

Database 1 Project

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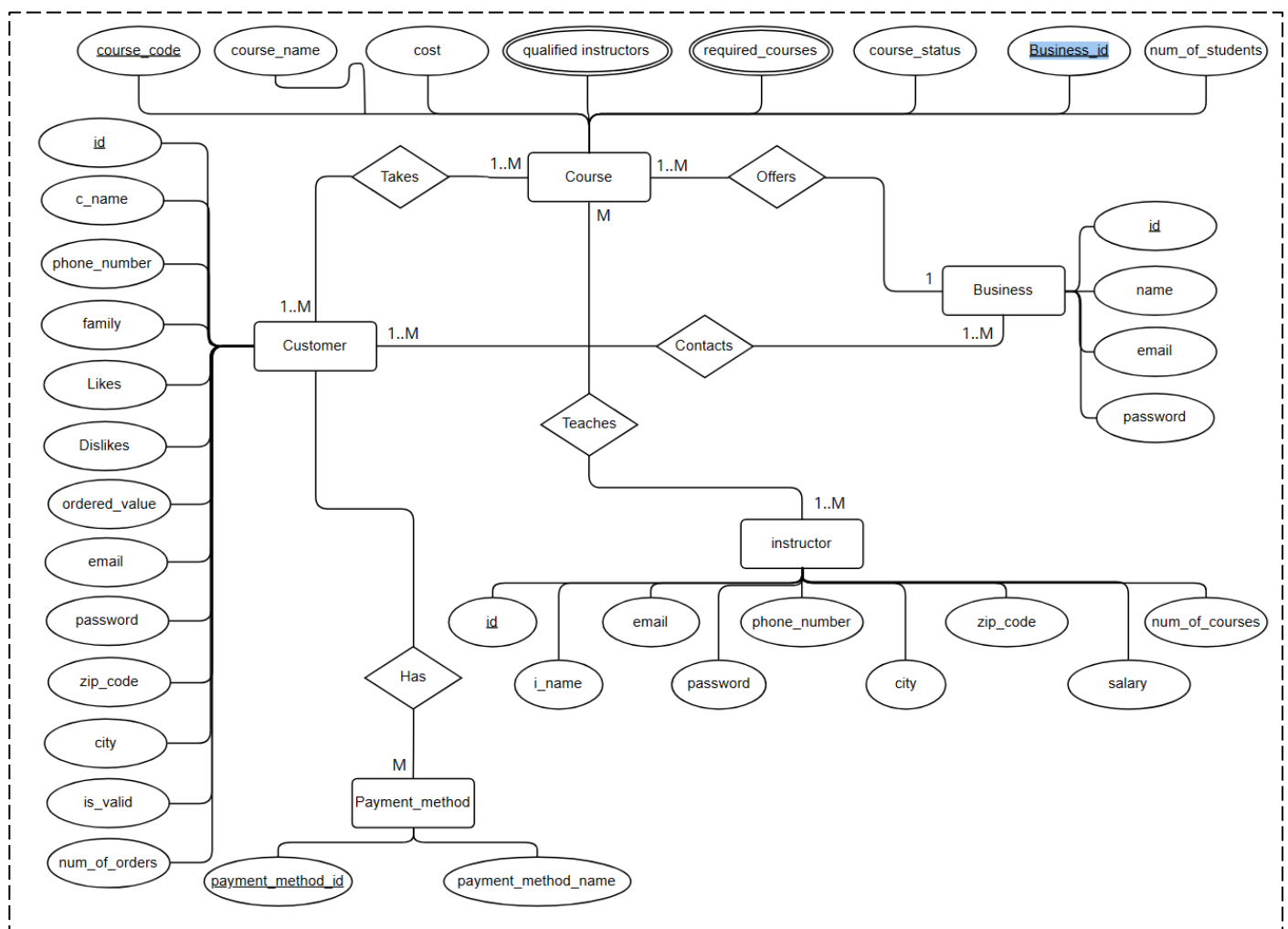
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Introduction

In this project report you will find an ERD, and Relational Schema that lines up “Tadreep Central” whole database, in addition of database tables, dummy data to fill in the tables as well as the queries to test those tables.

Entity Relation Diagram



Relational Schema

Customer

<u>customer_id</u>	C_name	Phone_number	Family	Likes	Dislikes	Ordered_value
Email	Password	Zip_code	City	Is_valid	num_of_orders	

Payment_method

<u>payment_id</u>	Payment_method_name
-------------------	---------------------

Business

<u>business_id</u>	b_name	Email	password
--------------------	--------	-------	----------

Course

<u>Course_code</u>	Course_name	Cost	Business_id	course_status
course_date	num_of_students			

Instructor

<u>instructor_id</u>	I_name	Email	Password	Phone_number	City	Zip_code	salary	num_of_courses
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Enroll

<u>course_code</u>	customer_id	course_status	course_method
--------------------	-------------	---------------	---------------

Payment_method

<u>payment_id</u>	customer_id
-------------------	-------------

Enroll

<u>course_code</u>	customer_id	course_status	course_method
--------------------	-------------	---------------	---------------

Payment

<u>payment_id</u>	customer_id
-------------------	-------------

contacts

<u>contact_id</u>	business_email	customer_email	message
-------------------	----------------	----------------	---------

Qualified instructors' course

course_code	instructor_id
-------------	---------------

Required courses

course_code	required_courses
-------------	------------------

Assigned courses

course_code	instructor_id	course_date	Cost	num_of_students
-------------	---------------	-------------	------	-----------------

Database tables

SQL Worksheet Clear

```

1 CREATE TABLE Customer(
2   customer_id int NOT NULL,
3   c_name VARCHAR(30),
4   phone_number INT UNIQUE,
5   Family VARCHAR(250),
6   likes VARCHAR(250),
7   dislikes VARCHAR(250),
8   ordered_value DECIMAL (7, 2),
9   zip_code INT,
10  city VARCHAR(20),
11  isValid INT CHECK (isValid IN (0,1)),
12  email VARCHAR(40),
13  pass VARCHAR(40),
14  num_of_orders int,
15  CONSTRAINT customerpk PRIMARY KEY ( customer_id )
16 );

```

Table created.

SQL Worksheet Clear

```

1 CREATE TABLE Payment_method(
2   payment_id int NOT NULL,
3   payment_name VARCHAR (15),
4   CONSTRAINT Paymentpk PRIMARY KEY ( payment_id )
5 );

```

Table created.

SQL Worksheet Clear

```

1 CREATE TABLE business(
2   business_id int NOT NULL,
3   b_name VARCHAR (30),
4   email VARCHAR(40),
5   pass VARCHAR(10),
6   CONSTRAINT businesspk PRIMARY KEY (business_id)
7 );

```

Table created.

SQL Worksheet Clear

```

1 CREATE TABLE instructor (
2   instructor_id int NOT NULL,
3   i_name VARCHAR(30),
4   email VARCHAR (30),
5   pass VARCHAR (10),
6   phone_number INT UNIQUE,
7   zip_code INT,
8   city VARCHAR(20),
9   salary INT,
10  num_of_courses int,
11  CONSTRAINT instructorpk PRIMARY KEY ( instructor_id )
12 );

```

Table created.

SQL Worksheet

Clear

```
1 CREATE TABLE course(
2   course_code varchar(7) NOT NULL,
3   course_name VARCHAR(30),
4   cost DECIMAL (7, 2),
5   business_id int,
6   course_status VARCHAR (30) CHECK (course_status IN ('In Develo
7   course_date date,
8   num_of_students int,
9   CONSTRAINT coursepk PRIMARY KEY ( course_code ),
10  CONSTRAINT course_fk FOREIGN KEY ( business_id ) REFERENCES bu
11 );
```

Table created.

SQL Worksheet

Clear

```
1 /*
2 Customer & payment method
3 */
4 CREATE TABLE payment (
5   payment_id int NOT NULL,
6   customer_id int NOT NULL,
7   CONSTRAINT payment_fk1 FOREIGN KEY ( payment_id )
8     REFERENCES Payment_method (payment_id) ON DELETE CASCADE,
9   CONSTRAINT payment_fk2 FOREIGN KEY ( customer_id )
10    REFERENCES customer (customer_id) ON DELETE CASCADE
11 );
12
```

Table created.

SQL Worksheet

Clear

Find

Actions

Save

Run

```
1 /*
2 Customer & course table
3 */
4 CREATE TABLE enroll (
5   course_code varchar(7) NOT NULL,
6   customer_id int NOT NULL,
7   course_status VARCHAR (15) CHECK (course_status IN ('Not Started', 'Just Started', 'In Progress'
8   , 'Completed', 'Cancelled')),
9   course_method VARCHAR (15) CHECK (course_method IN ('instructor', 'internet', 'self-pace')),
10  CONSTRAINT enroll_fk1 FOREIGN KEY ( course_code ) REFERENCES course (course_code) ON DELETE CASCADE,
11  CONSTRAINT enroll_fk2 FOREIGN KEY ( customer_id ) REFERENCES customer (customer_id) ON DELETE CASCADE
12 );
```

Table created.

SQL Worksheet

```
1 v /*
2   business & customer
3   */
4 v CREATE TABLE contacts(
5   contact_id int NOT NULL,
6   business_email VARCHAR(40),
7   customer_email VARCHAR(40),
8   message VARCHAR(250),
9   CONSTRAINT contactspk PRIMARY KEY ( contact_id )
10 );
11
```

Table created.

SQL Worksheet

Clear Find

```
1 v /*
2   qualified instructors course
3   */
4 v CREATE TABLE qualified_instructors_course(
5   course_code varchar(7) NOT NULL,
6   instructor_id int NOT NULL,
7   CONSTRAINT qualified_instructors_course_fk1 FOREIGN KEY ( course_code )
8     REFERENCES course (course_code) ON DELETE CASCADE
9 );
```

Table created.

SQL Worksheet

Clear

```
1 v /*
2   required courses
3   */
4 v CREATE TABLE required_courses(
5   course_code varchar(7) NOT NULL ,
6   required_courses VARCHAR (250),
7   CONSTRAINT required_courses_fk1 FOREIGN KEY (course_code)
8     REFERENCES course (course_code) ON DELETE CASCADE
9 );
```

Table created.

SQL Worksheet

Clear

```
1 v CREATE TABLE assigned_courses(
2   course_code varchar(7) NOT NULL ,
3   instructor_id int,
4   course_date date,
5   cost int,
6   num_of_students int,
7   CONSTRAINT assigned_courses_fk1 FOREIGN KEY (course_code)
8     REFERENCES course (course_code) ON DELETE CASCADE,
9   CONSTRAINT assigned_courses_fk2 FOREIGN KEY ( instructor_id )
10     REFERENCES instructor (instructor_id) ON DELETE CASCADE
11 );
```

Table created.

Dummy Data

```
SQL Worksheet
Clear Find Actions Save Run

5  /*1*/
6  INSERT INTO Customer
7  VALUES (1,'Rawan',0555555555, 'Consists of Mother, Father, 2 sisters and one brother', 'Likes tea', 'Dislikes coffee', 0, 22222, 'Makkah', 1, 'rawan@email.com','123@@', 0);
8
9  /*2*/
10 INSERT INTO Customer
11 VALUES (2,'Ali',0155555555, 'Consists of Mother, 2 sisters and 2 brother', 'likes art','Dislikes math', 50, 11718, 'Jeddah', 1, 'ali@email.com','123@@', 1);
12
13 /*3*/
14 INSERT INTO Customer
15 VALUES (3,'Mohammad', 0255555555, 'Consists of Mother, 2 sisters and 2 brother', 'Loves football', 'Dislikes junk food', 600, 11718, 'Jeddah', 1, 'Mohammad@email.com','1f3@@', 3);
16
17 /*4*/
18 INSERT INTO Customer
19 VALUES (4,'Rayan',0347850361, 'Consists of Mother, Father, one sister and 3 brother', 'intrested in data science', 'Dislikes computer graphics', 200, 25782, 'Taif', 1, 'Rayan@email.com','fjdkf1j', 2);
20
21 /*5*/
22 INSERT INTO Customer
23 VALUES (5,'Mahmoud',0561927347, 'Consists of Mother, Father, 7 brother', 'would like to become a software engineer', 'Dislikes algorithms', 650, 11718, 'Jeddah', 1, 'Mahmoud@email.com','dsu894j', 4);
24
25 /*6*/
26 INSERT INTO Customer
27 VALUES (6,'tasneem',0561927344, 'Consists of Mother, Father, 5 sisters and 1 brother', 'would like to become a Data scientest','Dislikes back-end development', 1000, 11794, 'Jeddah', 1, 'Tasneen@email.com','dhsq#4',
28
29 /*7*/
30 INSERT INTO Customer
31 VALUES (7,'Reem',0561927394, 'Consists of Mother, Father, 1 brother', 'loves math','Dislikes front-end development', 0, 12586, 'Jeddah', 0, 'Reem@email.com','fgdy#9', 0);
32
```

```
SQL Worksheet

1  v  /*
2  Payment methods
3  */
4
5  /*1*/
6  v  INSERT INTO Payment_method
7  VALUES (1, 'PayPal');
8
9  /*2*/
10 v  INSERT INTO Payment_method
11 VALUES (2, 'Mada');
12
13 /*3*/
14 v  INSERT INTO Payment_method
15 VALUES (3, 'Visa');
16
17 /*4*/
18 v  INSERT INTO Payment_method
19 VALUES (4, 'Master Card');
20

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```

```
SQL Worksheet

1  v  /*
2  business accounts
3  */
4
5  /*1*/
6  v  INSERT INTO business
7  VALUES (1, 'CISCO', 'cisco@email.com', 'jh#$43');
8
9  /*2*/
10 v  INSERT INTO business
11 VALUES (2, 'Taqat', 'taqat@email.com', 'loi349$#');
12
13 /*3*/
14 v  INSERT INTO business
15 VALUES (3, 'google', 'google@email.com', 'mjnk%#$232');
16
17

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.
```


SQL Worksheet

```

1  /*
2  instructors
3  */
4
5  /*1*/
6  INSERT INTO instructor
7  VALUES (1,'Aisha', 'AishaKJ@outlook.com', 'dhj93488@', 0558884532, 12044, 'Jeddah', 5900, 20);
8
9  /*2*/
10 INSERT INTO instructor
11 VALUES (2,'Sameer', 'SameerH@outlook.com', '##f534', 0547895131, 12378, 'Makkah', 9000, 45);
12
13 /*3*/
14 INSERT INTO instructor
15 VALUES (3,'Hamad', 'HamadSD@outlook.com', 'fhnf45i@', 0537195943, 12377, 'Makkah', 5300, 10);
16
17 /*4*/
18 INSERT INTO instructor
19 VALUES (4,'Maram', 'MaramAS@outlook.com', 'jkg%#4', 0537195999, 12374, 'Riyadh', 4500, 5);
20
21 /*5*/
22 INSERT INTO instructor
23 VALUES (5,'Sarah', 'SarahAI@outlook.com', 'kjr$%34', 0537195753, 12372, 'Riyadh', 8500, 6);
24
1 row(s) inserted.
1 row(s) inserted.
1 row(s) inserted.
1 row(s) inserted.

```

SQL Worksheet

```

1  /*
2  courses
3  */
4
5  /*1*/
6  INSERT INTO course
7  VALUES ('net101', 'introduction to networks', 300, 1, 'Cancelled', DATE'2014-12-3',0);
8
9  /*2*/
10 INSERT INTO course
11 VALUES ('net201', 'networks 2', 500, 1, 'Active', DATE'2014-11-4', 30);
12
13 /*3*/
14 INSERT INTO course
15 VALUES ('oop101', 'Java OOP', 300, 3, 'In Development', DATE'2015-6-1', 0);
16
17 /*4*/
18 INSERT INTO course
19 VALUES ('pyth1', 'introduction into python', 150, 3, 'Expired', DATE'2014-1-30', 40);
20
21 /*5*/
22 INSERT INTO course
23 VALUES ('HR101', 'Human Resources', 300, 2, 'Active', DATE'2014-4-29', 45);
24
25 /*6*/
26 INSERT INTO course
27 VALUES ('HR201', 'Human Resources', 600, 2, 'Cancelled', DATE'2013-12-5', 0);
28
1 row(s) inserted.
1 row(s) inserted.

```

SQL Worksheet

```

1  /*1*/
2  INSERT INTO enroll
3  VALUES ('net101', 1, 'Cancelled', 'instructor');
4
5  /*2*/
6  INSERT INTO enroll
7  VALUES ('net201', 2, 'Cancelled', 'internet');
8
9  /*3*/
10 INSERT INTO enroll
11 VALUES ('HR101', 3, 'Completed', 'internet');
12
13 /*4*/
14 INSERT INTO enroll
15 VALUES ('HR101', 4, 'Completed', 'self-pace');
16
17 /*5*/
18 INSERT INTO enroll
19 VALUES ('net201', 4, 'In Progress', 'self-pace');
20
21 /*6*/
22 INSERT INTO enroll
23 VALUES ('HR101', 5, 'Just Started', 'instructor');
24
25 /*7*/
26 INSERT INTO enroll
27 VALUES ('net201', 5, 'Just Started', 'instructor');
28
29 /*8*/
30 INSERT INTO enroll
31 VALUES ('HR101', 5, 'Completed', 'instructor');
32

```

SQL Worksheet

```

1  /*
2  payments
3  */
4
5  /*1*/
6  INSERT INTO Payment
7  VALUES (1, 6);
8
9  /*2*/
10 INSERT INTO Payment
11 VALUES (2, 3);
12
13 /*3*/
14 INSERT INTO Payment
15 VALUES (2, 2);
16
17 /*4*/
18 INSERT INTO Payment
19 VALUES (3, 1);

```

```

1 row(s) inserted.
1 row(s) inserted.
1 row(s) inserted.
1 row(s) inserted.

```

SQL Worksheet

```
1 v /*
2 contacts
3 */
4
5 /*1*/
6 INSERT INTO contacts
7 VALUES (1, 'cisco@email.com', 'rawan@email.com', 'thank you for helping me');
8
9 /*2*/
10 v INSERT INTO contacts
11 VALUES (2, 'google@email.com', 'Mohammad@email.com',
12 'i need your help regarding the professor who is in charge of python course');
13
14 /*3*/
15 v INSERT INTO contacts
16 VALUES (3, 'taqat@email.com', 'Tasneem@email.com', 'we need more A.I courses');
17
```

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

SQL Worksheet

```
1 v /*
2 Qualified instructors
3 */
4
5 /*1*/
6 v INSERT INTO qualified_instructors_course
7 VALUES ('oop101', 1);
8
9 /*2*/
10 v INSERT INTO qualified_instructors_course
11 VALUES ('oop101', 3);
12
13 /*3*/
14 v INSERT INTO qualified_instructors_course
15 VALUES ('oop101', 2);
16
```

1 row(s) inserted.

1 row(s) inserted.

1 row(s) inserted.

SQL Worksheet

```
1
2 v /*
3 required courses
4 */
5
6 /*1*/
7 v INSERT INTO required_courses
8 VALUES ('net201', 'net101');
9
10 /*2*/
11 v INSERT INTO required_courses
12 VALUES ('HR101', 'HR201');
13
14
```

1 row(s) inserted.

1 row(s) inserted.

SQL Worksheet

```
1 v /*
2 assigned courses
3 */
4
5 /*1*/
6 v INSERT INTO assigned_courses
7 VALUES ('HR101', 1, DATE '2014-04-29', 300, 45);
8
9 /*2*/
10 v INSERT INTO assigned_courses
11 VALUES ('net201', 1, DATE '2014-11-04', 500, 30);
12
13 /*4*/
14 v INSERT INTO assigned_courses
15 VALUES ('oop101', 2, DATE '2015-06-01', 300, 0);
16
17 /*5*/
18 v INSERT INTO assigned_courses
19 VALUES ('pyth1', 3, DATE '2014-01-30', 150, 40);
```

Queries

1) Who are our FIVE best customers that order from us (in total ordered value)?

```
1 v select customer_id , c_name, ordered_value
2   from customer
3   order by ordered_value DESC;
4
```

CUSTOMER_ID	C_NAME	ORDERED_VALUE
6	tasneem	1000
5	Mahmoud	650
3	Mohammad	600
4	Rayan	200
2	Ali	50

2) What professor teaches the most amount of classes?

```
1 v SELECT i_name, num_of_courses
2   FROM instructor
3  where num_of_courses = (select max(num_of_courses) from instructor);
```

I_NAME	NUM_OF_COURSES
Sameer	45

3) What professor teaches the most amounts of ACTIVE classes?

```
1 v SELECT i_name, num_of_courses
2   FROM instructor
3  where num_of_courses = (select max(num_of_courses) from instructor);
```

I_NAME	NUM_OF_COURSES
Sameer	45

4) What professor has been paid the most during the year 2014?

```
1 v select instructor_id, cost*num_of_students as "paid"
2   from assigned_courses
3  where course_date BETWEEN '14-JAN-01' AND '14-DEC-31';
```

INSTRUCTOR_ID	paid
1	13500
1	15000
2	0
3	6000

5) How many classes do we have ACTIVE?

```
1 v select count(*)
2   from course
3  where course_status = 'Active' ;
4
```

COUNT(*)
2

6) How many classes do we have IN DEVELOPMENT?

```
1 v select count(*)
2   from course
3  where course_status = 'In Development' ;
4
```

COUNT(*)
1

7) What class is the most expensive class?

```

1 v SELECT course_code, course_name, cost
2 FROM course
3 where cost = (select max(cost) from course);
4

```

COURSE_CODE	COURSE_NAME	COST
HR201	Human Resources	600

8) List all the customer information that is in ZIP code 11718.

```

1 select *
2 from customer
3 where zip_code = 11718;
4

```

CUSTOMER_ID	C_NAME	PHONE_NUMBER	FAMILY	LIKES	DISLIKES	ORDERED_VALUE	ZIP_CODE	CITY	ISVALID	EMAIL	PASS	NUM_OF_ORDERS
2	Ali	155555555	Consists of Mother, 2 sisters and 2 brother	likes art	Dislikes math	50	11718	Jeddah	1	ali@email.com	123@@	1
3	Mohammad	255555555	Consists of Mother, 2 sisters and 2 brother	Loves football	Dislikes junk food	600	11718	Jeddah	1	Mohammad@email.com	1#3@@	3
5	Mahmoud	561927347	Consists of Mother, Father, 7 brother	would like to become a software engineer	Dislikes algorithms	650	11718	Jeddah	1	Mahmoud@email.com	dsu894j	4

9) What class is our best class?

a. Most Ordered

```

1 v SELECT course_code, course_name, num_of_students
2 FROM course
3 where num_of_students = (select max(num_of_students) from course);
4

```

COURSE_CODE	COURSE_NAME	NUM_OF_STUDENTS
HR101	Human Resources	45

b. Most profitable:

Human resources course has the most profits.

```

1 v SELECT course_name, cost*num_of_students as "profits"
2 FROM course;
3
4

```

COURSE_NAME	profits
introduction to networks	0
networks 2	15000
Java OOP	0
introduction into python	6000
Human Resources	13500
Human Resources	0

10) What customers have ordered less than \$500 on all orders from us?

```

1 v select c_name, ordered_value
2 from customer
3 where ordered_value < 500;
4

```

C_NAME	ORDERED_VALUE
Rawan	0
Ali	50
Rayan	200
Reem	0

11) From what postal code were most of our orders from?

```
1 v SELECT c_name, zip_code
2 FROM customer
3 where num_of_orders = (select max(num_of_orders) from customer);
4
```

C_NAME	ZIP_CODE
tasneem	11794

12) List the customers that have ordered over \$1,000 in training.

```
1 v select c_name, ordered_value
2 from customer
3 where ordered_value > 999;
4
```

C_NAME	ORDERED_VALUE
tasneem	1000

13) List all the customers who have taken courses and also cancelled from courses.

```
1 v select customer_id, c_name
2 from customer
3 where customer_id in (
4     select customer_id
5     from enroll
6     where course_status = 'Cancelled' or course_status = 'Completed'
7 );
```

CUSTOMER_ID	C_NAME
1	Rawan
2	Ali
3	Mohammad
4	Rayan
5	Mahmoud

