

FIT5195 S1 2020 – Take Home Test

Case Study 1: Government Hospital Data Warehouse

Task 1: SQL Commands

DROP TABLE ASSIGNMENT;

DROP TABLE SERVICE;

DROP TABLE PATIENT;

DROP TABLE DOCTOR;

DROP TABLE CLINIC;

```
CREATE TABLE CLINIC(  
    hospital_id VARCHAR(20) PRIMARY KEY,  
    hospital_name VARCHAR(50) NOT NULL,  
    hospital_address VARCHAR(100) NOT NULL,  
    suburb VARCHAR(20) NOT NULL,  
    postcode NUMBER(6) NOT NULL  
);
```

```
CREATE TABLE DOCTOR(  
    staff_id VARCHAR(20) PRIMARY KEY,  
    staff_name VARCHAR(50) NOT NULL,  
    staff_ph VARCHAR(10) NOT NULL  
);
```

```
CREATE TABLE PATIENT(  
    patient_id VARCHAR(20) PRIMARY KEY,
```

```
patient_name VARCHAR(50) NOT NULL,  
patient_age NUMBER(3) NOT NULL,  
patient_ph_no VARCHAR(10) NOT NULL,  
patient_address VARCHAR(100) NOT NULL,  
patient_nationality VARCHAR(20) NOT NULL,  
patient_emergency_contact VARCHAR(10) NOT NULL  
);
```

```
CREATE TABLE SERVICE(  
service_id VARCHAR(20) PRIMARY KEY,  
staff_id VARCHAR(20) REFERENCES DOCTOR(staff_id),  
hospital_id VARCHAR(20) REFERENCES CLINIC(hospital_id),  
service_name VARCHAR(50) NOT NULL,  
service_cost NUMBER(10) NOT NULL  
);
```

```
CREATE TABLE ASSIGNMENT(  
assignment_id VARCHAR(20) PRIMARY KEY,  
patient_id VARCHAR(20) REFERENCES PATIENT(patient_id),  
patient_service_start_date DATE NOT NULL,  
patient_service_end_date DATE NOT NULL,  
service_id VARCHAR(20) REFERENCES SERVICE(service_id)  
);
```

```
INSERT INTO CLINIC VALUES('H0001','Monash Children Hospital','246 clayton  
Rd','Clayton',3168);
```

```
INSERT INTO CLINIC VALUES('H0002','Monash Medical Centre','246 clayton  
Rd','Clayton',3168);
```

```
INSERT INTO CLINIC VALUES('H0003','Jessie McPherson Private Hospital','246 clayton Rd','Clayton',3168);
```

```
INSERT INTO CLINIC VALUES('H0004','Moorabbin Hospital','823-865 Centre Rd','Bentleigh East',3165);
```

```
INSERT INTO CLINIC VALUES('H0005','Sandringham Hospital','193 Bluff Rd','Sandringham',3191);
```

```
INSERT INTO CLINIC VALUES('H0006','Holmesglen Private Hospital','490 South Rd','Moorabbin',3189);
```

```
INSERT INTO CLINIC VALUES('H0007','Sir John Monash Private Hospital','212-220 Clayton Rd','Clayton',3168);
```

```
INSERT INTO CLINIC VALUES('H0008','The Alfred','55 Commercial Rd','Melbourne',3004);
```

```
INSERT INTO CLINIC VALUES('H0009','Caulfield Hospital','260-294 Kooyong Rd','Caulfield',3162);
```

```
INSERT INTO CLINIC VALUES('H0010','Holmesglen Private Hospital: Emergency Department','490 South Rd','Moorabbin',3189);
```

```
SELECT * FROM CLINIC;
```

```
INSERT INTO DOCTOR VALUES('S0001','Dinesh Karthikeyan','0452357746');
```

```
INSERT INTO DOCTOR VALUES('S0002','Arshad Aaqib','0452357747');
```

```
INSERT INTO DOCTOR VALUES('S0003','Goutham Balaji','0452357748');
```

```
INSERT INTO DOCTOR VALUES('S0004','Vijay Rohin','0452357749');
```

```
INSERT INTO DOCTOR VALUES('S0005','Navin Chander','0452357750');
```

```
SELECT * FROM DOCTOR;
```

```
INSERT INTO PATIENT VALUES('P0001','Abu Suhail',26,'0452357777','9 Albany Road','Indian','0452357776');
```

```
INSERT INTO PATIENT VALUES('P0002','Anil sharma',30,'0452357778','19 Albany Road','Indian','0452357779');
```

```
INSERT INTO PATIENT VALUES('P0003','Beju Daniel',35,'0452357787','29 Albany Road','Indian','0452357780');
```

```
INSERT INTO PATIENT VALUES('P0004','Babu',12,'0452357785','32 Albany Road','Indian','0452357791');
```

```
INSERT INTO PATIENT VALUES('P0005','Chris',19,'0452357888','25 Albany Road','Australian','0452357889');
```

```
INSERT INTO PATIENT VALUES('P0006','Daniel',20,'0452357865','12 Albany Road','Australian','0452357866');
```

```
INSERT INTO PATIENT VALUES('P0007','David',42,'0452357841','1 Albany Road','Australian','0452357875');
```

```
INSERT INTO PATIENT VALUES('P0008','Jhon',50,'0452357651','5 Albany Road','Australian','0452255555');
```

```
INSERT INTO PATIENT VALUES('P0009','Jona',75,'0452357555','111 Albany Road','Australian','0452355252');
```

```
INSERT INTO PATIENT VALUES('P0010','Julie',99,'0452356565','255 Albany Road','Australian','0452357123');
```

```
SELECT * FROM PATIENT;
```

```
INSERT INTO SERVICE VALUES('SE0001','S0001','H0001','general medical consultations',15);
```

```
INSERT INTO SERVICE VALUES('SE0002','S0002','H0002','sports medicine',30);
```

```
INSERT INTO SERVICE VALUES('SE0003','S0003','H0003','mental health',40);
```

```
INSERT INTO SERVICE VALUES('SE0004','S0004','H0004','skin diseases',50);
```

```
INSERT INTO SERVICE VALUES('SE0005','S0005','H0005','referrals to specialists and pathology',70);
```

```
INSERT INTO SERVICE VALUES('SE0006','S0001','H0001','sports medicine',60);
```

```
INSERT INTO SERVICE VALUES('SE0007','S0002','H0002','mental health',70);
```

```
INSERT INTO SERVICE VALUES('SE0008','S0003','H0003','general medical consultations',15);
```

```
INSERT INTO SERVICE VALUES('SE0009','S0004','H0004','referrals to specialists and pathology',20);
```

```
INSERT INTO SERVICE VALUES('SE0010','S0005','H0005','general medical consultations',30);
```

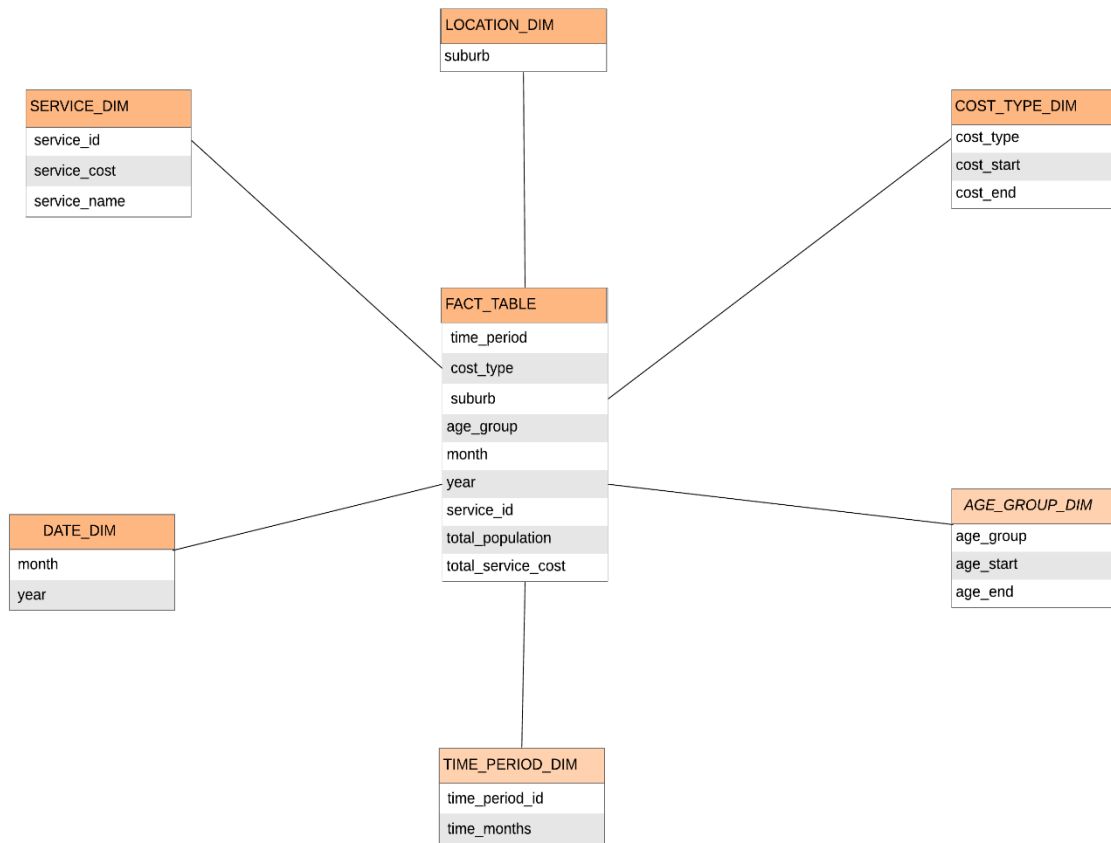
```
SELECT * FROM SERVICE;
```

```
INSERT INTO ASSIGNMENT VALUES('A0001','P0001','06-01-2018','06-01-2018','SE0001' );
INSERT INTO ASSIGNMENT VALUES('A0002','P0002','06-02-2018','06-03-2018','SE0003' );
INSERT INTO ASSIGNMENT VALUES('A0003','P0010','06-03-2018','06-04-2018','SE0004' );
INSERT INTO ASSIGNMENT VALUES('A0004','P0003','06-04-2018','06-05-2018','SE0002' );
INSERT INTO ASSIGNMENT VALUES('A0005','P0004','06-05-2018','06-06-2018','SE0005' );
INSERT INTO ASSIGNMENT VALUES('A0006','P0003','06-06-2018','06-07-2018','SE0006' );
INSERT INTO ASSIGNMENT VALUES('A0007','P0004','06-07-2018','06-08-2018','SE0008' );
INSERT INTO ASSIGNMENT VALUES('A0008','P0005','06-09-2018','06-10-2018','SE0007' );
INSERT INTO ASSIGNMENT VALUES('A0009','P0003','06-11-2018','06-12-2018','SE0010' );
INSERT INTO ASSIGNMENT VALUES('A0010','P0004','06-12-2018','06-01-2019','SE0009' );
INSERT INTO ASSIGNMENT VALUES('A0011','P0007','06-01-2019','06-02-2019','SE0001' );
INSERT INTO ASSIGNMENT VALUES('A0012','P0002','06-02-2019','06-03-2019','SE0003' );
INSERT INTO ASSIGNMENT VALUES('A0013','P0008','06-03-2019','06-04-2019','SE0004' );
INSERT INTO ASSIGNMENT VALUES('A0014','P0009','06-04-2019','06-05-2019','SE0005' );
INSERT INTO ASSIGNMENT VALUES('A0015','P0010','06-05-2019','06-06-2019','SE0002' );
INSERT INTO ASSIGNMENT VALUES('A0016','P0006','06-06-2019','06-07-2019','SE0007' );
INSERT INTO ASSIGNMENT VALUES('A0017','P0007','06-01-2020','06-02-2020','SE0001' );
INSERT INTO ASSIGNMENT VALUES('A0018','P0002','06-02-2020','06-03-2020','SE0003' );
INSERT INTO ASSIGNMENT VALUES('A0019','P0008','06-03-2020','06-04-2020','SE0004' );
INSERT INTO ASSIGNMENT VALUES('A0020','P0009','06-04-2020','06-05-2020','SE0005' );
```

```
SELECT * FROM ASSIGNMENT;
```

```
COMMIT;
```

Task 2: Star Schema Diagram



Task 3: Two Column Table methodology

SUBURB	TOTAL POPULATION	TOTAL SERVICE COST
Clayton	5	100
Caulfield	6	200
Sandringham	4	300

AGE GROUP	TOTAL POPULATION	TOTAL SERVICE COST
Infant	2	100
Children	3	200
Adult	5	600
Senior	6	1000

TIME PERIOD	TOTAL POPULATION	TOTAL SERVICE COST
Winter	2	100
Summer	3	200
Spring	5	600
Autumn	6	1000

SERVICE COST TYPE	TOTAL POPULATION	TOTAL SERVICE COST
Low	2	100
Medium	3	200
High	5	600

SERVICE NAME	TOTAL POPULATION	TOTAL SERVICE COST
General consultation	2	100
Sport Medication	3	200
Mental Health	5	600
Skin Disease	6	1000

MONTH, YEAR	TOTAL POPULATION	TOTAL SERVICE COST
JAN, 2020	2	100
FEB, 2020	3	200
MAR, 2020	5	600
APR, 2020	6	1000

Task 4: SQL Commands for Star Schema

```
DROP TABLE LOCATION_DIM;
```

```
DROP TABLE SERVICE_DIM;
```

```
DROP TABLE DATE_DIM;
```

```
DROP TABLE AGE_GROUP_DIM;
```

```
DROP TABLE TIME_PERIOD_DIM;
```

```
DROP TABLE COST_TYPE_DIM;
```

```
DROP TABLE TEMP_FACT;
```

```
DROP TABLE FACT_TABLE;
```

```
CREATE TABLE LOCATION_DIM AS SELECT DISTINCT(SUBURB) FROM CLINIC;
```

```
SELECT * FROM LOCATION_DIM;
```

```
CREATE TABLE SERVICE_DIM AS SELECT SERVICE_ID,S.SERVICE_COST,S.SERVICE_NAME  
FROM SERVICE S;
```

```
SELECT * FROM SERVICE_DIM;
```

```
CREATE TABLE DATE_DIM AS SELECT  
TO_CHAR(TO_DATE(PATIENT_SERVICE_START_DATE),'MON') AS MONTH,  
TO_CHAR(TO_DATE(PATIENT_SERVICE_START_DATE),'YYYY') AS YEAR FROM ASSIGNMENT;
```

```
SELECT * FROM DATE_DIM;
```

```
CREATE TABLE AGE_GROUP_DIM(AGE_GROUP VARCHAR(10) PRIMARY KEY,AGE_START  
NUMBER NOT NULL,AGE_END NUMBER NOT NULL);
```

```
INSERT INTO AGE_GROUP_DIM VALUES('INFANT',0,1);
```

```
INSERT INTO AGE_GROUP_DIM VALUES('CHILDREN',2,17);
```

```
INSERT INTO AGE_GROUP_DIM VALUES('ADULT',18,64);
```

```
INSERT INTO AGE_GROUP_DIM VALUES('SENIOR',65,200);
```

```
SELECT * FROM AGE_GROUP_DIM ;
```



```
CREATE TABLE TIME_PERIOD_DIM(TIME_PERIOD_ID VARCHAR(10) PRIMARY  
KEY,TIME_MONTHS VARCHAR(20) NOT NULL);
```

```
INSERT INTO TIME_PERIOD_DIM VALUES('SUMMER','DEC,JAN,FEB');
```

```
INSERT INTO TIME_PERIOD_DIM VALUES('WINTER','JUN,JUL,AUG');
```

```
INSERT INTO TIME_PERIOD_DIM VALUES('SPRING','SEP,OCT,NOV');
```

```
INSERT INTO TIME_PERIOD_DIM VALUES('AUTUMN','MAR,APR,MAY');
```

```
SELECT * FROM TIME_PERIOD_DIM ;
```

```
CREATE TABLE COST_TYPE_DIM(COST_TYPE VARCHAR(10) PRIMARY KEY,COST_START  
NUMBER NOT NULL,COST_END NUMBER NOT NULL);
```

```
INSERT INTO COST_TYPE_DIM VALUES('LOW',0,19);
```

```
INSERT INTO COST_TYPE_DIM VALUES('MEDIUM',20,49);
```

```
INSERT INTO COST_TYPE_DIM VALUES('HIGH',50,1000);
```

```
SELECT * FROM COST_TYPE_DIM;
```

```
CREATE TABLE TEMP_FACT AS SELECT  
A.PATIENT_ID,P.PATIENT_AGE,A.SERVICE_ID,S.SERVICE_COST,S.HOSPITAL_ID,C.SUBURB,A.A  
SSIGNMENT_ID,A.PATIENT_SERVICE_START_DATE
```

```
FROM ASSIGNMENT A JOIN SERVICE S ON A.SERVICE_ID = S.SERVICE_ID JOIN PATIENT P ON  
A.PATIENT_ID=P.PATIENT_ID JOIN CLINIC C ON S.HOSPITAL_ID=C.HOSPITAL_ID;
```

```
SELECT * FROM TEMP_FACT;
```

```
ALTER TABLE TEMP_FACT ADD AGE_GROUP VARCHAR(10);
```

```
ALTER TABLE TEMP_FACT ADD TIME_PERIOD VARCHAR(10);
```

```
ALTER TABLE TEMP_FACT ADD COST_TYPE VARCHAR(10);
```

```
UPDATE TEMP_FACT SET AGE_GROUP=CASE
```

```
    WHEN PATIENT_AGE BETWEEN 0 AND 1 THEN 'INFANT'
```

```
    WHEN PATIENT_AGE BETWEEN 2 AND 17 THEN 'CHILDREN'
```

```
    WHEN PATIENT_AGE BETWEEN 18 AND 64 THEN 'ADULT'
```

```
    WHEN PATIENT_AGE BETWEEN 65 AND 200 THEN 'SENIOR' END;
```

```
UPDATE TEMP_FACT SET COST_TYPE=CASE
```

```
    WHEN SERVICE_COST BETWEEN 0 AND 19 THEN 'LOW'
```

```
    WHEN SERVICE_COST BETWEEN 20 AND 49 THEN 'MEDIUM'
```

```
    WHEN SERVICE_COST BETWEEN 50 AND 1000 THEN 'HIGH'
```

```
END;
```

```
UPDATE TEMP_FACT SET TIME_PERIOD=CASE
```

```
    WHEN 'DEC,JAN,FEB' LIKE
```

```
CONCAT(CONCAT('%',TO_CHAR(TO_DATE(PATIENT_SERVICE_START_DATE),'MON')),'%')THE  
N 'SUMMER'
```

```
    WHEN 'JUN,JUL,AUG' LIKE
```

```
CONCAT(CONCAT('%',TO_CHAR(TO_DATE(PATIENT_SERVICE_START_DATE),'MON')),'%')THE  
N 'WINTER'
```

```
    WHEN 'SEP,OCT,NOV' LIKE
```

```
CONCAT(CONCAT('%',TO_CHAR(TO_DATE(PATIENT_SERVICE_START_DATE),'MON')),'%')THE  
N 'SPRING'
```

```
    WHEN 'MAR,APR,MAY' LIKE
```

```
CONCAT(CONCAT('%',TO_CHAR(TO_DATE(PATIENT_SERVICE_START_DATE),'MON')),'%')THE  
N 'AUTUMN'
```

```
END;
```

```
CREATE TABLE FACT_TABLE AS SELECT
```

```
TIME_PERIOD,COST_TYPE,SUBURB,AGE_GROUP,TO_CHAR(TO_DATE(PATIENT_SERVICE_STA
```

```

RT_DATE),'MON') AS MONTH, TO_CHAR(TO_DATE(PATIENT_SERVICE_START_DATE),'YYYY')
AS YEAR,

SERVICE_ID,COUNT(ASSIGNMENT_ID) AS TOTAL_POPULATION,SUM(SERVICE_COST) AS
TOTAL_SERVICE_COST FROM TEMP_FACT

GROUP
BY(TIME_PERIOD,COST_TYPE,SUBURB,AGE_GROUP,TO_CHAR(TO_DATE(PATIENT_SERVICE_
START_DATE),'MON'),
TO_CHAR(TO_DATE(PATIENT_SERVICE_START_DATE),'YYYY'),SERVICE_ID);

SELECT * FROM FACT_TABLE;

COMMIT;

```

Task 5: SQL Commands for Fetching from FACT_TABLE

/*# A)*/

```

SELECT SUM(TOTAL_POPULATION),TIME_PERIOD FROM FACT_TABLE WHERE
TIME_PERIOD='WINTER' GROUP BY (TIME_PERIOD);

```

	⚡ SUM(TOTAL_POPULATION) ⚡	⚡ TIME_PERIOD ⚡
1	3	WINTER

/*# B)*/

```

SELECT SUM(TOTAL_SERVICE_COST),COST_TYPE FROM FACT_TABLE GROUP BY
(COST_TYPE);

```

	⚡ SUM(TOTAL_SERVICE_COST) ⚡	⚡ COST_TYPE ⚡
1	560	HIGH
2	60	LOW
3	230	MEDIUM

/* C)*/

```
SELECT SUM(TOTAL_POPULATION),AGE_GROUP,MONTH,YEAR FROM FACT_TABLE WHERE  
MONTH='APR' AND YEAR=2020 GROUP BY (AGE_GROUP,MONTH,YEAR);
```

	SUM(TOTAL_POPULATION)	AGE_GROUP	MONTH	YEAR
1	1	SENIOR	APR	2020

/* D)*/

```
SELECT SUM(TOTAL_SERVICE_COST),SUBURB,S.SERVICE_NAME FROM FACT_TABLE F JOIN  
SERVICE_DIM S ON F.SERVICE_ID=S.SERVICE_ID WHERE S.SERVICE_NAME='general medical  
consultations' GROUP BY(SUBURB,SERVICE_NAME);
```

	SUM(TOTAL_SERVICE_...	SUBURB	SERVICE_NAME
1	60	Clayton	general medical consultations
2	30	Sandringham	general medical consultations