CPD-2154 Term Project
Ashley's Lawn and Garden Equipment

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Conceptual Design

Requirement Analysis

Description of company

Ashley's Lawn & Garden Equipment was founded in 2000 by Ashley and, under her ownership, has evolved into the most respected and longest established lawn and garden equipment dealer in the area. Currently, the company sells and services all brands of lawn and garden equipment with a focus on lawn mowers, snow blowers, generators, and chain saws. The company is an authorized service dealer for all the manufactures they deal with, including all engines used in the equipment they sell.

The company stores and organizes data about employees, employee history, customers, service requests, parts and equipment.

Office employees receive a salary.

Service employees are paid an hourly-rate and a bonus based on performance.

Part-time employees are paid an hourly rate. The company stores historical records on part-time employees maintaining their starting and ending dates, job title, and hourly rate during each employment.

Each customer is identified by a customer id and their first name, last name, email, and mobile number is retained in the system

The company stores and organizes data about the customers, associates, products, orders, orderlines and categories.

Each customer is identified by a unique customer ID. In addition to that the customer's first name, last name, address and the associate's ID of the associate who serves the customer is stored.

Each associate is identified by a unique associate ID. Associate's fist name, last name and, commission rate is also stored.

Each equipment is identified by its unique serial number. In addition to that brand and model are also stored.

For lawnmowers, the system stores the propulsion type, starter type, drive control, speed control, cutting width, wheel size, discharge, and bag capacity.

For snow blowers, the system stores amp range, driveway size, clearing width range, chute control, intake height range, electric start, usage.

For generators, the system stores remote starter, wattage range, and fuel type.

For each chain saws, the system stores the power type, chain saw length, chain oiling, and if the case is included.

For each service, the service date, service description, and hourly labor rate are recorded. Once a service is completed, the actual number of hours spend on the job are recorded.

Each part is identified by part id. The part description, cost, and quantity on hand are recorded for re-order purposes.

ER Diagram based on Requirement Analysis

Entities and Attributes

CUSTOMER

Attribute	Data type	Length
customer_id	Int	10
first_name	char	30
last_name	char	30
email	char	30
mobile_number	int	10

EMPLOYEE

Attributes	Data type	Length
employee_id	Int	10
first_name	char	30
last_name	char	30
birth_date	date	
address	char	50
gender	char	10
Salary	Int	9,2
hourly_rate	Int	10
bonus	Int	10
employee_type	Char	2

EMPLOYEE HISTORY

Attributes	Data type	Length
employee_id	Int	10
job_title	char	30
start_date	date	
end_start	date	
hourly_rate	int	10

SERVICE

Attribute	Data type	Length
service_id	Int	10
service_date	Date	
service_description	char	30
hourly_labour_rate	Int	10
number_of_hours_spent	int	10
serial_no	Int	10
customer_id	Int	10
employee_id	Int	10

PART

Attribute	Data type	Length
part_id	Int	10
description	char	30
cost	int	9,2
quantity	Int	10
Service_id	Int	10

EQUIPMENT

Attribute	Data type	Length
serial_number	Int	10
brand	char	30
model	char	30
Equipment_type	char	30

SNOW BLOWER

Attribute	Data type	Length
serial_number	int	10
amp_range	char	10
driveway_size	char	30
clearing_width_range	char	30
chute_control	char	30
intake_height_range	char	50
electric_start	char	30
usage	Char	30

LAWN MOWER

Attribute	Data type	Length
serial_number	int	10
Propulsion_type	char	30
Starter_type	char	30
Drive_control	char	30
Speed_control	char	30
Cutting_width	char	30
Wheel_size	char	30
discharge	char	30

Bag_capacity	Char	30

GENERATOR

Column name	Data type	Length
serial_number	int	10
wattage_range	char	30
Fuel_type	char	30

CHAIN SAW

Attribute	Data type	Length
serial_number	int	10
Power_type	Char	30
Chainsaw_length	char	30
Chain_oiling	char	30

Logical Data Model

Normalization and Relational Schema

EMPLOYEE(employee_id,first_name,last_name,birth_date,address,gender,salary,hourly_rate,bonus, employee_type)

CUSTOMER (customer_id, first_name, last_name, email, mobile_no)

EMPLOYEE_HISTORY(*employee_id*, start_date, job_title,end_date,hourly_rate)

SERVICE (service_id, service_date, service_description, hourly_labour_rate, number_of_hours_spent, *employee_id*, *customer_id*, *serial_number*)

SERVICE_PART (*service_id*, *part_id*, quantity_taken, unit_cost)

PART (part_id, description,cost, quantity)

SNOW_BLOWER (*serial_number*,amp_range,driveway_size,clearing_width_range, chute_control, intake_height_range, electric_start,usage)

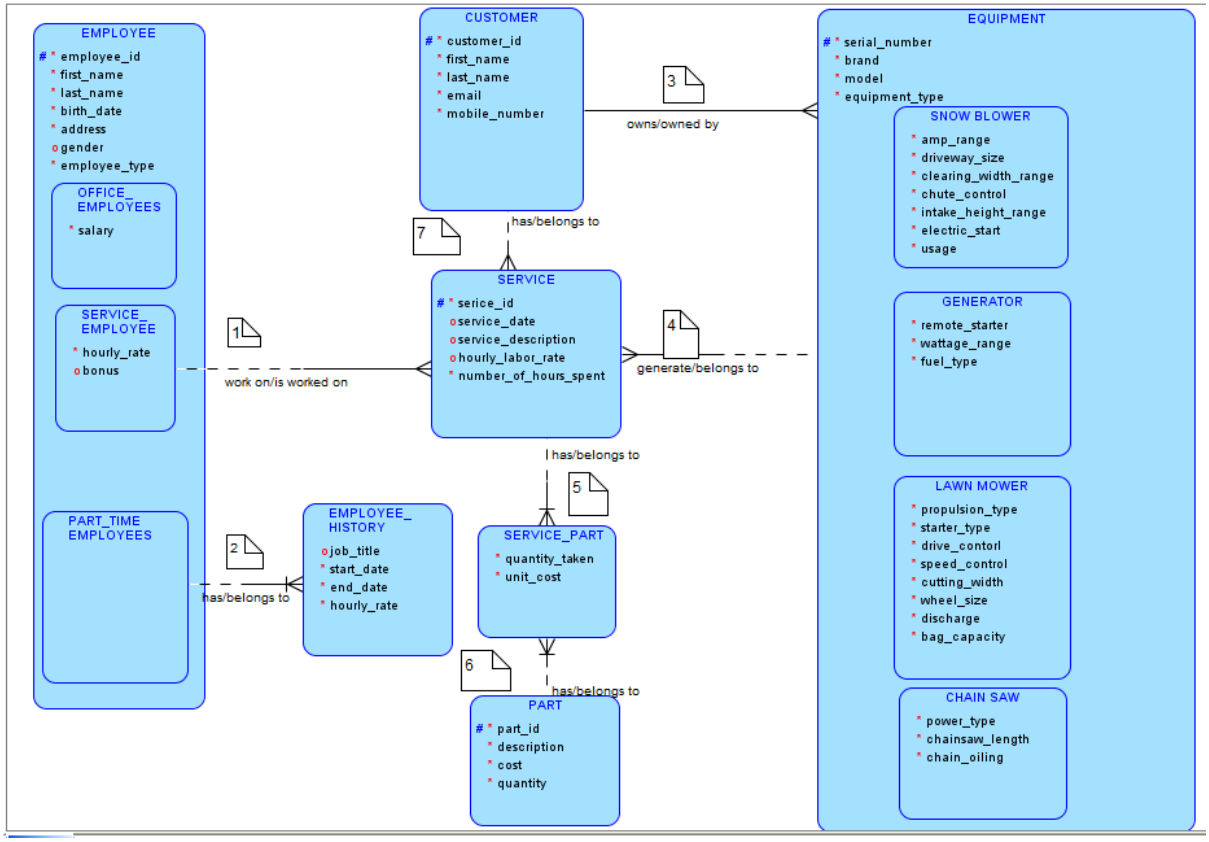
GENERATOR (*serial_number*, remote_starter, wattage_range,fuel_type)

LAWN_MOWER (*serial_number*, propulsion_type, starter_type, drive_control, speed_control, cutting_width, wheel_size, discharge, bag_capacity)

CHAIN_SAW (*serial_number*, power_type, chainsaw_length, chain_oiling)

EQUIPMENT(serial_number,equipment_type,model,brand,*customer_id*)

Final ERD



1. SERVICE_EMPLOYEE MAY be assigned to zero one or many SERVICE
   SERVICE MUST belong to one and only one SERVICE_EMPLOYEE

2. PART_TIME_EMPLOYEE MAY have zero one or many EMPLOYEE_HISTORY
   EMPLOYEE_HISTORY MUST belong to one and only one PART_TIME_EMPLOYEE

3. CUSTOMER MUST own one or many EQUIPMENT
   EQUIPMENT MUST belong be owned by one and only one CUSTOMER

4. EQUIPMENT MAY belong to zero one or may SERVICE
   SERVICE MUST be generated for one and only on EQUIPMENT

5. SERVICE MAY have zero one or many SERVICE_PART
   SERVICE_PART MUST belong to one and only one SERVICE

6. PART MAY have zero one or many SERVICE_PART
   SERVICE_PART must belong to one and only one PART

7. CUSTOMER MAY have zero one or many SERVICE
   SERVICE MUST belong to one and only one CUSTOMER

Relationships using ERDish

SERVICE_EMPLOYEE-SERVICE

- SERVICE_EMPLOYEE MAY be assigned to zero one or many SERVICE
- SERVICE MUST belong to one and only one SERVICE_EMPLOYEE

PART_TIME_EMPLOYEES-EMPLOYEE_HISTORY

- PART_TIME_EMPLOYEE MAY have zero one or many EMPLOYEE_HISTORY
- EMPLOYEE_HISTORY MUST belong to one and only one PART_TIME_EMPLOYEE

CUSTOMER-EQUIPMENT

- CUSTOMER MUST own one or many EQUIPMENT
- EQUIPMENT MUST belong be owned by one and only one CUSTOMER

SERVICE-EQUIPMENT

- EQUIPMENT MAY belong to zero one or may SERVICE
- SERVICE MUST be generated for one and only one EQUIPMENT

SERVICE –SERVICE_PART

- SERVICE MAY have zero one or many SERVICE_PART
- SERVICE_PART MUST belong to one and only one SERVICE

SERVICE_PART-PART

- PART MAY have zero one or many SERVICE_PART
- SERVICE_PART must belong to one and only one PART

CUSTOMER-SERVICE

- CUSTOMER MAY have zero one or many SERVICE
- SERVICE MUST belong to one and only one CUSTOMER

Physical Database Design

Table Definitions

EMPLOYEE

EMPLOYEE				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk	*	employee_id	Int	10
	*	first_name	char	30
	*	last_name	char	30
	*	birth_date	date	
	*	address	char	50
	*	gender	char	10

	O	Salary	Int	9,2
	O	hourly_rate	Int	10
	O	bonus	Int	10
	*	Employee_type	Char	2

EMPLOYEE_HISTORY

PART_TIME _EMPLOYEE				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk,fk	*	employee_id	Int	10
	*	job_title	char	30
pk	*	start_date	date	
	*	end_start	date	
	*	hourly_rate	int	10

CUSTOMER

CUSTOMER				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk	*	customer_id	Int	10
	*	first_name	char	30
	*	last_name	char	30
uk	*	email	char	30
uk	*	mobile_number	int	10

SERVICE

SERVICE

Key type(pk, uk, fk)	Optionality("*", "O")	Column name	Data type	Length
pk	*	service_id	Int	10
	*	service_date	Date	
	*	service_description	char	30
	*	hourly_labour_rate	Int	10
	*	number_of_hours_spent	int	10
fk	*	serial_no	Int	10
fk	*	customer_id	Int	10
fk	*	employee_id	Int	10

SERVICE_PART

SERVICE_PART				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk,fk	*	part_id	Int	10
pk,fk	*	service_id	Int	10
	*	unit_cost	int	9,2
	*	quantity_taken	Int	10

PART

PART				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk	*	part_id	Int	10
	*	description	char	30
	*	cost	int	9,2
	*	quantity	Int	10

EQUIPMENT

EQUIPMENT				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk	*	serial_number	Int	10
	*	brand	char	30
	*	model	char	30
	*	equipment_type	char	30

SNOW_BLOWER

SNOW_BLOWER				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk	*	serial_number	int	10
	*	amp_range	char	10
	*	driveway_size	char	30
	*	clearing_width_range	char	30
	*	chute_control	char	30
	*	intake_height_range	char	50
	*	electric_start	char	30
	*	usage	Char	30

LAWN MOWER

LAWN MOWER				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk	*	serial_number	int	10
	*	Propulsion_type	char	30
	*	Starter_type	char	30
	*	Drive_control	char	30
	*	Speed_control	char	30

	*	Cutting_width	char	30
	*	Wheel_size	char	30
	*	discharge	char	30
	*	Bag_capacity	Char	30

CHAIN SAW

CHAIN_SAW				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk	*	serial_number	int	10
	*	Power_type	Char	30
	*	Chainsaw_length	char	30
	*	Chain_oiling	char	30

GENERATOR

GENERATOR				
Key type(pk, uk, fk)	**Optionality("*", "O")**	**Column name**	**Data type**	**Length**
pk	*	serial_number	int	10
	*	wattage_range	char	30
	*	Fuel_type	char	30

Business Rules and Constraints

Customer

- Each customer is identified by a unique customer ID
- Each customer has a first name
- Each customer has a last name
- Each customer has an email which is unique
- Each customer has a mobile number which is unique

Equipment

- Each equipment is identified by a unique serial number
- Each equipment has a brand and a model
- Each equipment has a customer's ID that references a single customer identified by customer's customer ID
- Each equipment has an equipment type that must be IN SB,LM,CS,GE

Employee

- Each employee is identified by a unique employee ID
- Each employee has a first name
- Each employee ha a last name
- Each employee has birth date
- Each employee has an address
- Each employee can either be a full time, service or part time
- Service employees are paid by hourly rate and bonus

Employee History

- Each employee history is identified by start_date and a unique employee ID that references a single part time employee which is identified by a part time employee's employee ID
- Each employee history has a job title
- Each employee history has a start date
- Each employee history has an end date
- Each employee history has an hourly rate
- For each employee history end date must be greater that start date
- For each employee history hourly rate must be greater than 10

Service

- Each service is identified by a unique service ID
- Each service has a service date
- Each service has a service description
- Each service has a hourly labour rate
- Each service has number of hours associated with it
- Each service has an employee's ID that references a single employee which is identified by a service employee's employee ID
- Each service has customer's ID that references a single customer which is identified by a customer's customer ID
- Each service has a serial no that references a single equipment which is identified by an equipment's serial number

- For each service the hourly labour rate must be greater than 10

Service Part

- Each service part has an service's ID that references a single service which is identified by a service's service ID
- Each service part has part's ID that references a single part which is identified by a part's part ID
- Each service part has a quantity taken
- Each service part has a unit cost that must be greater than 0

Part

- Each part is identified by a unique part ID
- Each part has a description
- Each part has a part and quantity
- Cost must be greater than 0
- Each part has a service's ID that references a single service which is identified by a service's service ID

Database Table Creation

SQL create statement

EMPLOYEE

```
CREATE table employee
(employee_id        NUMBER(10)          NOT NULL,
 first_name         CHARACTER(30)       NOT NULL,
 last_name          CHARACTER(30)       NOT NULL,
 birth_date         DATE                NOT NULL,
 address            CHARACTER(50)       NOT NULL,
 gender             CHARACTER(1) ,
 salary             NUMBER(9,2),
 hourly_rate        NUMBER(10),
 bonus              NUMBER(10),
employee_type       CHARACTER(2)                NOT NULL
)
```

EMPLOYEE HISTORY

```
CREATE table employee_history
(employee_id        NUMBER(10)        NOT NULL,
 job_title          CHARACTER(30)     NOT NULL,
 start_date         DATE              NOT NULL,
 end_date           DATE              NOT NULL,
 hourly_rate        NUMBER(10)
)
```

CUSTOMER TABLE

```
CREATE TABLE customer
( customer_id       NUMERIC(10)       NOT NULL,
 first_name         CHARACTER (30)    NOT NULL,
 last_name          CHARACTER (30)    NOT NULL,
 email              CHARACTER (30)    NOT NULL,
 mobile_number      NUMERIC(10)       NOT NULL
        );
```

SERVICE TABLE

```
CREATE TABLE service
( service_id              NUMERIC(10)       NOT NULL,
 service_date             DATE              NOT NULL,
 service_description      CHARACTER (30)    NOT NULL,
 hourly_labour_rate       NUMERIC(10)       NOT NULL,
 number_of_hours_spent    NUMERIC(10)       NOT NULL,
 customer_id              NUMERIC(10)       NOT NULL,
 serial_no                NUMERIC(10)       NOT NULL,
 employee_id              NUMERIC(10)       NOT NULL
 );
```

PART TABLE

```
CREATE TABLE part
( part_id           NUMERIC(10)       NOT NULL,
 description        CHARACTER (30)    NOT NULL,
```

```
cost                NUMERIC(9,2)        NOT NULL,
quantity            NUMERIC(10)         NOT NULL
        );
```

SERVICE_PART TABLE

```
CREATE TABLE service_part
( part_id           NUMERIC(10)         NOT NULL,
 service_id         NUMERIC(10)         NOT NULL,
 quantity_taken     NUMERIC(10)         NOT NULL,
 unit_cost          NUMERIC(9,2)        NOT NULL
);
```

EQUIPMENT TABLE

```
CREATE TABLE EQUIPMENT
(serial_number          NUMBER(10)          NOT NULL,
 equipment_type         CHARACTER(2)        NOT NULL ,
 brand                  CHARACTER(30)       NOT NULL ,
 model                  CHARACTER(30)       NOT NULL,
 customer_id            CHARACTER(30)       NOT NULL,
)
```

SNOW BLOWER TABLE

```
CREATE TABLE snow_blower
( serial_number         NUMERIC(10)         NOT NULL,
 amp_range              CHARACTER (30)      NOT NULL,
 driveway_size          CHARACTER (30)      NOT NULL,
 clearing_width_range   CHARACTER (30)      NOT NULL,
 chute_control          CHARACTER (30)      NOT NULL,
 intake_height_range    CHARACTER(30)       NOT NULL,
 electric_start         CHARACTER (30)      NOT NULL,
 usage                  CHARACTER (30)      NOT NULL,
 customer_id            NUMERIC(10)         NOT NULL
        );
```

LAWN MOWER TABLE

```
CREATE TABLE lawn_mower
( serial_number        NUMERIC(10)        NOT NULL,
 propulsion_type       CHARACTER (30)     NOT NULL,
 starter_type          CHARACTER (30)     NOT NULL,
 drive_control         CHARACTER (30)     NOT NULL,
 speed_control         CHARACTER (30)     NOT NULL,
 cutting_width         CHARACTER(30)      NOT NULL,
 wheel_size            CHARACTER (30)     NOT NULL,
 discharge             CHARACTER (30)     NOT NULL,
 bag_capacity          CHARACTER (30)     NOT NULL,
 customer_id           NUMERIC(10)        NOT NULL
        );
```

CHAIN SAW TABLE

```
CREATE TABLE chain_saw
( serial_number        NUMERIC(10)        NOT NULL,
 power_type            CHARACTER (30)     NOT NULL,
 chainsaw_length       CHARACTER (30)     NOT NULL,
 chain_oiling          CHARACTER (30)     NOT NULL,
 customer_id           NUMERIC(10)        NOT NULL
        );
```

GENERATOR TABLE

```
CREATE TABLE generator
( serial_number        NUMERIC(10)        NOT NULL,
 wattage_range         CHARACTER (30)     NOT NULL,
 fuel_type             CHARACTER (30)     NOT NULL,
 customer_id           NUMERIC(10)        NOT NULL
        );
```

SQL Constraint Statements

CHECK CONSTRAINTS

```
ALTER table employee
ADD CONSTRAINT employee_employee_type_ck
CHECK (employee_type IN ('OF','SE','PA'));

ALTER TABLE employee
ADD CONSTRAINT employee_office_type_ck
CHECK((employee_type ='OF'
                                    AND salary is NOT NULL
                                    AND hourly_rate is NULL
                                    AND bonus IS NULL)
                                    OR(employee_type <> 'OF'));

ALTER TABLE employee
ADD CONSTRAINT employee_service_type_ck
CHECK ((employee_type = 'SE'
                        AND SALARY IS NULL
                        AND hourly_rate IS  NOT NULL AND BONUS IS NOT NULL)

                        OR (employee_type <>'SE'));

ALTER TABLE employee
ADD CONSTRAINT employee_part_type_ck
CHECK ((employee_type = 'PA'
        AND salary IS NULL
        AND hourly_rate IS NOT NULL
        AND bonus IS NULL)

        OR (employee_type <> 'PA'));
```

```
ALTER table equipment
ADD CONSTRAINT equipment_equipment_type_ck
CHECK (equipment_type IN ('SB','LM','CS','GE'));

ALTER TABLE employee_history
ADD CONSTRAINT employee_history_end_date_ck
CHECK(end_date>=start_date);


ALTER TABLE employee_history
ADD CONSTRAINT employee_hourly_rate_ck
CHECK(hourly_rate>=10);

ALTER TABLE service
ADD CONSTRAINT service_hourly_labour_rate_ck
CHECK(hourly_labour_rate>=10);

ALTER TABLE part
ADD CONSTRAINT part_cost_ck
CHECK(cost>0);

ALTER TABLE service_part
ADD CONSTRAINT service_part_unit_cost_ck
CHECK(unit_cost>0);
```

PRIMARY KEY CONSTRAINT

```
ALTER TABLE  employee
ADD CONSTRAINT employee_id_pk
PRIMARY KEY(employee_id);

ALTER TABLE  employee_history
ADD CONSTRAINT employee_history_id_pk
```

```
PRIMARY KEY(employee_id,start_date);

ALTER TABLE  customer
ADD CONSTRAINT customer_customer_id_pk
PRIMARY KEY(customer_id);

ALTER TABLE  service
ADD CONSTRAINT service_service_id_pk
PRIMARY KEY(service_id);

ALTER TABLE  part
ADD CONSTRAINT part_part_id_pk
PRIMARY KEY(part_id);

ALTER TABLE service_part
ADD CONSTRAINT service_part_id_pk
PRIMARY KEY (service_id,part_id);

ALTER TABLE EQUIPMENT
ADD CONSTRAINT equipment_serial_number_pk
PRIMARY KEY (serial_number);

ALTER TABLE  snow_blower
ADD CONSTRAINT snow_blower_serial_number_pk
PRIMARY KEY(serial_number);

ALTER TABLE  lawn_mower
ADD CONSTRAINT lawn_mower_serial_number_pk
PRIMARY KEY(serial_number);

ALTER TABLE  chain_saw
ADD CONSTRAINT chain_saw_serial_number_pk
```

```
PRIMARY KEY(serial_number);

ALTER TABLE  generator
ADD CONSTRAINT generator_serial_number_pk
PRIMARY KEY(serial_number);
```

FOREIGN KEY CONSTRAINTS

EMPLOYEE HISTORY TABLE

```
ALTER TABLE employee_history
ADD CONSTRAINT emp_history_employee_id_fk
FOREIGN KEY (employee_id) REFERENCES employee(employee_id) ON DELETE CASCADE;
```

SERVICE TABLE

```
ALTER TABLE service
ADD CONSTRAINT service_serial_no_fk
FOREIGN KEY (serial_no) REFERENCES equipment(serial_number) ON DELETE CASCADE;

ALTER TABLE service
ADD CONSTRAINT service_customer_id_fk
FOREIGN KEY (customer_id) REFERENCES customer(customer_id) ON DELETE CASCADE;

ALTER TABLE service
ADD CONSTRAINT service_employee_id_fk
FOREIGN KEY (employee_id) REFERENCES employee(employee_id) ON DELETE CASCADE;
```

SERVICE_PART TABLE

```
ALTER TABLE service_part
ADD CONSTRAINT service_part_service_id_fk
FOREIGN KEY(service_id) REFERENCES service(service_id) ON DELETE CASCADE;
```

```
ALTER TABLE service_part
ADD CONSTRAINT service_part_part_id_fk
FOREIGN KEY(part_id) REFERENCES part(part_id) ON DELETE CASCADE;
```

EQUIPMENT

```
ALTER TABLE equipment
ADD CONSTRAINT equipment_customer_id_fk
FOREIGN KEY(customer_id)REFERENCES customer(customer_id);
```

SNOW BLOWER

```
ALTER TABLE
SNOW_BLOWER ADD CONSTRAINT sb_serial_no_fk
FOREIGN KEY(serial_number) REFERENCES equipment(serial_number);
```

LAWN_MOWER

```
ALTER TABLE LAWN_MOWER
ADD CONSTRAINT lm_serial_no_fk
FOREIGN KEY(serial_number) REFERENCES equipment(serial_number);
```

CHAIN_SAW

```
ALTER TABLE CHAIN_SAW ADD CONSTRAINT cs_serial_no_fk
FOREIGN KEY(serial_number) REFERENCES equipment(serial_number);
```

GENERATOR

```
ALTER TABLE GENERATOR ADD CONSTRAINT ge_serial_no_fk
FOREIGN KEY(serial_number) REFERENCES equipment(serial_number);
```

UNIQUE CONSTRAINTS

CUSTOMER

```
ALTER TABLE customer

ADD CONSTRAINT customer_email_uq

UNIQUE(email);


ALTER TABLE customer

ADD CONSTRAINT customer_mobile_number_uq

UNIQUE(mobile_number);
```

SQL Insert Statements

EMPLOYEE TABLE

```
INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (50, 'Neha', 'Sahota', '06-Nov-1989','501 Erindale Crt','F',20000,'','','OF');


INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (51, 'Emma', 'Watson', '07-Jan-1990','15 Lewisham Road','F','',11,12,'SE');
```

```
INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (52, 'Christian', 'Bale', '05-Feb-1970','501 London Road','M','',12,'10','SE');


INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (53, 'Edward', 'Nortan', '07-Dec-1982','501 Murphy Road','M',50000,'','','OF');


INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (54, 'Edward', 'Watson', '06-Mar-1980','509 Maxwell Road','M',80000,'','','OF');


INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (55, 'Harry', 'Potter', '31-Jul-1989','15 Surrey Road','M','',11,12,'SE');



INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (56, 'Bruce', 'Wayne', '07-Jan-1990','15 Oxford Road','M','',11,12,'SE');


INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (57, 'Briane', 'Wayne', '07-Jan-1990','15 Oxford Road','F','',11,'','PA');


INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)
```

VALUES (58, 'Connie', 'Cox', '05-Jan-1994','15 Surrey Road','F','',11,'','PA');

INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (59, 'Amy', 'Adams', '09-Dec-1994','508 Fanshawe Road','F','',11,'','PA');

EMPLOYEE HISTORY

INSERT INTO employee_history

(employee_id,start_date,job_title,end_date,hourly_rate)

VALUES(57,'01-Feb-1992','MA','04-Feb-1992',11);

INSERT INTO employee_history

(employee_id,start_date,job_title,end_date,hourly_rate)

VALUES(58,'01-Feb-1992','FA','04-Feb-1992',12);

INSERT INTO employee_history

(employee_id,start_date,job_title,end_date,hourly_rate)

VALUES(59,'08-Feb-1990','FA','20-Feb-1990',12);

CUSTOMER TABLE

INSERT INTO customer

(customer_id, first_name, last_name, email, mobile_number)

VALUES (10, 'John', 'Smith', 'jsmith@gmail.com', 102456321);

INSERT INTO customer

(customer_id, first_name, last_name, email, mobile_number)

VALUES (11, 'Michael', 'Fassbender', 'mfassbender@gmail.com', 102455421);

```
INSERT INTO customer
(customer_id, first_name, last_name, email, mobile_number)
VALUES (12, 'Natalie', 'Portman', 'nportman@gmail.com', 102489321);

INSERT INTO customer
(customer_id, first_name, last_name, email, mobile_number)
VALUES (13, 'Kate', 'Beckinsale', 'kbeckinsale@gmail.com', 105456321);

INSERT INTO customer
(customer_id, first_name, last_name, email, mobile_number)
VALUES (14, 'John', 'Marsh', 'jmarsh@gmail.com', 572456321);

INSERT INTO customer
(customer_id, first_name, last_name, email, mobile_number)
VALUES (15, 'Nicole', 'Kidman', 'nkidman@gmail.com', 962456321);
```

PART TABLE

```
INSERT INTO part
(part_id, description, cost, quantity)
VALUES (20, 'oil filter', 100, 20);

INSERT INTO part
(part_id, description, cost, quantity)
VALUES (21, 'air filter', 80, 10);

INSERT INTO part
(part_id, description, cost, quantity)
VALUES (22, 'blade', 100, 1);

INSERT INTO part
(part_id, description, cost, quantity)
VALUES (23, 'spark plugs', 50, 50);
```

```
INSERT INTO part
(part_id, description, cost, quantity)
VALUES (24, 'oil filter', 100, 1);
```

EQUIPMENT

```
INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(30,'SB','WAO','A24',10);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(31,'SB','TORO','A40',11);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(32,'SB','TORO','A45',11);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(33,'SB','OREGAN','A56',12);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(34,'SB','TORO','A78',14);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(35,'LM','OREGAN','K75',10);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(36,'LM','CRAFTSMAN','B54',11);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(37,'LM','OREGAN','M45',12);
```

```
INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(38,'LM','SYMA','N45',13)

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(39,'LM','OREGAN','H54',14);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(40,'CS','OREGAN','A56',10);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(41,'CS','WAO','A56',10);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(42,'CS','FORESTER','A56',10);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(43,'CS','WAO','K75',13);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(44,'CS','WAO','A',13);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(45,'GE','WAO','D56',13);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(46,'GE','WAO','P56',12);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(47,'GE','OREGAN','A60',11);

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(48,'GE','STEMS','A6',10);
```

```
INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)
VALUES(49,'CS','FORESTER','Q56',14);
```

SNOW BLOWER TABLE

```
INSERT INTO snow_blower
(serial_number,amp_range, driveway_size, clearing_width_range, chute_control ,
intake_height_range, electric_start , usage)
VALUES(30, '10 to 15 ',' Up to 12 vehicles','13 to 24 in','Joystick','13 to 18 in','No','Medium use');

INSERT INTO snow_blower
(serial_number,amp_range, driveway_size, clearing_width_range, chute_control ,
intake_height_range, electric_start , usage)
VALUES(31, '14 to 16 ',' Up to 6 vehicles','13 to 24 in','Crank Manual','13 to 14 in','Yes','Heavy
use');

INSERT INTO snow_blower
(serial_number,amp_range, driveway_size, clearing_width_range, chute_control ,
intake_height_range, electric_start , usage)
VALUES(32, 'Less than 10 ',' Up to 8 vehicles','13 to 24 in','Manual','10 to 12 in','No','Medium
use');

INSERT INTO snow_blower
(serial_number,amp_range, driveway_size, clearing_width_range, chute_control ,
intake_height_range, electric_start , usage)
VALUES(33, '7 to 15 ',' Up to 4 vehicles','8 to 10 in','Switch','13 to 16 in','Yes','Heavy use');

INSERT INTO snow_blower
(serial_number,amp_range, driveway_size, clearing_width_range, chute_control ,
intake_height_range, electric_start , usage)
VALUES(34, '10 to 12 ',' Up to 8 vehicles','13 to 15 in','Joystick','15 to 18 in','No','Medium use');
```

LAWN MOWER

```
INSERT INTO lawn_mower

(serial_number,propulsion_type, starter_type, drive_control, speed_control , cutting_width,
wheel_size , discharge ,bag_capacity)

VALUES(35, 'Power Propelled ',' Key start','All wheel control','Single speed','14 up tp 20
in','Small','Less','Small');


INSERT INTO lawn_mower

(serial_number,propulsion_type, starter_type, drive_control, speed_control , cutting_width,
wheel_size , discharge ,bag_capacity)

VALUES(36, 'Push','Pull start','Front wheel drive','Variable pace control','15 up tp 20
in','Large','More','Medium');


INSERT INTO lawn_mower

(serial_number,propulsion_type, starter_type, drive_control, speed_control , cutting_width,
wheel_size , discharge ,bag_capacity)

VALUES(37, 'Power Propelled','Push button ','Reae wheel drive','Variable with ball','20 up tp 30
in','Small','More','Large');


INSERT INTO lawn_mower

(serial_number,propulsion_type, starter_type, drive_control, speed_control , cutting_width,
wheel_size , discharge ,bag_capacity)

VALUES(38, 'Push',' Key start','All wheel control','Single speed','10 up tp 16
in','Small','Less','Large');


INSERT INTO lawn_mower

(serial_number,propulsion_type, starter_type, drive_control, speed_control , cutting_width,
wheel_size , discharge ,bag_capacity)

VALUES(39, 'Power Propelled','Key start','All wheel control','Single speed','14 up tp 20
in','Medium ','Less','Medium');
```

CHAIN SAW TABLE

```
INSERT INTO chain_saw

(serial_number,power_type, chainsaw_length, chain_oiling)

VALUES(40, 'Needs external power','11 in','Automatic');
```

```
INSERT INTO chain_saw
(serial_number,power_type, chainsaw_length, chain_oiling)
VALUES(41, '110V electric','12 in','Manual');

INSERT INTO chain_saw
(serial_number,power_type, chainsaw_length, chain_oiling)
VALUES(42, 'Needs external power','16 in','Automatic');

INSERT INTO chain_saw
(serial_number,power_type, chainsaw_length, chain_oiling)
VALUES(43, 'Needs external power','16 in','Manual');

INSERT INTO chain_saw
(serial_number,power_type, chainsaw_length, chain_oiling)
VALUES(44, '110V electric','14 in','Automatic');
```

GENERATOR

```
INSERT INTO generator
(serial_number,wattage_range, fuel_type )
VALUES(45, '10-15 kW','Diesel');

INSERT INTO generator
(serial_number,wattage_range, fuel_type)
VALUES(46, '16-19 kW','Gasoline');

INSERT INTO generator
(serial_number,wattage_range, fuel_type)
VALUES(47, '30-39 kW','Hybrid');

INSERT INTO generator
(serial_number,wattage_range, fuel_type)
VALUES(48, '100+ kW','Propane');
```

```
INSERT INTO generator
(serial_number,wattage_range, fuel_type)
VALUES(49, '10-15 kW','LP');
```

SEQUENCE

```
CREATE SEQUENCE service_service_id_seq
 START WITH 100
 INCREMENT BY 1
 MAXVALUE 999
 NOCACHE
 NOCYCLE;

INSERT  INTO SERVICE
(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,custom
er_id,employee_id,serial_no)
VALUES (service_service_id_seq.NEXTVAL, '01-Feb-2015','New Air Filter',11,2,11,52,35);

INSERT INTO SERVICE_PART (service_id,part_id, quantity_taken,unit_cost)
VALUES (service_service_id_seq.CURRVAL, 22,1,75);

INSERT INTO
service(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,c
ustomer_id,employee_id,serial_no)
VALUES (service_service_id_seq.NEXTVAL,'05-Feb-2015','New Oil Filter',11,5,12,51,35);

INSERT INTO service_part (service_id,part_id, quantity_taken,unit_cost)
VALUES (service_service_id_seq.CURRVAL, 21,1,50);

INSERT INTO
service(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,c
ustomer_id,employee_id,serial_no)
VALUES (service_service_id_seq.NEXTVAL,'06-Mar-2015','New Blade',11,5,13,56,42);
```

```
INSERT INTO service_part (service_id,part_id, quantity_taken,unit_cost)

VALUES (service_service_id_seq.CURRVAL, 23,1,52);


INSERT INTO
service(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,customer_id,employee_id,serial_no)

 VALUES (service_service_id_seq.NEXTVAL,'07-Jan-2015','New Blade',11,6,14,55,44);


INSERT INTO service_part (service_id,part_id, quantity_taken,unit_cost)

VALUES (service_service_id_seq.CURRVAL, 20,1,50);


INSERT INTO
service(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,customer_id,employee_id,serial_no)

VALUES (service_service_id_seq.NEXTVAL,'08-Mar-2015','New Air Filter',11,7,13,55,45);


INSERT INTO service_part (service_id,part_id, quantity_taken,unit_cost)

VALUES (service_service_id_seq.CURRVAL, 22,1,100);
```

Constraint Testing

PRIMARY KEY CONSTRAINTS

EMPLOYEE

```
INSERT INTO employee
(employee_id, first_name, last_name, birth_date, address, gender,salary,hourly_rate,bonus,employee_type)
VALUES (50, 'Neha', 'Sahota', '06-Nov-1989','501 Erindale Crt','F',20000,'','','PA');
--ORA-00001: unique constraint (CA_1800_SQL01_S29.EMPLOYEE_ID_PK) violated
```

EMPLOYEE_HISTORY

```
INSERT INTO employee_history
(employee_id, start_date, job_title,end_date,hourly_rate)
VALUES(51,'01-Feb-1992','MA','04-Feb-1992',11);
ORA-00001: unique constraint (CA_1800_SQL01_S29.EMPLOYEE_HISTORY_ID_PK) violated
```

SERVICE

```
 INSERT  INTO SERVICE
(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,customer_id,employee_id,serial_number)

VALUES (100, '01-Feb-2015','New Air Filter',11,2,11,52,35);
```

ORA-00001: unique constraint (CA_1800_SQL01_S29.SERVICE_SERVICE_ID_PK) violated

PART

INSERT INTO part

(part_id, description, cost, quantity)

VALUES (20, 'oil filter', 100, 20);

ORA-00001: unique constraint (CA_1800_SQL01_S29.PART_PART_ID_PK) violated

SERVICE_PART

INSERT INTO SERVICE_PART (service_id,part_id, quantity_taken,unit_cost)

VALUES (100, 22,1,75);

ORA-00001: unique constraint (CA_1800_SQL01_S29.SERVICE_PART_ID_PK) violated

SNOW_BLOWER

INSERT INTO snow_blower

(serial_number,amp_range, driveway_size, clearing_width_range, chute_control , intake_height_range, electric_start , usage)

VALUES(30, '10 to 15 ',' Up to 12 vehicles','13 to 24 in','Joystick','13 to 18 in','No','Medium use');

ORA-00001: unique constraint (CA_1800_SQL01_S29.SNOW_BLOWER_SERIAL_NUMBER_PK) violated

LAWN_MOWER

INSERT INTO lawn_mower

(serial_number,propulsion_type, starter_type, drive_control, speed_control , cutting_width, wheel_size , discharge ,bag_capacity)

VALUES(35, 'Power Propelled ',' Key start','All wheel control','Single speed','14 up tp 20 in','Small','Less','Small');

ORA-00001: unique constraint (CA_1800_SQL01_S29.LAWN_MOWER_SERIAL_NUMBER_PK) violated

CHAIN_SAW

INSERT INTO chain_saw

(serial_number,power_type, chainsaw_length, chain_oiling)

VALUES(40, 'Needs external power','11 in','Automatic');

ORA-00001: unique constraint (CA_1800_SQL01_S29.CHAIN_SAW_SERIAL_NUMBER_PK) violated

GENERATOR

INSERT INTO generator

(serial_number,wattage_range, fuel_type)

VALUES(45, '10-15 kW','Diesel');

ORA-00001: unique onstraint(CA_1800_SQL01_S29.GENERATOR_SERIAL_NUMBER_PK) violated

FOREIGN KEY CONSTRAINTS

EMPLOYEE_HISTORY

INSERT INTO employee_history
(employee_id,start_date,job_title,end_date,hourly_rate)
VALUES(1000,'01-Feb-1992','MA','04-Feb-1992',11);
--ORA-02291: integrity constraint (CA_1800_SQL01_S29.EMP_HISTORY_EMPLOYEE_ID_FK) violated - parent key not found

SERVICE

INSERT INTO SERVICE
(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,customer_id,employee_id,serial_no)

VALUES (service_service_id_seq.NEXTVAL, '01-Feb-2015','New Air Filter',11,2,11,52,500);

ORA-02291: integrity constraint (CA_1800_SQL01_S29.SERVICE_SERIAL_NO_FK) violated - parent key not found

INSERT INTO SERVICE
(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,customer_id,employee_id,serial_no)

VALUES (service_service_id_seq.NEXTVAL, '01-Feb-2015','New Air Filter',11,2,1000,52,35);

ORA-02291: integrity constraint (CA_1800_SQL01_S29.SERVICE_CUSTOMER_ID_FK) violated - parent key not found

INSERT INTO SERVICE
(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,customer_id,employee_id,serial_no)

VALUES (service_service_id_seq.NEXTVAL, '01-Feb-2015','New Air Filter',11,2,100,1000,35);

ORA-02291: integrity constraint (CA_1800_SQL01_S29.SERVICE_EMPLOYEE_ID_FK) violated - parent key not found

SERVICE_PART

INSERT INTO SERVICE_PART (service_id,part_id, quantity_taken,unit_cost)
VALUES (1000, 22,1,75);
ORA-02291: integrity constraint (CA_1800_SQL01_S29.SERVICE_PART_SERVICE_ID_FK) violated - parent key not found

INSERT INTO SERVICE_PART (service_id,part_id, quantity_taken,unit_cost)
VALUES (100, 1000,1,75);
ORA-02291: integrity constraint (CA_1800_SQL01_S29.SERVICE_PART_PART_ID_FK) violated - parent key not found

SNOW_BLOWER

INSERT INTO snow_blower
(serial_number,amp_range, driveway_size, clearing_width_range, chute_control , intake_height_range, electric_start , usage ,customer_id)
VALUES(1000, '10 to 15 ',' Up to 12 vehicles','13 to 24 in','Joystick','13 to 18 in','No','Medium use',1000);

ORA-02291: integrity constraint (CA_1800_SQL01_S29.SNOW_BLOWER_CUSTOMER_ID_FK) violated - parent key not found

LAWN_MOWER

INSERT INTO lawn_mower
(serial_number,propulsion_type, starter_type, drive_control, speed_control , cutting_width, wheel_size , discharge ,bag_capacity, customer_id)
VALUES(1000, 'Power Propelled ',' Key start','All wheel control','Single speed','14 up tp 20 in','Small','Less','Small',10000);
ORA-02291: integrity constraint (CA_1800_SQL01_S29.LAWN_MOWER_CUSTOMER_ID_FK) violated - parent key not found

CHAIN_SAW

INSERT INTO chain_saw
(serial_number,power_type, chainsaw_length, chain_oiling,customer_id)
VALUES(1000, 'Needs external power','11 in','Automatic',10000);
ORA-02291: integrity constraint (CA_1800_SQL01_S29.CHAIN_SAW_CUSTOMER_ID_FK) violated - parent key not found

GENERATOR

INSERT INTO generator
(serial_number,wattage_range, fuel_type,customer_id)
VALUES(10000, '10-15 kW','Diesel',10000);

ORA-02291: integrity constraint
(CA_1800_SQL01_S29.GENERATOR_CUSTOMER_ID_FK) violated - parent key not found

EQUIPMENT

INSERT INTO equipment (serial_number,equipment_type,brand,model,customer_id)

VALUES(1000,'SB','WAO','A24',1000);

ORA-02291: integrity constraint (CA_1800_SQL01_S29.EQUIPMENT_CUSTOMER_ID_FK) violated - parent key not found

UNIQUE CONSTRAINTS

CUSTOMER

INSERT INTO customer
(customer_id, first_name, last_name, email, mobile_number)
VALUES (10000, 'John', 'Smith', 'jsmith@gmail.com', 102456321);
ORA-00001: unique constraint (CA_1800_SQL01_S29.CUSTOMER_EMAIL_UQ) violated

INSERT INTO customer
(customer_id, first_name, last_name, email, mobile_number)
VALUES (10000, 'John', 'Smith', 'jsth@gmail.com', 102456321);
ORA-00001: unique constraint
(CA_1800_SQL01_S29.CUSTOMER_MOBILE_NUMBER_UQ) violated

CHECK CONSTRAINTS

EMPLOYEE_TYPE SHOULD BE IN OF,SE,PA

INSERT INTO employee(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (1000, 'Neha', 'Sahota', '06-Nov-1989','501 Erindale Crt','F',20000,'','','AB');

ORA-02290: check constraint (CA_1800_SQL01_S29.EMPLOYEE_EMPLOYEE_TYPE_CK) violated

FOR OFFICE EMPLOYEES

INSERT INTO employee(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (1000, 'Neha', 'Sahota', '06-Nov-1989','501 Erindale Crt','F',20000,'','11','OF');

ORA-02290: check constraint (CA_1800_SQL01_S29.EMPLOYEE_OFFICE_TYPE_CK) violated

INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (1000, 'Neha', 'Sahota', '06-Nov-1989','501 Erindale Crt','F',20000,'10','','OF');

ORA-02290: check constraint (CA_1800_SQL01_S29.EMPLOYEE_OFFICE_TYPE_CK) violated

FOR SERVICE EMPLOYEES

INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (1000, 'Neha', 'Sahota', '06-Nov-1989','501 Erindale Crt','F',20000,'10','','SE');

ORA-02290: check constraint (CA_1800_SQL01_S29.EMPLOYEE_SERVICE_TYPE_CK) violated

INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (1000, 'Neha', 'Sahota', '06-Nov-1989','501 Erindale Crt','F','','10','','SE');

ORA-02290: check constraint (CA_1800_SQL01_S29.EMPLOYEE_SERVICE_TYPE_CK) violated

FOR PART TIME EMPLOYEES

INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (450, 'Neha', 'Sahota', '06-Nov-1989','501 Erindale Crt','F','2000','','10','PA');

ORA-02290: check constraint (CA_1800_SQL01_S29.EMPLOYEE_PART_TYPE_CK) violated

INSERT INTO employee

(employee_id, first_name, last_name, birth_date, address,
gender,salary,hourly_rate,bonus,employee_type)

VALUES (450, 'Neha', 'Sahota', '06-Nov-1989','501 Erindale Crt','F','','10','10','PA');

ORA-02290: check constraint (CA_1800_SQL01_S29.EMPLOYEE_PART_TYPE_CK) violated

EMPOYEE_HISTORY

END DATE GREATER THAN START DATE

INSERT INTO employee_history
(employee_id,start_date,job_title,end_date,hourly_rate)
VALUES(1000,'04-Feb-1992','MA','01-Feb-1992',11);
ORA-02290: check constraint
(CA_1800_SQL01_S29.EMPLOYEE_HISTORY_END_DATE_CK) violated

HOURLY RATE MUST BE GREATER THAN EQUAL TO 10

```
INSERT INTO employee_history
(employee_id,start_date,job_title,end_date,hourly_rate)
VALUES(1000,'01-Feb-1992','MA','04-Feb-1992',9);
```

ORA-02290: check constraint (CA_1800_SQL01_S29.EMPLOYEE_HOURLY_RATE_CK) violated

SERVICE

HOURLY_LABOUR_RATE MUST BE GREATER THAN EQUAL TO 10

```
 INSERT  INTO SERVICE
(service_id,service_date,service_description,hourly_labour_rate,number_of_hours_spent,
customer_id,employee_id,snow_blower_serial_no,lawn_mower_serial_no,generator_seri
al_no,chain_saw_serial_no)
VALUES (service_service_id_seq.NEXTVAL, '01-Feb-2015','New Air
Filter',9,2,11,52,'',35,'','');
```

ORA-02290: check constraint
(CA_1800_SQL01_S29.SERVICE_HOURLY_LABOUR_RATE_CK) violated

PART

COST MUST BE GREATER THAN ZERO

```
INSERT INTO part
(part_id, description, cost, quantity)
VALUES (1000, 'oil filter', 0, 20);
```

ORA-02290: check constraint (CA_1800_SQL01_S29.PART_COST_CK) violated

SERVICE_PART

UNIT_COST MUST BE GREATER THAN ZERO

```
INSERT INTO SERVICE_PART (service_id,part_id, quantity_taken,unit_cost)
VALUES (service_service_id_seq.CURRVAL, 22,1,0);
```