

**Faculty of Engineering, University of Jaffna**  
**Department of Computer Engineering**  
**EC5070 – Database Systems**  
**Lab -01**

**Date: 23-Apr-2021**

**2018/E/102**

**Exercises**

1.

I.

The screenshot shows the SQL Server Enterprise Manager interface. At the top, a query window titled 'SQLQuery1.sql - DE...5\S Miyushan (61))\*' contains the command 'CREATE DATABASE e102;'. Below this, the 'Databases' folder in the server tree is expanded, showing 'e102' highlighted with a red box. The 'Messages' pane at the bottom shows the command completed successfully. The bottom pane shows the SQL code for creating an 'Employee' table with various columns and constraints.

```
SQLQuery1.sql - DE...5\S Miyushan (61))* X
CREATE DATABASE e102;

DESKTOP-PB1HD75\MSSQLSERVER01 (S
  Databases
    System Databases
    Database Snapshots
    e102
    happy

use e102;

Messages
Commands completed successfully.

Completion time: 2021-04-27T20:50:35.8008594-07:00

CREATE TABLE Employee(
  Fname VARCHAR(15) NOT NULL, -- Adding columns
  Minit CHAR,
  Lname VARCHAR(15) NOT NULL, -- NOT NULL means the domain must have a value
  Bdate DATE, -- Date, YYYY-MM-DD
  Address VARCHAR(30), -- Variable length CHAR array (string)
  Sex CHAR, -- Single character
  Salary DECIMAL(10,2), -- Decimal up to a precision of two decimal points
  Super_ssn CHAR(9),
  Dno INT NOT NULL,
  Ssn CHAR(9) NOT NULL, -- CHAR padded to 9 spaces
  PRIMARY KEY (Ssn) -- Primary key constraint
);
```

- + System Tables
- + FileTables
- + External Tables
- + Graph Tables
- + **dbo.Employee**

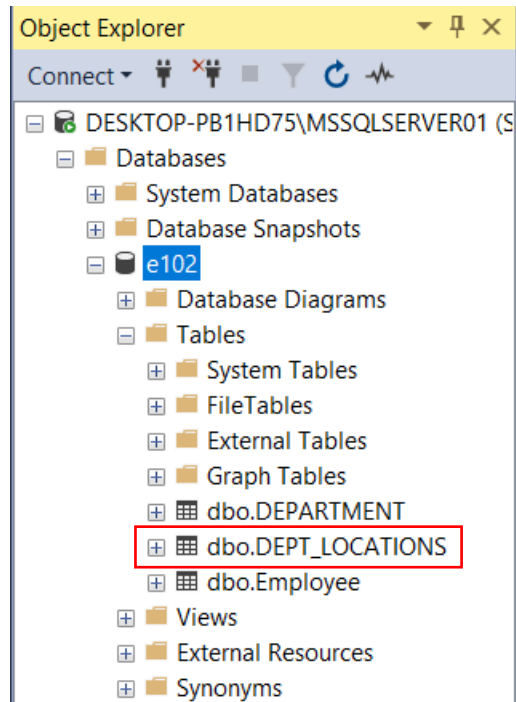
II.

```
CREATE TABLE DEPARTMENT(  
    Dname VARCHAR(15) NOT NULL, -- Adding columns  
    Dnumber INT NOT NULL,  
    Mgr_ssn CHAR(9) NOT NULL,  
    Mgr_start_date DATE, -- Date, YYYY-MM-DD  
    PRIMARY KEY (Dnumber), -- Primary key constraint  
    UNIQUE (Dname), --Unique value constrain - no department have the same name  
    FOREIGN KEY (Mgr_ssn) REFERENCES Employee(Ssn)  
);
```

- DESKTOP-PB1HD75\MSSQLSERVER01 (S)
  - Databases
    - System Databases
    - Database Snapshots
    - e102
      - Database Diagrams
      - Tables
        - System Tables
        - FileTables
        - External Tables
        - Graph Tables
        - + **dbo.DEPARTMENT**
        - + dbo.Employee
      - Views
      - External Resources
      - Synonyms
      - Programmability
      - Service Broker
      - Storage
      - Security
    - happy

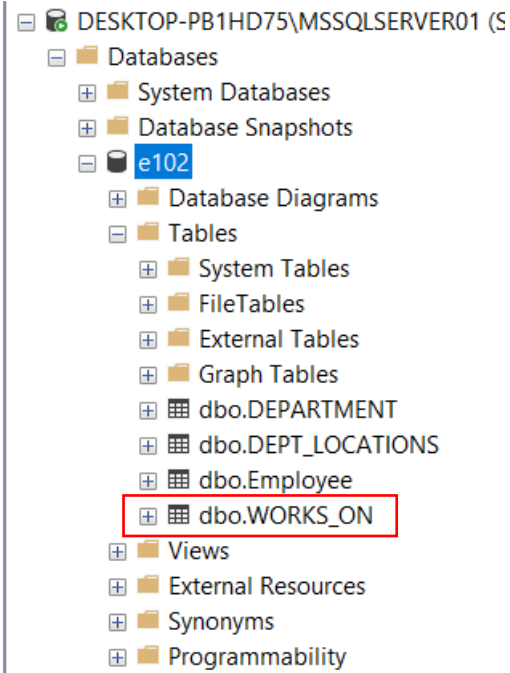
III.

```
CREATE TABLE DEPT_LOCATIONS(  
    Dnumber INT NOT NULL,  
    Dlocation VARCHAR(15) NOT NULL, -- Adding columns  
    PRIMARY KEY (Dlocation), -- Primary key constraint  
    UNIQUE (Dlocation), --Unique value constrain - no department have the same name  
    FOREIGN KEY (Dnumber) REFERENCES DEPARTMENT(Dnumber)  
);
```



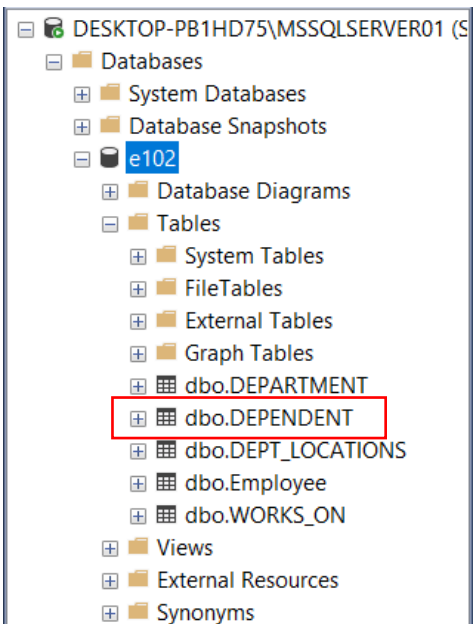
IV.

```
CREATE TABLE WORKS_ON(  
    Essn CHAR(9) NOT NULL,  
    Pno INT NOT NULL,  
    Hours INT NOT NULL,  
    PRIMARY KEY (Pno),  
    FOREIGN KEY (Essn) REFERENCES Employee(Ssn)  
);
```



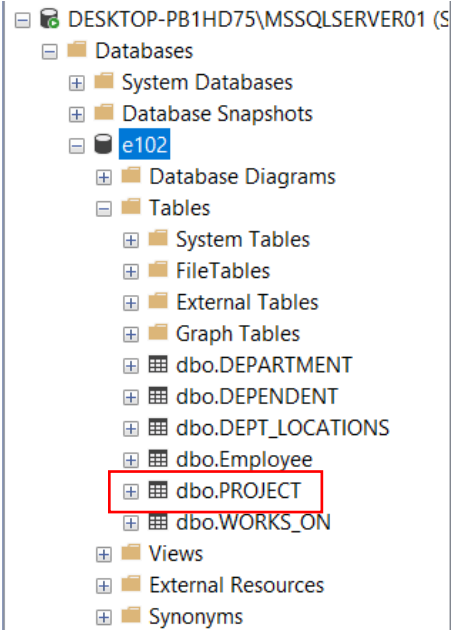
V.

```
CREATE TABLE DEPENDENT (  
    Essn CHAR(9) NOT NULL,  
    Dependent_name VARCHAR(15) NOT NULL,  
    Sex CHAR,  
    Bdate DATE,  
    Relationship VARCHAR(20) NOT NULL,  
    PRIMARY KEY (Dependent_name),  
    UNIQUE (Dependent_name),  
    FOREIGN KEY (Essn) REFERENCES Employee(Ssn)  
);
```



VI.

```
CREATE TABLE PROJECT(  
    Pname VARCHAR(20) NOT NULL,  
    Pnumber INT NOT NULL,  
    Plocation VARCHAR(30),  
    Dnum INT NOT NULL,  
    PRIMARY KEY (Pnumber),  
    UNIQUE (Pname),  
    FOREIGN KEY (Dnum) REFERENCES DEPARTMENT(Dnumber)  
);
```



2.

```
--enter data to the table
INSERT INTO employee VALUES('Nadeesha','D','Madhuranga','1998-05-10','No 7, Main road Kothmale','M',15624.45,'164724864',1,'423567283'),
('Anuvathan','A','Anpalakan','1997-03-22','No 2, Kilinochchiya','M',47000.25,'435246723',5,'928376524'),
('Isuru','C','Akalanka','1997-07-05','No 23, Haldhanduwana','M',36528.92,'546378683',2,'332736483'),
('Anjana','E','Nuwansiri','1997-12-30','No 15, Badulla','M',28975.75,'657472438',9,'542678905');

INSERT INTO DEPARTMENT VALUES('Computer',2,'332736483','2021-06-03'),
('Civil',9,'542678905','2021-01-20'),
('Elec',1,'423567283','2020-09-13'),
('Mechanical',5,'928376524','2020-06-08');

INSERT INTO DEPT_LOCATIONS VALUES(5,'64 67 32 09'),
(1,'98 45 62 82'),
(9,'71 63 82 23'),
(2,'57 91 30 20');

INSERT INTO WORKS_ON VALUES('423567283',35,11),
('542678905',9,8),
('928376524',12,14),
('332736483',42,6);

INSERT INTO DEPENDENT VALUES('928376524','New York','M','1997-03-22','Instructor'),
('542678905','Cape Town','M','1997-12-30','Advisor'),
('332736483','Sydney','M','1997-07-05','Instructor'),
('423567283','Melbourn','M','1998-05-10','Department Head');

INSERT INTO PROJECT VALUES('VEGA',12,'46 83 42 19',5),
('ADOBE',9,'49 72 59 30',9),
('TESLA',42,'95 36 29 77',2),
('MICROSOFT',35,'12 59 89 40',1);
```

3.

```
SELECT * FROM Employee;
SELECT * FROM DEPARTMENT;
SELECT * FROM DEPT_LOCATIONS;
SELECT * FROM WORKS_ON;
SELECT * FROM DEPENDENT;
SELECT * FROM PROJECT;
```

Results Messages

	Fname	Minit	Lname	Bdate	Address	Sex	Salary	Super_ssn	Dno	Ssn
1	Isuru	C	Akalanka	1997-07-05	No 23, Haldhanduwana	M	36528.92	546378683	2	332736483
2	Nadeesha	D	Madhuranga	1998-05-10	No 7, Main road Kothmale	M	15624.45	164724864	1	423567283
3	Anjana	E	Nuwansiri	1997-12-30	No 15, Badulla	M	28975.75	657472438	9	542678905
4	Anuvathan	A	Anpalakan	1997-03-22	No 2, Kilinochchiya	M	47000.25	435246723	5	928376524

	Dname	Dnumber	Mgr_ssn	Mgr_start_date
1	ELec	1	423567283	2020-09-13
2	Computer	2	332736483	2021-06-03
3	Mechanical	5	928376524	2020-06-08
4	Civil	9	542678905	2021-01-20

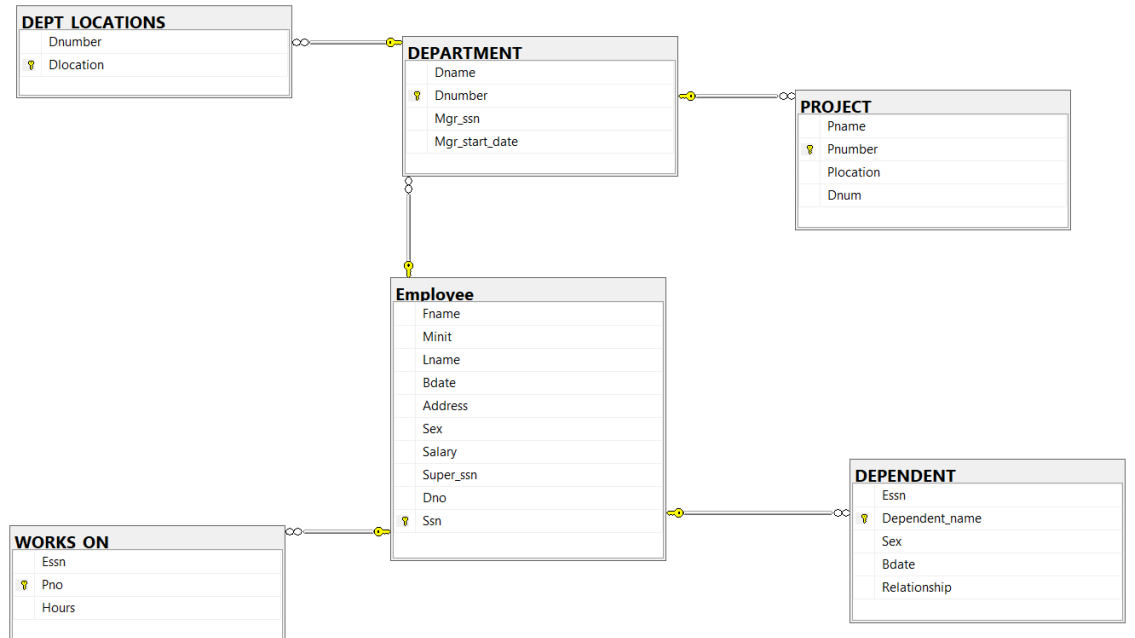
	Dnumber	Dlocation
1	2	57 91 30 20
2	5	64 67 32 09
3	9	71 63 82 23
4	1	98 45 62 82

	Essn	Pno	Hours
1	542678905	9	8
2	928376524	12	14
3	423567283	35	11
4	332736483	42	6

	Essn	Dependent_name	Sex	Bdate	Relationship
1	542678905	Cape Town	M	1997-12-30	Advisor
2	423567283	Melbourn	M	1998-05-10	Department Head
3	928376524	New York	M	1997-03-22	Instructor
4	332736483	Sydney	M	1997-07-05	Instructor

	Pname	Pnumber	Plocation	Dnum
1	ADOBE	9	49 72 59 30	9
2	VEGA	12	46 83 42 19	5
3	MICR...	35	12 59 89 40	1
4	TESLA	42	95 36 29 77	2

4.





5.

a.

```
--Question no. 5--  
--a)  
SELECT * FROM Employee WHERE Ssn > 0;
```

	Fname	Minit	Lname	Bdate	Address	Sex	Salary	Super_ssn	Dno	Ssn
1	Isuru	C	Akalanka	1997-07-05	No 23, Haldhanduwana	M	36528.92	546378683	2	332736483
2	Nadeesha	D	Madhuranga	1998-05-10	No 7, Main road Kothmale	M	15624.45	164724864	1	423567283
3	Anjana	E	Nuwansiri	1997-12-30	No 15, Badulla	M	28975.75	657472438	9	542678905
4	Anuvathan	A	Anpalakan	1997-03-22	No 2, Kilinochchiya	M	47000.25	435246723	5	928376524

b.

```
--b)  
SELECT Fname, Address FROM Employee WHERE Salary > 35000.00;
```

	Fname	Address
1	Isuru	No 23, Haldhanduwana
2	Anuvathan	No 2, Kilinochchiya

c.

```
--c)  
SELECT DEPARTMENT.Dname, DEPT_LOCATIONS.Dlocation  
FROM DEPARTMENT  
JOIN DEPT_LOCATIONS ON DEPARTMENT.Dnumber=DEPT_LOCATIONS.Dnumber;
```

	Dname	Dlocation
1	Computer	57 91 30 20
2	Mechanical	64 67 32 09
3	Civil	71 63 82 23
4	ELec	98 45 62 82

d.

```
--d)
SELECT Employee.Fname, DEPT_LOCATIONS.Dlocation
FROM Employee
JOIN DEPT_LOCATIONS ON DEPT_LOCATIONS.Dnumber=Employee.Dno;
```

	Dname	Dlocation
1	Computer	57 91 30 20
2	Mechanical	64 67 32 09
3	Civil	71 63 82 23
4	ELec	98 45 62 82

e.

```
--e)
SELECT Employee.Fname, DEPARTMENT.Dname
FROM Employee
JOIN DEPARTMENT ON DEPARTMENT.Mgr_ssn=Employee.Ssn;
```

	Fname	Dname
1	Nadeesha	ELec
2	Isuru	Computer
3	Anuvathan	Mechanical
4	Anjana	Civil

f.

```
--f)
SELECT Employee.Fname, DEPENDENT.Dependent_name, DEPENDENT.Relationship
FROM Employee
JOIN DEPENDENT ON DEPENDENT.Essn=Employee.Ssn;
```

	Fname	Dependent_name	Relationship
1	Anjana	Cape Town	Advisor
2	Nadeesha	Melbourn	Department Head
3	Anuvathan	New York	Instructor
4	Isuru	Sydney	Instructor