm.sql
SQL> --****PLEASE ENTER YOUR DETAILS BELOW****
SQL> --T1-ml-schm.sql
SQL>
SQL> --Student ID: Sample Solution
SQL> --Student Name:
SQL> --Tutorial No:
SQL>
SQL> /* Comments for your marker:
SQL>
SQL>
SQL>
SQL>*/
SQL>
SQL> -- 1.1 Add Create table statments for the Missing TABLES below
SQL> -- Ensure all column comments, and constraints (other than FK's)
SQL> -- are included. FK constraints are to be added at the end of this script
SQL>
SQL> -- BOOK_COPY
SQL> CREATE TABLE book_copy (
  2      branch_code        NUMBER(2) NOT NULL,
  3      bc_id              NUMBER(6) NOT NULL,
  4      bc_purchase_price  NUMBER(7, 2) NOT NULL,
  5      bc_counter_reserve CHAR(1) NOT NULL,
  6      book_call_no       VARCHAR2(20) NOT NULL
  7  );

Table BOOK_COPY created.

SQL>
SQL> ALTER TABLE book_copy
  2      ADD CONSTRAINT bc_counter_chk CHECK ( bc_counter_reserve IN ( 'N', 'Y' ) );

Table BOOK_COPY altered.

SQL>
SQL> COMMENT ON COLUMN book_copy.branch_code IS
  2      'Branch number ';

Comment created.

SQL>
SQL> COMMENT ON COLUMN book_copy.bc_id IS
  2      'Book copy id within the branch which owns this book copy';

Comment created.

SQL>
SQL> COMMENT ON COLUMN book_copy.bc_purchase_price IS
  2      'Purchase price for this copy';

Comment created.
```

```
SQL>
SQL> COMMENT ON COLUMN book_copy.bc_counter_reserve IS
  2      'Flag to indicate if on Counter Reserve or not (Y/N)';

Comment created.

SQL>
SQL> COMMENT ON COLUMN book_copy.book_call_no IS
  2      'Books call number - identifies a book';

Comment created.

SQL>
SQL> ALTER TABLE book_copy ADD CONSTRAINT book_copy_pk PRIMARY KEY ( bc_id,
  2                                                                 branch_code );

Table BOOK_COPY altered.

SQL>
SQL> -- LOAN
SQL> CREATE TABLE loan (
  2      branch_code             NUMBER(2) NOT NULL,
  3      bc_id                   NUMBER(6) NOT NULL,
  4      loan_date_time          DATE NOT NULL,
  5      loan_due_date           DATE NOT NULL,
  6      loan_actual_return_date DATE,
  7      bor_no                  NUMBER(6) NOT NULL
  8  );

Table LOAN created.

SQL>
SQL> COMMENT ON COLUMN loan.branch_code IS
  2      'Branch number ';

Comment created.

SQL>
SQL> COMMENT ON COLUMN loan.bc_id IS
  2      'Book copy id within the branch which owns this book copy';

Comment created.

SQL>
SQL> COMMENT ON COLUMN loan.loan_date_time IS
  2      'Date and time loan taken out';

Comment created.

SQL>
SQL> COMMENT ON COLUMN loan.loan_due_date IS
  2      'Date loan due';

Comment created.
```

```
SQL>
SQL> COMMENT ON COLUMN loan.loan_actual_return_date IS
  2      'Actual date loan returned';

Comment created.

SQL>
SQL> COMMENT ON COLUMN loan.bor_no IS
  2      'Borrower identifier';

Comment created.

SQL>
SQL> ALTER TABLE loan
  2      ADD CONSTRAINT loan_pk PRIMARY KEY ( bc_id,
  3                                           branch_code,
  4                                           loan_date_time );

Table LOAN altered.

SQL>
SQL> -- RESERVE
SQL> CREATE TABLE reserve (
  2      reserve_id               NUMBER(6) NOT NULL,
  3      branch_code              NUMBER(2) NOT NULL,
  4      bc_id                    NUMBER(6) NOT NULL,
  5      reserve_date_time_placed DATE NOT NULL,
  6      bor_no                   NUMBER(6) NOT NULL
  7  );

Table RESERVE created.

SQL>
SQL> COMMENT ON COLUMN reserve.reserve_id IS
  2      'Reservation number';

Comment created.

SQL>
SQL> COMMENT ON COLUMN reserve.branch_code IS
  2      'Branch number ';

Comment created.

SQL>
SQL> COMMENT ON COLUMN reserve.bc_id IS
  2      'Book copy id within the branch which owns this book copy';

Comment created.

SQL>
SQL> COMMENT ON COLUMN reserve.reserve_date_time_placed IS
  2      'Date and time reserve was placed';

Comment created.
```

```
SQL>
SQL> COMMENT ON COLUMN reserve.bor_no IS
  2      'Borrower identifier';

Comment created.

SQL>
SQL> ALTER TABLE reserve ADD CONSTRAINT reserve_pk PRIMARY KEY ( reserve_id );

Table RESERVE altered.

SQL>
SQL> ALTER TABLE reserve
  2      ADD CONSTRAINT reserve_nk UNIQUE ( branch_code,
  3                                         bc_id,
  4                                         reserve_date_time_placed );

Table RESERVE altered.

SQL>
SQL> -- Add all missing FK Constraints below here
SQL>
SQL> ALTER TABLE loan
  2      ADD CONSTRAINT bc_loan FOREIGN KEY ( bc_id,
  3                                           branch_code )
  4          REFERENCES book_copy ( bc_id,
  5                                 branch_code );

Table LOAN altered.

SQL>
SQL> ALTER TABLE reserve
  2      ADD CONSTRAINT bc_reserve FOREIGN KEY ( bc_id,
  3                                              branch_code )
  4          REFERENCES book_copy ( bc_id,
  5                                 branch_code );

Table RESERVE altered.

SQL>
SQL> ALTER TABLE book_copy
  2      ADD CONSTRAINT bd_bc FOREIGN KEY ( book_call_no )
  3          REFERENCES book_detail ( book_call_no );

Table BOOK_COPY altered.

SQL>
SQL> ALTER TABLE loan
  2      ADD CONSTRAINT borr_loan FOREIGN KEY ( bor_no )
  3          REFERENCES borrower ( bor_no );

Table LOAN altered.

SQL>
SQL> ALTER TABLE reserve
  2      ADD CONSTRAINT borr_reserve FOREIGN KEY ( bor_no )
```

```
  3          REFERENCES borrower ( bor_no );

Table RESERVE altered.

SQL>
SQL> ALTER TABLE book_copy
  2      ADD CONSTRAINT branch_bookcopy FOREIGN KEY ( branch_code )
  3          REFERENCES branch ( branch_code );

Table BOOK_COPY altered.

SQL>
SQL> ------------- BOOK_COPY ----------------------------------------
SQL> describe BOOK_COPY
Name                 Null?    Type
-------------------- -------- ------------
BRANCH_CODE          NOT NULL NUMBER(2)
BC_ID                NOT NULL NUMBER(6)
BC_PURCHASE_PRICE    NOT NULL NUMBER(7,2)
BC_COUNTER_RESERVE   NOT NULL CHAR(1)
BOOK_CALL_NO         NOT NULL VARCHAR2(20)
SQL> ------------- LOAN ---------------------------------------
SQL> describe LOAN
Name                       Null?    Type
-------------------------- -------- ---------
BRANCH_CODE                NOT NULL NUMBER(2)
BC_ID                      NOT NULL NUMBER(6)
LOAN_DATE_TIME             NOT NULL DATE
LOAN_DUE_DATE              NOT NULL DATE
LOAN_ACTUAL_RETURN_DATE             DATE
BOR_NO                     NOT NULL NUMBER(6)
SQL> ------------- RESERVE ------------------------------------------
SQL> describe RESERVE
Name                        Null?    Type
--------------------------- -------- ---------
RESERVE_ID                  NOT NULL NUMBER(6)
BRANCH_CODE                 NOT NULL NUMBER(2)
BC_ID                       NOT NULL NUMBER(6)
RESERVE_DATE_TIME_PLACED    NOT NULL DATE
BOR_NO                      NOT NULL NUMBER(6)
SQL>
SQL> ------------- CONSTRAINTS DECLARED --------------------------
SQL> set echo off

CONSTRAINT_NAME            CONSTRAINT_ TABLE_NAME      SEARCH_CONDITION
-------------------------- ----------- --------------- ----------------------------------------
BOOK_COPY_PK               Primary Key BOOK_COPY
BD_BC                      Foreign Key BOOK_COPY
BRANCH_BOOKCOPY            Foreign Key BOOK_COPY
SYS_C0031834               Check       BOOK_COPY       "BC_ID" IS NOT NULL
SYS_C0031837               Check       BOOK_COPY       "BOOK_CALL_NO" IS NOT NULL
SYS_C0031836               Check       BOOK_COPY       "BC_COUNTER_RESERVE" IS NOT NULL
BC_COUNTER_CHK             Check       BOOK_COPY        bc_counter_reserve IN ( 'N', 'Y' )
SYS_C0031833               Check       BOOK_COPY       "BRANCH_CODE" IS NOT NULL
SYS_C0031835               Check       BOOK_COPY       "BC_PURCHASE_PRICE" IS NOT NULL
LOAN_PK                    Primary Key LOAN
```

```
BORR_LOAN                Foreign Key LOAN
BC_LOAN                  Foreign Key LOAN
SYS_C0031843             Check       LOAN           "LOAN_DUE_DATE" IS NOT NULL
SYS_C0031842             Check       LOAN           "LOAN_DATE_TIME" IS NOT NULL
SYS_C0031841             Check       LOAN           "BC_ID" IS NOT NULL
SYS_C0031840             Check       LOAN           "BRANCH_CODE" IS NOT NULL
SYS_C0031844             Check       LOAN           "BOR_NO" IS NOT NULL
RESERVE_NK               Unique      RESERVE
RESERVE_PK               Primary Key RESERVE
BORR_RESERVE             Foreign Key RESERVE
BC_RESERVE               Foreign Key RESERVE
SYS_C0031848             Check       RESERVE        "BC_ID" IS NOT NULL
SYS_C0031849             Check       RESERVE        "RESERVE_DATE_TIME_PLACED" IS NOT NULL
SYS_C0031850             Check       RESERVE        "BOR_NO" IS NOT NULL
SYS_C0031846             Check       RESERVE        "RESERVE_ID" IS NOT NULL
SYS_C0031847             Check       RESERVE        "BRANCH_CODE" IS NOT NULL

26 rows selected.

SQL>
SQL> ------------- Task 2 Load Student Data  -------------------------------------
SQL> @T2-ml-insert.sql
SQL> --****PLEASE ENTER YOUR DETAILS BELOW****
SQL> --T2-ml-insert.sql
SQL>
SQL> --Student ID: Sample Solution
SQL> --Student Name:
SQL> --Tutorial No:
SQL>
SQL> /* Comments for your marker:
SQL>
SQL>
SQL>
SQL>*/
SQL>
SQL> -- 2 (a) Load the BOOK_COPY, LOAN and RESERVE tables with your own
SQL> -- test data following the data requirements expressed in the brief
SQL>
SQL> -- BOOK COPY
SQL> INSERT INTO book_copy VALUES (
  2      10,
  3      1,
  4      150.43,
  5      'Y',
  6      '005.432 L761P'
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      12,
  3      1,
  4      150.43,
  5      'N',
  6      '005.432 L761P'
```

```
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      13,
  3      1,
  4      150.43,
  5      'N',
  6      '005.432 L761P'
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      10,
  3      2,
  4      24.56,
  5      'N',
  6      '823.914 A211H'
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      10,
  3      3,
  4      82.83,
  5      'N',
  6      '005.74 D691D'
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      12,
  3      2,
  4      82.83,
  5      'N',
  6      '005.74 D691D'
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      13,
  3      2,
  4      85.67,
  5      'Y',
  6      '005.74 D691D'
  7  );
```

```
1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      13,
  3      3,
  4      90.23,
  5      'N',
  6      '005.74 D691D'
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      12,
  3      3,
  4      22.06,
  5      'N',
  6      '112.6 S874D'
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      12,
  3      4,
  4      19.99,
  5      'N',
  6      '823.914 H219A'
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO book_copy VALUES (
  2      12,
  3      5,
  4      19.99,
  5      'N',
  6      '823.914 H219A'
  7  );

1 row inserted.

SQL>
SQL> UPDATE branch
  2  SET
  3      branch_count_books = 3
  4  WHERE
  5      branch_code = 10;

1 row updated.
```

```
SQL>
SQL> UPDATE branch
  2  SET
  3      branch_count_books = 5
  4  WHERE
  5      branch_code = 12;

1 row updated.

SQL>
SQL> UPDATE branch
  2  SET
  3      branch_count_books = 3
  4  WHERE
  5      branch_code = 13;

1 row updated.

SQL>
SQL> -- LOAN
SQL>
SQL> INSERT INTO loan VALUES (
  2      12,
  3      1,
  4      TO_DATE('01-Jun-2021 09:00 AM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('15-Jun-2021', 'dd-mon-yyyy'),
  6      TO_DATE('10-Jun-2021', 'dd-mon-yyyy'),
  7      4
  8  );

1 row inserted.

SQL>
SQL> INSERT INTO loan VALUES (
  2      12,
  3      2,
  4      TO_DATE('01-Jun-2021 10:15 AM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('15-Jun-2021', 'dd-mon-yyyy'),
  6      TO_DATE('15-Jun-2021', 'dd-mon-yyyy'),
  7      4
  8  );

1 row inserted.

SQL>
SQL> INSERT INTO loan VALUES (
  2      13,
  3      1,
  4      TO_DATE('01-Jun-2021 02:00 PM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('15-Jun-2021', 'dd-mon-yyyy'),
  6      TO_DATE('15-Jun-2021', 'dd-mon-yyyy'),
  7      5
  8  );

1 row inserted.
```

```
SQL>
SQL> INSERT INTO loan VALUES (
  2      12,
  3      1,
  4      TO_DATE('15-Jun-2021 10:00 AM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('29-Jun-2021', 'dd-mon-yyyy'),
  6      TO_DATE('01-Aug-2021', 'dd-mon-yyyy'),
  7      1
  8  );

1 row inserted.

SQL>
SQL> INSERT INTO loan VALUES (
  2      13,
  3      1,
  4      TO_DATE('15-Jun-2021 11:00 AM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('29-Jun-2021', 'dd-mon-yyyy'),
  6      TO_DATE('05-Aug-2021', 'dd-mon-yyyy'),
  7      1
  8  );

1 row inserted.

SQL>
SQL> INSERT INTO loan VALUES (
  2      12,
  3      2,
  4      TO_DATE('17-Jun-2021 10:00 AM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('01-Jul-2021', 'dd-mon-yyyy'),
  6      TO_DATE('29-Jun-2021', 'dd-mon-yyyy'),
  7      3
  8  );

1 row inserted.

SQL>
SQL> INSERT INTO loan VALUES (
  2      12,
  3      1,
  4      TO_DATE('06-Aug-2021 01:00 PM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('20-Aug-2021', 'dd-mon-yyyy'),
  6      TO_DATE('20-Aug-2021', 'dd-mon-yyyy'),
  7      4
  8  );

1 row inserted.

SQL>
SQL> INSERT INTO loan VALUES (
  2      12,
  3      2,
  4      TO_DATE('06-Aug-2021 01:00 PM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('20-Aug-2021', 'dd-mon-yyyy'),
  6      TO_DATE('20-Aug-2021', 'dd-mon-yyyy'),
  7      5
```

```
  8  );

1 row inserted.

SQL>
SQL> INSERT INTO loan VALUES (
  2      13,
  3      1,
  4      TO_DATE('06-Aug-2021 01:06 PM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('20-Aug-2021', 'dd-mon-yyyy'),
  6      TO_DATE('18-Aug-2021', 'dd-mon-yyyy'),
  7      4
  8  );

1 row inserted.

SQL>
SQL> INSERT INTO loan VALUES (
  2      12,
  3      4,
  4      TO_DATE('12-Aug-2021 11:50 AM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('26-Aug-2021', 'dd-mon-yyyy'),
  6      NULL,
  7      1
  8  );

1 row inserted.

SQL>
SQL> INSERT INTO loan VALUES (
  2      12,
  3      5,
  4      TO_DATE('13-Aug-2021 10:00 AM', 'dd-mon-yyyy hh:mi AM'),
  5      TO_DATE('27-Aug-2021', 'dd-mon-yyyy'),
  6      NULL,
  7      2
  8  );

1 row inserted.

SQL>
SQL> -- RESERVE
SQL> INSERT INTO reserve VALUES (
  2      1,
  3      12,
  4      4,
  5      TO_DATE('16-Aug-2021 10:00 AM', 'dd-mon-yyyy hh:mi AM'),
  6      2
  7  );

1 row inserted.

SQL>
SQL> INSERT INTO reserve VALUES (
  2      2,
  3      12,
```

```
  4      5,
  5      TO_DATE('18-Aug-2021 11:30 AM', 'dd-mon-yyyy hh:mi AM'),
  6      1
  7  );

1 row inserted.

SQL>
SQL> COMMIT;

Commit complete.

SQL>
SQL> -- Check INSERT Count
SQL> ----------------------
SQL> set echo off

Table Loaded          COUNT(*)
------------------- ----------
1. BOOK_COPY Rows:          11
2. LOAN Rows:               11
3. RESERVE Rows:             2


BRANCH_CODE      BC_ID BC_PURCHASE_PRICE B BOOK_CALL_NO
----------- ---------- ---------------- - --------------------
         10          1           150.43 Y 005.432 L761P
         12          1           150.43 N 005.432 L761P
         13          1           150.43 N 005.432 L761P
         10          2            24.56 N 823.914 A211H
         10          3            82.83 N 005.74 D691D
         12          2            82.83 N 005.74 D691D
         13          2            85.67 Y 005.74 D691D
         13          3            90.23 N 005.74 D691D
         12          3            22.06 N 112.6 S874D
         12          4            19.99 N 823.914 H219A
         12          5            19.99 N 823.914 H219A

11 rows selected.


BRANCH_CODE      BC_ID LOAN_DATE_TIME                LOAN_DUE_DATE        LOAN_ACTUAL_RETURN_D     BOR_NO
----------- ---------- ------------------------------ -------------------- -------------------- ----------
         12          1 01-JUN-2021 09:00:00          15-JUN-2021          10-JUN-2021                   4
         12          2 01-JUN-2021 10:15:00          15-JUN-2021          15-JUN-2021                   4
         13          1 01-JUN-2021 14:00:00          15-JUN-2021          15-JUN-2021                   5
         12          1 15-JUN-2021 10:00:00          29-JUN-2021          01-AUG-2021                   1
         13          1 15-JUN-2021 11:00:00          29-JUN-2021          05-AUG-2021                   1
         12          2 17-JUN-2021 10:00:00          01-JUL-2021          29-JUN-2021                   3
         12          1 06-AUG-2021 13:00:00          20-AUG-2021          20-AUG-2021                   4
         12          2 06-AUG-2021 13:00:00          20-AUG-2021          20-AUG-2021                   5
         13          1 06-AUG-2021 13:06:00          20-AUG-2021          18-AUG-2021                   4
         12          4 12-AUG-2021 11:50:00          26-AUG-2021                                        1
         12          5 13-AUG-2021 10:00:00          27-AUG-2021                                        2

11 rows selected.
```

```
RESERVE_ID BRANCH_CODE      BC_ID RESERVE_DATE_TIME_PLACED          BOR_NO
---------- ----------- ---------- ---------------------------- ----------
         1          12          4 16-AUG-2021 10:00:00                  2
         2          12          5 18-AUG-2021 11:30:00                  1

SQL> -- EXPLICIT checks
SQL> --
SQL> -- Check INSERT Data
SQL> ----------------------
SQL> set echo off
SQL> -- BOOK COPY
SQL> set echo off

BOOK_DETAILS                                          COUNT
--------------------------------------------- ----------
1. Book details used                                   5
2. Libraries assigned book copies                      3
3. Libraries holding multiple copies of a book         2
4. Book copies on counter reserve                      2

SQL> -- CHECK branch count of books updated when book copies inserted
SQL> set echo off

BRANCH_CODE BOOKCOPYCOUNT BRANCH_COUNT_BOOKS  COUNTDIFF
----------- ------------- ------------------ ----------
         10             3                  3          0
         12             5                  5          0
         13             3                  3          0

SQL> -- LOAN
SQL> -- Loan period not 14 day
SQL> -- Each book copy can be loaned for 14 days and then must be renewed to avoid a fine.
SQL> -- For example, a book borrowed on the 2nd August 2021 at 10:00 AM will be due on the
SQL> -- 16th August 2021.
SQL> set echo off
no rows selected

LOAN_DETAILS                                           COUNT
---------------------------------------------- ----------
1. Loans dates incorrect - due/returned before out          0
2. Loans completed                                          9
3. Loans returned late                                      2
4. Loans still due                                          2
5. Branches involved in a loan                              2
6. Borrowers involved in a loan                             5

6 rows selected.

SQL> -- Reserves placed on a book which is on the shelf ie. not currently or never borrowed
SQL> -- (should not occur) Count should be 0
SQL> set echo off

ReservedBookIsOnShelf
---------------------
```

```
                    0

SQL> -- Reserve placed on book on counter reserve
SQL> --  (should not occur) Count should be 0
SQL> set echo off

CounterReserveUsedForReserve
----------------------------
                           0

SQL> -- Date range used
SQL> set echo off

DATES_USED                          COUNT
------------------------------ ----------
1. Invalid Loan dates used              0
2. Invalid reserve dates used           0

SQL> ------------- Task 1.2 Drop Tables ----------------------------------------
SQL> @T1-ml-drop.sql
SQL> --****PLEASE ENTER YOUR DETAILS BELOW****
SQL> --T1-ml-drop.sql
SQL>
SQL> --Student ID: Sample Solution
SQL> --Student Name:
SQL> --Tutorial No:
SQL>
SQL> /* Comments for your marker:
SQL>
SQL>
SQL>
SQL>
SQL>*/
SQL>
SQL> -- 1.2 Add Drop table statements for ALL table below (not just those created
SQL> -- in this script)use ONLY
SQL> --       DROP TABLE tblname PURGE
SQL> -- syntax DO NOT use CASCADE CONSTRAINTS
SQL>
SQL> DROP TABLE loan PURGE;

Table LOAN dropped.

SQL>
SQL> DROP TABLE reserve PURGE;

Table RESERVE dropped.

SQL>
SQL> DROP TABLE borrower PURGE;

Table BORROWER dropped.

SQL>
SQL> DROP TABLE book_copy PURGE;
```

```
Table BOOK_COPY dropped.

SQL>
SQL> DROP TABLE book_detail PURGE;

Table BOOK_DETAIL dropped.

SQL>
SQL> DROP TABLE branch PURGE;

Table BRANCH dropped.

SQL>
SQL> DROP TABLE manager PURGE;

Table MANAGER dropped.

SQL>
SQL> set echo off

TABLES_REMAINING
----------------
               0

SQL> ------------- Student Data replaced with marking data ---------------------
SQL> ---------------------- Task 2 DML ----------------------------------------
SQL> @T2-ml-dm.sql
SQL> --****PLEASE ENTER YOUR DETAILS BELOW****
SQL> --T2-ml-dm.sql
SQL>
SQL> --Student ID: Sample Solution
SQL> --Student Name:
SQL> --Tutorial No:
SQL>
SQL> /* Comments for your marker:
SQL>
SQL>
SQL>
SQL>
SQL>*/
SQL>
SQL> -- 2 (b) (i)
SQL> -- Book details
SQL> INSERT INTO book_detail VALUES (
  2      '005.74 C824C',
  3      'Database Systems: Design, Implementation, and Management',
  4      'R',
  5      793,
  6      TO_DATE('2019', 'YYYY'),
  7      '13'
  8  );

1 row inserted.

SQL>
SQL> -- first copy
```

```
SQL> insert into book_copy values (
  2  (select branch_code from branch where branch_contact_no = '0395413120'),
  3  (
  4          SELECT
  5              branch_count_books + 1
  6          FROM
  7              branch
  8          WHERE
  9              branch_contact_no = '0395413120'),120,'N','005.74 C824C');

1 row inserted.

SQL>
SQL> UPDATE branch
  2      SET
  3          branch_count_books = branch_count_books + 1
  4  WHERE
  5      branch_contact_no = '0395413120';

1 row updated.

SQL>
SQL> -- second copy
SQL> insert into book_copy values (
  2  (select branch_code from branch where branch_contact_no = '0395601655'),
  3  (
  4          SELECT
  5              branch_count_books + 1
  6          FROM
  7              branch
  8          WHERE
  9              branch_contact_no = '0395601655'),120,'N','005.74 C824C');

1 row inserted.

SQL>
SQL> UPDATE branch
  2      SET
  3          branch_count_books = branch_count_books + 1
  4  WHERE
  5      branch_contact_no = '0395601655';

1 row updated.

SQL>
SQL> -- third copy
SQL> insert into book_copy values (
  2  (select branch_code from branch where branch_contact_no = '0395461253'),
  3  (
  4          SELECT
  5              branch_count_books + 1
  6          FROM
  7              branch
  8          WHERE
  9              branch_contact_no = '0395461253'),120,'N','005.74 C824C');
```

```
1 row inserted.

SQL>
SQL> UPDATE branch
  2      SET
  3          branch_count_books = branch_count_books + 1
  4  WHERE
  5      branch_contact_no = '0395461253';

1 row updated.

SQL>
SQL> COMMIT;

Commit complete.

SQL>
SQL> -- 2 (b) (ii)
SQL>
SQL> DROP SEQUENCE borrower_seq;

Error starting at line : 81 File @ /Ass2A/Marking/_MarkingScripts_Sample/SampleSoln/T2-ml-dm.sql
In command -
DROP SEQUENCE borrower_seq
Error report -
ORA-02289: sequence does not exist
02289. 00000 -  "sequence does not exist"
*Cause:    The specified sequence does not exist, or the user does
           not have the required privilege to perform this operation.
*Action:   Make sure the sequence name is correct, and that you have
           the right to perform the desired operation on this sequence.
SQL>
SQL> DROP SEQUENCE reserve_seq;

Error starting at line : 83 File @ /Ass2A/Marking/_MarkingScripts_Sample/SampleSoln/T2-ml-dm.sql
In command -
DROP SEQUENCE reserve_seq
Error report -
ORA-02289: sequence does not exist
02289. 00000 -  "sequence does not exist"
*Cause:    The specified sequence does not exist, or the user does
           not have the required privilege to perform this operation.
*Action:   Make sure the sequence name is correct, and that you have
           the right to perform the desired operation on this sequence.
SQL>
SQL> CREATE SEQUENCE borrower_seq START WITH 100;

Sequence BORROWER_SEQ created.

SQL>
SQL> CREATE SEQUENCE reserve_seq START WITH 100;

Sequence RESERVE_SEQ created.

SQL>
SQL> -- 2 (b) (iii)
```

```
SQL>
SQL> INSERT INTO borrower VALUES (
  2      borrower_seq.NEXTVAL,
  3      'Ada',
  4      'Lovelace',
  5      '1 Programmer Way',
  6      'Programville',
  7      '5000',
  8      (
  9          SELECT
 10              branch_code
 11          FROM
 12              branch
 13          WHERE
 14              branch_contact_no = '0395413120'
 15      )
 16  );

1 row inserted.

SQL>
SQL> COMMIT;

Commit complete.

SQL>
SQL> INSERT INTO reserve VALUES (
  2      reserve_seq.nextval,
  3      (
  4          SELECT
  5              branch_code
  6          FROM
  7              branch
  8          WHERE
  9              branch_contact_no = '0395413120'
 10      ),
 11      (
 12          SELECT
 13              bc_id
 14          FROM
 15              book_copy
 16          WHERE
 17              book_call_no = '005.74 C824C'
 18              AND   branch_code = (
 19                  SELECT
 20                      branch_code
 21                  FROM
 22                      branch
 23                  WHERE
 24                      branch_contact_no = '0395413120'
 25              )
 26      ),
 27      TO_DATE('14-Sep-2021 3:30 PM','DD-MON-YYYY HH:MI PM'),
 28      (
 29           SELECT
 30               bor_no
```

```
 31           FROM
 32               borrower
 33           WHERE
 34               bor_fname = 'Ada'
 35               AND bor_lname = 'Lovelace'
 36              )
 37  );

1 row inserted.

SQL>
SQL> COMMIT;

Commit complete.

SQL>
SQL>  -- 2 (b) (iv)
SQL>
SQL> INSERT INTO loan VALUES (
  2      (
  3          SELECT
  4              branch_code
  5          FROM
  6              branch
  7          WHERE
  8              branch_contact_no = '0395413120'
  9      ),
 10      (
 11          SELECT
 12              bc_id
 13          FROM
 14              book_copy
 15          WHERE
 16              book_call_no = '005.74 C824C'
 17              AND   branch_code = (
 18                  SELECT
 19                      branch_code
 20                  FROM
 21                      branch
 22                  WHERE
 23                      branch_contact_no = '0395413120'
 24              )
 25      ),
 26      (TO_DATE('14-Sep-2021 3:30 PM','DD-MON-YYYY HH:MI PM') - 3/24) + 7,
 27      TO_DATE('14-Sep-2021','DD-MON-YYYY') + 7 + 14,
 28      NULL,
 29      (
 30          SELECT
 31              bor_no
 32          FROM
 33              borrower
 34          WHERE
 35              bor_fname = 'Ada'
 36              AND   bor_lname = 'Lovelace'
 37      )
 38  );
```

```
1 row inserted.

SQL>
SQL> DELETE FROM reserve
  2  WHERE
  3          branch_code = (
  4              SELECT
  5                  branch_code
  6              FROM
  7                  branch
  8              WHERE
  9                  branch_contact_no = '0395413120'
 10          )
 11      AND bc_id = (
 12          SELECT
 13              bc_id
 14          FROM
 15              book_copy
 16          WHERE
 17                  book_call_no = '005.74 C824C'
 18              AND branch_code = (
 19                  SELECT
 20                      branch_code
 21                  FROM
 22                      branch
 23                  WHERE
 24                      branch_contact_no = '0395413120'
 25              )
 26       AND bor_no = (
 27           SELECT
 28               bor_no
 29           FROM
 30               borrower
 31           WHERE
 32               bor_fname = 'Ada'
 33               AND bor_lname = 'Lovelace'
 34              )
 35      );

1 row deleted.

SQL>
SQL> COMMIT;

Commit complete.

SQL>
SQL> select table_name, table_type from cat where table_type='SEQUENCE' order by table_name;

TABLE_NAME      TABLE_TYPE
--------------- -----------
BORROWER_SEQ    SEQUENCE
RESERVE_SEQ     SEQUENCE

SQL> select * from borrower;
```

```
    BOR_NO BOR_FNAME            BOR_LNAME            BOR_STREET           BOR_SUBURB           BOR_ BRANCH_CODE
---------- -------------------- -------------------- -------------------- -------------------- ---- -----------
         1 Mark                 Zuckerberg           1 Facebook Way       Faceville            1000          10
         2 Sergey               Brin                 2 Alphabet Way       Alphaville           2000          11
         3 Larry                Page                 1 Alphabet Way       Alphaville           2000          11
         4 Bill                 Gates                1 Microsoft Way      Microville           3000          12
         5 Tim                  Cook                 1 ApplePark Lane     Appleville           4000          13
       100 Ada                  Lovelace             1 Programmer Way     Programville         5000          10

6 rows selected.

SQL> SELECT
  2      branch_code,
  3      bc_id,
  4      to_char(loan_date_time,'dd-Mon-yyyy hh24:mi:ss') as loan_date_time,
  5      to_char(loan_due_date,'dd-Mon-yyyy') as loan_due_date,
  6      to_char(loan_actual_return_date,'dd-Mon-yyyy') as loan_actual_return_date,
  7      bor_no
  8  FROM
  9      loan
 10  ORDER BY
 11      loan_date_time;

BRANCH_CODE      BC_ID LOAN_DATE_TIME               LOAN_DUE_DATE        LOAN_ACTUAL_RETURN_D     BOR_NO
----------- ---------- ---------------------------- -------------------- -------------------- ----------
         12          1 01-Jun-2021 09:00:00         15-Jun-2021          10-Jun-2021                   4
         12          2 01-Jun-2021 10:15:00         15-Jun-2021          15-Jun-2021                   4
         13          1 01-Jun-2021 14:00:00         15-Jun-2021          15-Jun-2021                   5
         12          2 06-Aug-2021 13:00:00         20-Aug-2021          20-Aug-2021                   5
         12          1 06-Aug-2021 13:00:00         20-Aug-2021          20-Aug-2021                   4
         13          1 06-Aug-2021 13:06:00         20-Aug-2021          18-Aug-2021                   4
         12          4 12-Aug-2021 11:50:00         26-Aug-2021                                        1
         12          5 13-Aug-2021 10:00:00         27-Aug-2021                                        2
         12          1 15-Jun-2021 10:00:00         29-Jun-2021          01-Aug-2021                   1
         13          1 15-Jun-2021 11:00:00         29-Jun-2021          05-Aug-2021                   1
         12          2 17-Jun-2021 10:00:00         01-Jul-2021          29-Jun-2021                   3
         10          4 21-Sep-2021 12:30:00         05-Oct-2021                                      100

12 rows selected.

SQL>
SQL> SELECT
  2      reserve_id,
  3      branch_code,
  4      bc_id,
  5      to_char(reserve_date_time_placed,'dd-Mon-yyyy hh24:mi:ss') as reserve_date_time_placed,
  6      bor_no
  7  FROM
  8      reserve
  9  order by
 10      reserve_date_time_placed;

RESERVE_ID BRANCH_CODE      BC_ID RESERVE_DATE_TIME_PLACED          BOR_NO
---------- ----------- ---------- ---------------------------- ----------
         1          12          4 16-Aug-2021 10:00:00                  2
```

```
         2          12          5 18-Aug-2021 11:30:00                   1

SQL>
SQL> set echo on
SQL> ------------- Task 3 ALTER ------------------------------------------------
SQL> @T3-ml-alter.sql
SQL> --****PLEASE ENTER YOUR DETAILS BELOW****
SQL> --T3-ml-alter.sql
SQL>
SQL> --Student ID: Sample Solution
SQL> --Student Name:
SQL> --Tutorial No:
SQL>
SQL> /* Comments for your marker:
SQL>
SQL>*/
SQL>
SQL> -- 3 (a)
SQL> ALTER TABLE book_copy ADD (
  2      bc_status CHAR(1) DEFAULT 'G' NOT NULL
  3  );

Table BOOK_COPY altered.

SQL>
SQL> COMMENT ON COLUMN book_copy.bc_status IS
  2      'Status of book (D,L,G)';

Comment created.

SQL>
SQL> ALTER TABLE book_copy
  2      ADD CONSTRAINT bc_status_chk CHECK ( bc_status IN ( 'D', 'L', 'G' ) );

Table BOOK_COPY altered.

SQL>
SQL> UPDATE book_copy
  2  SET
  3      bc_status = 'L'
  4  WHERE
  5          branch_code = (
  6              SELECT
  7                  branch_code
  8              FROM
  9                  branch
 10              WHERE
 11                  branch_contact_no = '0395601655'
 12          )
 13      AND book_call_no = '005.74 C824C';

1 row updated.

SQL>
SQL> COMMIT;
```

```
Commit complete.

SQL>
SQL> -- 3 (b)
SQL>
SQL> ALTER TABLE loan ADD (
  2      loan_return_branch NUMBER(2)
  3  );

Table LOAN altered.

SQL>
SQL> COMMENT ON COLUMN loan.loan_return_branch IS
  2      'Branch which loan was retruned to';

Comment created.

SQL>
SQL> ALTER TABLE loan
  2      ADD CONSTRAINT loan_ret_branch_fk FOREIGN KEY ( loan_return_branch )
  3          REFERENCES branch ( branch_code );

Table LOAN altered.

SQL>
SQL> UPDATE loan
  2  SET
  3      loan_return_branch = branch_code
  4  WHERE
  5      loan_actual_return_date IS NOT NULL;

9 rows updated.

SQL>
SQL> COMMIT;

Commit complete.

SQL>
SQL> -- 3 (c)
SQL>
SQL> DROP TABLE branch_manager PURGE;

Error starting at line : 62 File @ /Ass2A/Marking/_MarkingScripts_Sample/SampleSoln/T3-ml-alter.sql
In command -
DROP TABLE branch_manager PURGE
Error report -
ORA-00942: table or view does not exist
00942. 00000 -  "table or view does not exist"
*Cause:
*Action:
SQL>
SQL> CREATE TABLE branch_manager
  2      AS
  3          SELECT
  4              branch_code,
```

```
  5              man_id,
  6              'A' AS bm_collection
  7          FROM
  8              branch;

Table BRANCH_MANAGER created.

SQL>
SQL> COMMENT ON COLUMN branch_manager.branch_code IS
  2      'Branch number';

Comment created.

SQL>
SQL> COMMENT ON COLUMN branch_manager.man_id IS
  2      'Managers assigned identifier';

Comment created.

SQL>
SQL> COMMENT ON COLUMN branch_manager.bm_collection IS
  2      'Collection managed (F,R,A)';

Comment created.

SQL>
SQL> ALTER TABLE branch_manager ADD CONSTRAINT branch_manager_pk PRIMARY KEY ( branch_code,
  2                                                                            man_id );

Table BRANCH_MANAGER altered.

SQL>
SQL> ALTER TABLE branch_manager
  2      ADD CONSTRAINT chk_bm_collection CHECK ( bm_collection IN ( 'F', 'R', 'A' ) );

Table BRANCH_MANAGER altered.

SQL>
SQL> ALTER TABLE branch_manager
  2      ADD CONSTRAINT branch_manager_bc FOREIGN KEY ( branch_code )
  3          REFERENCES branch ( branch_code );

Table BRANCH_MANAGER altered.

SQL>
SQL> ALTER TABLE branch_manager
  2      ADD CONSTRAINT manager_branch_mi FOREIGN KEY ( man_id )
  3          REFERENCES manager ( man_id );

Table BRANCH_MANAGER altered.

SQL>
SQL> -- No penalty if not provided as we have not explicitly covered CREATE INDEX
SQL> -- have seen in schema file generated from Ass1B when unique used
SQL> CREATE UNIQUE INDEX branch_collection_idx ON
  2      branch_manager (
```

```
  3          branch_code,
  4          bm_collection
  5      );

INDEX BRANCH_COLLECTION_IDX created.

SQL>
SQL> ALTER TABLE branch DROP COLUMN man_id;

Table BRANCH altered.

SQL>
SQL> -- Could use two separate commits here, one after each operation
SQL> -- Below treats the changes as a single transaction
SQL>
SQL> UPDATE branch_manager
  2  SET
  3      bm_collection = 'R'
  4  WHERE
  5          branch_code = (
  6              SELECT
  7                  branch_code
  8              FROM
  9                  branch
 10              WHERE
 11                  branch_contact_no = '0395413120'
 12          )
 13      AND man_id = 10;

1 row updated.

SQL>
SQL> INSERT INTO branch_manager VALUES (
  2      (
  3          SELECT
  4              branch_code
  5          FROM
  6              branch
  7          WHERE
  8              branch_contact_no = '0395413120'
  9      ),
 10      12,
 11      'F'
 12  );

1 row inserted.

SQL>
SQL> COMMIT;

Commit complete.

SQL>
SQL> ------------- BOOK_COPY -----------------------------------
SQL> desc book_copy;
Name               Null?    Type
```

```
------------------ -------- ------------
BRANCH_CODE        NOT NULL NUMBER(2)
BC_ID              NOT NULL NUMBER(6)
BC_PURCHASE_PRICE  NOT NULL NUMBER(7,2)
BC_COUNTER_RESERVE NOT NULL CHAR(1)
BOOK_CALL_NO       NOT NULL VARCHAR2(20)
BC_STATUS          NOT NULL CHAR(1)
SQL> select * from book_copy;

BRANCH_CODE      BC_ID BC_PURCHASE_PRICE B BOOK_CALL_NO         B
----------- ---------- ----------------- - -------------------- -
         10          1            150.43 Y 005.432 L761P        G
         12          1            150.43 N 005.432 L761P        G
         13          1            150.43 N 005.432 L761P        G
         10          2             24.56 N 823.914 A211H        G
         10          3             82.83 N 005.74 D691D         G
         12          2             82.83 N 005.74 D691D         G
         13          2             85.67 Y 005.74 D691D         G
         12          3             22.06 N 112.6 S874D          G
         12          4             19.99 N 823.914 H219A        G
         12          5             19.99 N 823.914 H219A        G
         10          4               120 N 005.74 C824C         G
         11          1               120 N 005.74 C824C         L
         13          3               120 N 005.74 C824C         G

13 rows selected.

SQL> ------------- LOAN ----------------------------------------
SQL> desc loan;
Name                    Null?    Type
----------------------- -------- ---------
BRANCH_CODE             NOT NULL NUMBER(2)
BC_ID                   NOT NULL NUMBER(6)
LOAN_DATE_TIME          NOT NULL DATE
LOAN_DUE_DATE           NOT NULL DATE
LOAN_ACTUAL_RETURN_DATE          DATE
BOR_NO                  NOT NULL NUMBER(6)
LOAN_RETURN_BRANCH               NUMBER(2)
SQL> select * from loan;

BRANCH_CODE      BC_ID LOAN_DATE_T LOAN_DUE_DA LOAN_ACTUAL     BOR_NO LOAN_RETURN_BRANCH
----------- ---------- ----------- ----------- ----------- ---------- ------------------
         12          1 01/JUN/2021 15/JUN/2021 10/JUN/2021          4                 12
         12          2 01/JUN/2021 15/JUN/2021 15/JUN/2021          4                 12
         13          1 01/JUN/2021 15/JUN/2021 15/JUN/2021          5                 13
         12          1 15/JUN/2021 29/JUN/2021 01/AUG/2021          1                 12
         13          1 15/JUN/2021 29/JUN/2021 05/AUG/2021          1                 13
         12          2 17/JUN/2021 01/JUL/2021 29/JUN/2021          3                 12
         12          1 06/AUG/2021 20/AUG/2021 20/AUG/2021          4                 12
         12          2 06/AUG/2021 20/AUG/2021 20/AUG/2021          5                 12
         13          1 06/AUG/2021 20/AUG/2021 18/AUG/2021          4                 13
         12          4 12/AUG/2021 26/AUG/2021                      1
         12          5 13/AUG/2021 27/AUG/2021                      2
         10          4 21/SEP/2021 05/OCT/2021                    100

12 rows selected.
```

```
SQL> ------------- BRANCH ---------------------------------------
SQL> desc branch;
Name                 Null?    Type
-------------------- -------- -------------
BRANCH_CODE          NOT NULL NUMBER(2)
BRANCH_NAME          NOT NULL VARCHAR2(50)
BRANCH_ADDRESS       NOT NULL VARCHAR2(100)
BRANCH_CONTACT_NO    NOT NULL CHAR(10)
BRANCH_COUNT_BOOKS   NOT NULL NUMBER(5)
SQL> select * from branch;

BRANCH_CODE BRANCH_NAME               BRANCH_ADDRESS                          BRANCH_CON BRANCH_COUNT_BOOKS
----------- ------------------------- --------------------------------------- ---------- ------------------
         10 Clayton Library           9-15 Cooke Street, Clayton 3168         0395413120                  4
         11 Glen Waverley Library     112 Kingsway, Glen Waverley 3150        0395601655                  1
         12 Mount Waverley Library    41 Miller Crescent, Mount Waverley 3149 0398075022                  5
         13 Mulgrave Library          36 - 42 Mackie Road, Mulgrave 3170      0395461253                  3

SQL>
SQL> set echo on
SQL> --============================== END RUN =======================================---
SQL> set echo off
```