NATIONAL INSTITUTE OF TECHNOLOGY, WARANGAL

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

DBMS PROJECT

VACCINATION DATABASE MANAGEMENT SYSTEM

GROUP MEMBER

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Problem Statement:

The goal of this project is to design and implement a database management system for tracking vaccinations. The system should be able to store and manage information on individuals receiving vaccinations, including their personal details such as name, age, contact information, and medical history. It should also include information on the type of vaccine administered, the date of administration, and any relevant medical information such as allergies or adverse reactions.

The system should be user-friendly and allow authorized healthcare professionals to input and access data easily. It should also provide real-time updates on vaccination coverage and trends, enabling decision-makers to make informed decisions about resource allocation and public health initiatives.

Additionally, the system should be secure, with appropriate measures in place to protect sensitive data from unauthorized access or breaches. It should comply with relevant data protection and privacy regulations and adhere to ethical principles governing the collection and use of personal information.

Overall, the vaccination database management system should be a reliable, efficient, and secure tool for tracking and managing vaccinations, supporting public health efforts to improve population health outcomes.

Assumptions:

- *A vaccine supplier can supply multiple hospitals with vaccines and Hospitals can receive vaccines from multiple suppliers thus M:N relationship between the two entities.*

- *A vaccination center receives vaccines through multiple inventories keepings track of vaccines available at a center hence there is 1:M relationship between the entities.*

- *A hospital supplies the vaccines to multiple inventories.*

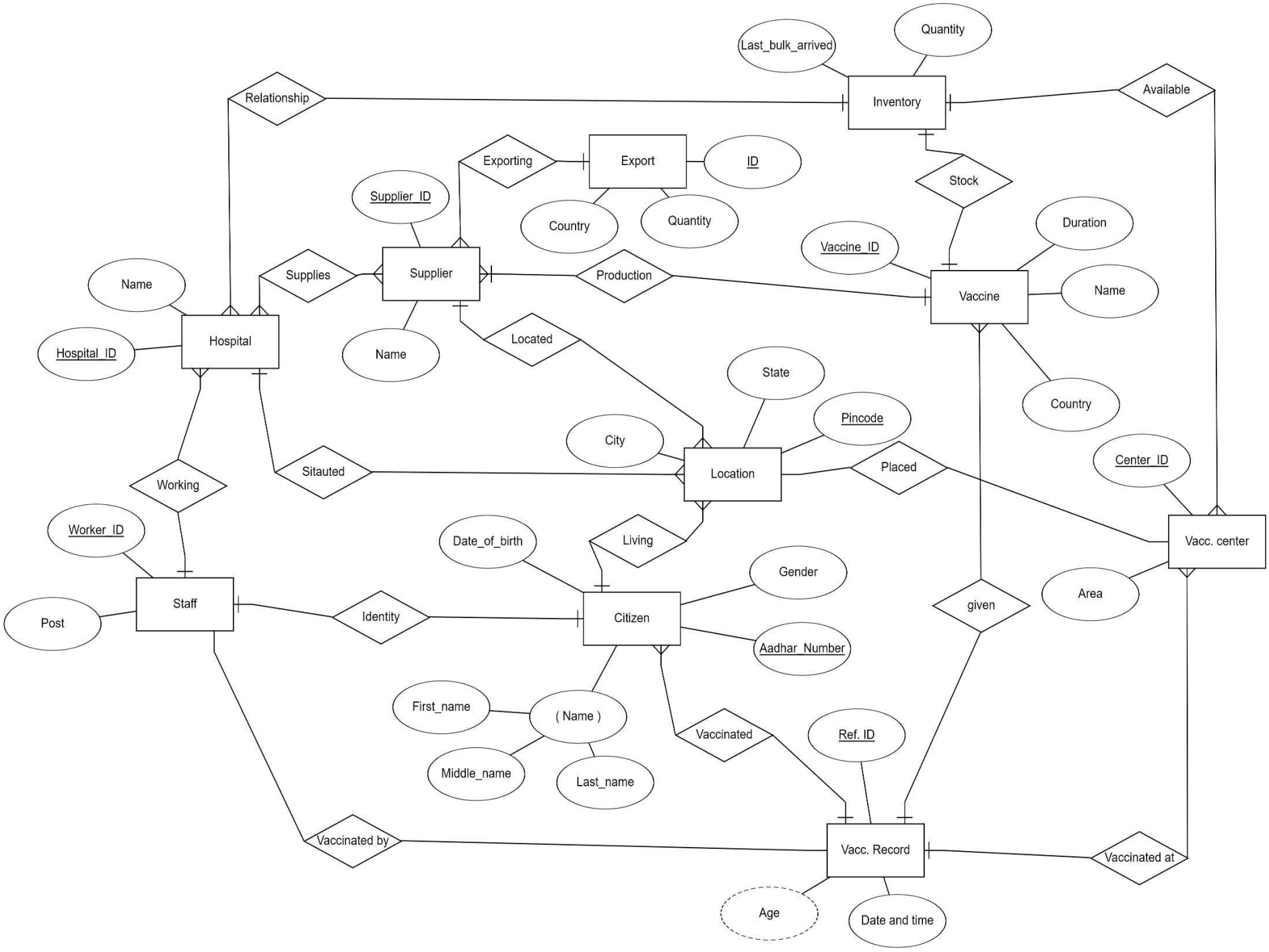
- *A hospital has multiple health workers available for vaccination drives at vaccination centers.*

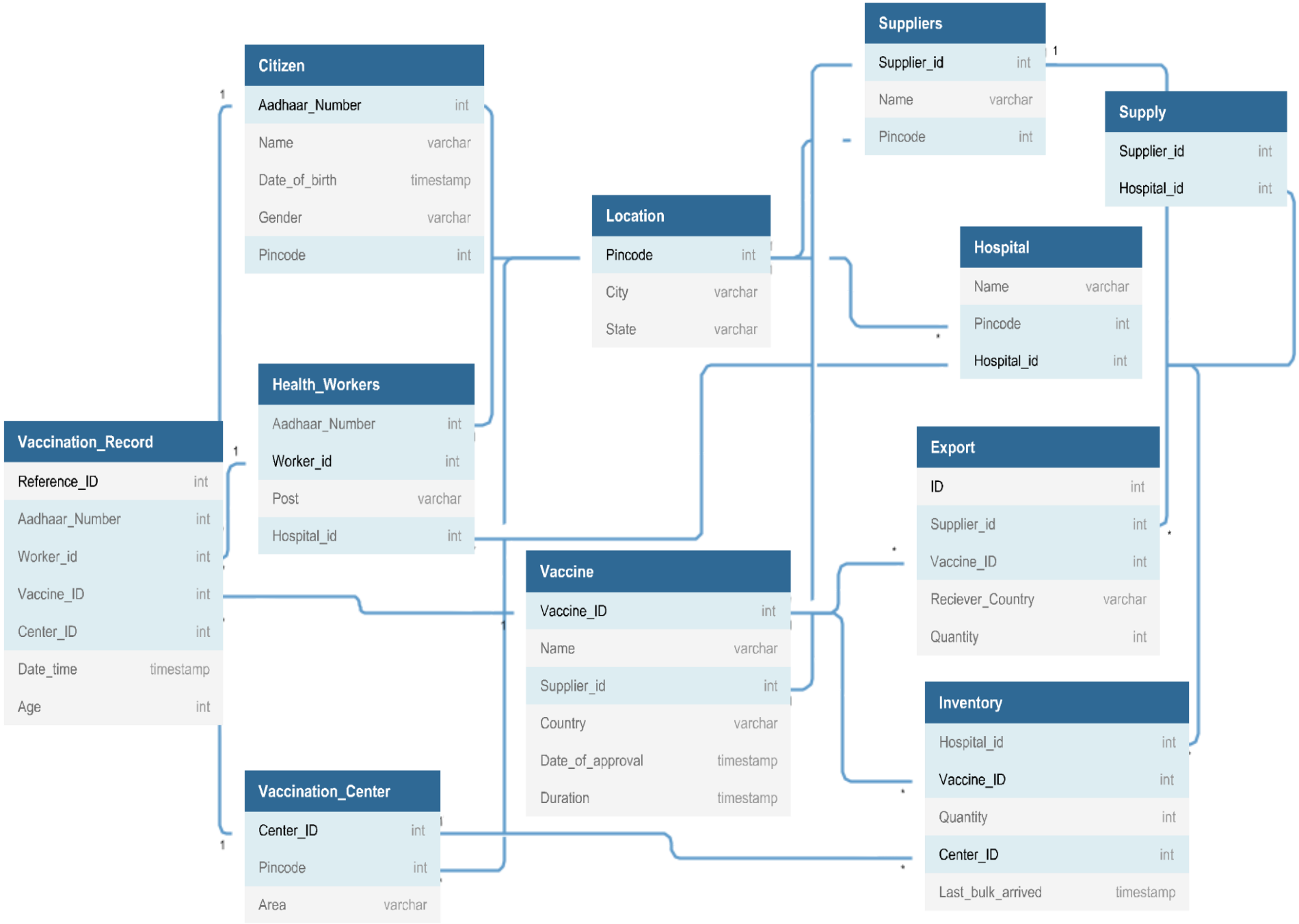
- *A citizen can have multiple vaccination records depending on the number of vaccines he has taken.*

- *A health worker can give multiple vaccines to patients.*

- *The health worker is a citizen of India thus part of the citizen table too.*

- *A supplier can export vaccines to multiple countries.*


Last_bulk_arrived
Quantity
Relationship
Inventory
Available
Exporting
Export
ID
Stock
Supplier_ID
Country
Quantity
Duration
Vaccine_ID
Name
Supplies
Supplier
Production
Vaccine
Name
Hospital_ID
Hospital
Name
Located
State
Country
Pincode
City
Center_ID
Sitauted
Location
Placed
Working
Worker_ID
Date_of_birth
Living
Vacc. center
Gender
Area
Post
Staff
Identity
Citizen
given
Aadhar_Number
First_name
(Name)
Vaccinated
Ref. ID
Middle_name
Last_name
Vaccinated by
Vacc. Record
Vaccinated at
Age
Date and time


Citizen
Aadhaar_Number int
Name varchar
Date_of_birth timestamp
Gender varchar
Pincode int
Suppliers
Supplier_id int
Name varchar
Pincode int
Supply
Supplier_id int
Hospital_id int
Location
Pincode int
City varchar
State varchar
Hospital
Name varchar
Pincode int
Hospital_id int
Health_Workers
Aadhaar_Number int
Worker_id int
Post varchar
Hospital_id int
Vaccination_Record
Reference_ID int
Aadhaar_Number int
Worker_id int
Vaccine_ID int
Center_ID int
Date_time timestamp
Age int
Export
ID int
Supplier_id int
Vaccine_ID int
Reciever_Country varchar
Quantity int
Vaccine
Vaccine_ID int
Name varchar
Supplier_id int
Country varchar
Date_of_approval timestamp
Duration timestamp
Inventory
Hospital_id int
Vaccine_ID int
Quantity int
Center_ID int
Last_bulk_arrived timestamp
Vaccination_Center
Center_ID int
Pincode int
Area varchar

Functional Dependencies:

- **Location** 3rd Normal Form

  Pin Code->City, State

- **Vaccination Center** 3rd Normal Form

  Center_ID->Area, Pincode

- **Vaccine 3rd Normal Form**

  Vaccine_ID->Name, Country, Supplier_ID,

  Date_of_approval

- **Supplier 3rd Normal Form**

  Supplier_ID->Pin Code, Name

- **Hospital 3rd Normal Form**

  Hospital_ID-> Name, Pincode

- **Supplies Boyce-Codd Normal Form**

  Hospital_ID,Supplier_ID

- **Citizen 3rd Normal Form**

  Aadhar_number->Name,DOB,Gender,Pin code

- **Export 3rd Normal Form**

  ID->Supplier_ID,Vaccine_ID,Receiver,Quantity

- **Inventory 3rd Normal Form**

  Vaccination_ID,Center_ID->Hospital_ID, Quantity, Last_bulk_arrived

- **Vaccination Record 3rd Normal Form**

  Reference_ID-> Aadhar_number , Worker_ID, Vaccine_ID, Center_ID,Date,Age

TABLES:

Vaccine:

```
CREATE TABLE
VACCINE( NAME
VARCHAR(50),
 VACCINE_ID NUMBER PRIMARY
 KEY, SUPPLIER_ID NUMBER,
COUNTRY
VARCHAR(30),
DATEOFMANU DATE,
FOREIGN KEY (SUPPLIER_ID) REFERENCES SUPPLIERS(ID)
);
```

```
INSERT INTO VACCINE VALUES( 'CERVICAL CANCER
VACCINE',729579,6327274,'IRAQ','03-Jun- 1998');

INSERT INTO VACCINE VALUES( 'CHOLERA
VACCINE',442737,4921885,'BONAIRE','12-Dec- 1998');

INSERT INTO VACCINE VALUES( 'COVID-19
VACCINE',295381,1445632,'CZECHIA','09-Oct- 2020');

INSERT INTO VACCINE VALUES( 'DIPHTHERIA
VACCINE',367852,8520979,'ARGENTINA','09-Aug- 1981');

INSERT INTO VACCINE VALUES( 'HEPATITIS B
VACCINE',310900,2349129,'CHAD','06-Feb- 1990');

INSERT INTO VACCINE VALUES( 'INFLUENZA VACCINE',185863,4921885,'?LAND
ISLANDS','10- Aug-1997');

INSERT INTO VACCINE VALUES( 'JAPANESE ENCEPHALITIS VACCINE',179703,2349129,'GERMANY'
,'10-Jan-2001');

INSERT INTO VACCINE VALUES( 'MEASLES
VACCINE',396114,4921885,'AUSTRIA','11-May- 2021');

INSERT INTO VACCINE VALUES( 'MENINGITIS
VACCINE',939220,2349129,'PARAGUAY','10-Jan- 1955');

INSERT INTO VACCINE VALUES( 'MUMPS
VACCINE',860228,3514525,'MAURITIUS','05-Mar- 2006');

INSERT INTO VACCINE VALUES( 'PERTUSSIS VACCINE',155557,6327274,'BURKINA
FASO','07- Jun-2018');

INSERT INTO VACCINE VALUES( 'PNEUMONIA
VACCINE',375955,2917230,'MACEDONIA','09-Jul- 1991');
```

```
INSERT INTO VACCINE VALUES( 'POLIO VACCINE',981364,2349129,'SVALBARD AND JAN MAYEN', '11-Aug-2009');

INSERT INTO VACCINE VALUES( 'RABIES VACCINE',628928,4921885,'BHUTAN','12-Sep-2005');

INSERT INTO VACCINE VALUES( 'ROTAVIRUS VACCINE',460418,1650092,'CONGO','02-Sep- 2014');

INSERT INTO VACCINE VALUES( 'RUBELLA VACCINE',900658,2349129,'ZIMBABWE','04-May- 2002');

INSERT INTO VACCINE VALUES( 'TETANUS VACCINE',891780,5155170,'BURUNDI','09-Mar- 2002');

INSERT INTO VACCINE VALUES( 'TYPHOID VACCINE',220332,7127844,'INDIA','04-Mar-2020');

INSERT INTO VACCINE VALUES( 'VARICELLA VACCINE',910780,4921885,'NEW ZEALAND','12- Jun-2010');

INSERT INTO VACCINE VALUES( 'YELLOW FEVER VACCINE',504200,2349129,'UNITED ARAB EMIRA TES','12-Feb-2004');
```

NAME	VACCINE ID	SUPPLIER ID	COUNTRY	DATE
CERVICAL CANCER VACCINE	729579	6327274	IRAQ	1998-06-30
CHOLERA VACCINE	442737	4921885	BONAIRE	1998-12-18
COVID-19 VACCINE	295381	1445632	CZECHIA	2019-10-08
DIPHTHERIA VACCINE	367852	8520979	ARGENTINA	1999-07-11
HEPATITIS B VACCINE	310900	2349129	CHAD	2016-02-10
INFLUENZA VACCINE	185863	4921885	ÅLAND ISLANDS	2010-08-27
JAPANESE ENCEPHALITIS VACCINE	179703	2349129	GERMANY	2020-01-01
MEASLES VACCINE	396114	4921885	AUSTRIA	2018-05-21
MENINGITIS VACCINE	939220	2349129	PARAGUAY	2010-01-15
MUMPS VACCINE	860228	3514525	MAURITIUS	2005-04-06
PERTUSSIS VACCINE	155557	6327274	BURKINA FASO	2017-06-08
PNEUMONIA VACCINE	375955	2917230	MACEDONIA	2019-07-31

RABIES VACCINE	628928	4921885	BHUTAN	1998-09-25
ROTAVIRUS VACCINE	460418	1650092	CONGO	2015-09-14
RUBELLA VACCINE	900658	2349129	ZIMBABWE	2004-04-02
TETANUS VACCINE	891780	5155170	BURUNDI	2009-03-02
TYPHOID VACCINE	220332	7127844	INDIA	2014-03-20
VARICELLA VACCINE	910780	4921885	NEW ZEALAND	2016-06-10
YELLOW FEVER VACCINE	504200	2349129	UNITED ARAB EMIRATES	2016-02-24
POLIO VACCINE	981364	2349129	SVALBARD AND JAN MAYEN	2021-07-29

Suppliers:

```
CREATE TABLE
    SUPPLIERS( NAME
    VARCHAR(20),
    ID NUMBER(7) PRIMARY
    KEY, PINCODE NUMBER ,
    FOREIGN KEY (PINCODE) REFERENCES LOCATION(PINCODE)
);

INSERT INTO SUPPLIERS VALUES( 'ABUNDANT
HEALTH',6327274,362001); INSERT INTO SUPPLIERS VALUES(
'HEALTH BLOOM',4921885,380001); INSERT INTO SUPPLIERS VALUES(
'CORDIAL CARE',1445632,226001); INSERT INTO SUPPLIERS VALUES(
'DYNAMIC HEALTH',8520979,506002);
INSERT INTO SUPPLIERS VALUES( 'HEALING
EQUILIBRIUM',2349129,500005); INSERT INTO SUPPLIERS VALUES(
'FRUITFUL CARE',3514525,324006); INSERT INTO SUPPLIERS VALUES(
'GIFT OF HEALTH',2917230,302003); INSERT INTO SUPPLIERS VALUES(
'HELPFUL HEARTS',1650092,324006); INSERT INTO SUPPLIERS VALUES(
'OPEN HEALTH',5155170,506002);
```

```
INSERT INTO SUPPLIERS VALUES( 'LUB HEALTH',7127844,500005);
```

NAME	ID	PIN
ABUNDANT HEALTH.	**6327274**	362001
HEALTH BLOOM.	**4921885**	380001
CORDIAL CARE.	**1445632**	226001
DYNAMIC HEALTH.	**8520979**	506002
HEALING EQUILIBRIUM.	**2349129**	500005
FRUITFUL CARE.	**3514525**	324006
GIFT OF HEALTH.	**2917230**	302003
HELPFUL HEARTS.	**1650092**	324006
OPEN HEALTH.	**5155170**	506002
LUB HEALTH	**7127844**	500005

Export:

```
CREATE TABLE EXPORT(
EXPORT_ID VARCHAR(7) PRIMARY KEY,
 RECIEVER_COUNTRY VARCHAR(30),
 QUANTITY NUMBER,
VACCINE_ID NUMBER,
FOREIGN KEY (VACCINE_ID) REFERENCES VACCINE(VACCINE_ID)
);

DROP TABLE EXPORT;
INSERT INTO EXPORT VALUES( 'EX63769','AUSTRIA',156,729579);
```

```
INSERT INTO EXPORT VALUES( 'EX12324','BAHRAIN',70,396114);
INSERT INTO EXPORT VALUES( 'EX95660','BRAZIL',342,295381);
INSERT INTO EXPORT VALUES( 'EX31021','BAHRAIN',44,310900);
INSERT INTO EXPORT VALUES( 'EX45603','GREECE',596,185863);
INSERT INTO EXPORT VALUES( 'EX41145','ROMANIA',497,310900);
INSERT INTO EXPORT VALUES( 'EX76347','MAURITIUS',354,729579);
INSERT INTO EXPORT VALUES( 'EX34073','BAHRAIN',16,939220);
INSERT INTO EXPORT VALUES( 'EX42109','ROMANIA',494,442737);
INSERT INTO EXPORT VALUES( 'EX29876','GREECE',810,939220);
```

EXPORT ID	RECEIVER COUNTRY	QUANTITY	VACCINE ID
EX63769	AUSTRIA	156	729579
EX12324	BAHRAIN	70	396114
EX95660	BRAZIL	342	295381
EX31021	BAHRAIN	44	310900
EX45603	GREECE	596	185863
EX41145	ROMANIA	497	310900
EX76347	MAURITIUS	354	729579
EX34073	BAHRAIN	16	939220
EX42109	ROMANIA	494	442737
EX29876	GREECE	810	939220

Inventory:

```
CREATE TABLE INVENTORY (
VACCINE_ID NUMBER,
```

```
QUANTITY NUMBER,
 CENTER_ID
 VARCHAR(256),
 LAST_ARRIVED DATE,
 HOSPITAL_ID NUMBER,
PRIMARY KEY(VACCINE_ID, CENTER_ID),
FOREIGN KEY (VACCINE_ID) REFERENCES VACCINE(VACCINE_ID),
FOREIGN KEY (CENTER_ID) REFERENCES VACCINATION_CENTER(CENTER_ID)
);
INSERT INTO INVENTORY VALUES(729579,295,'C1301','18-JAN-2021',7);
 INSERT INTO INVENTORY VALUES(442737,216,'C1302','23-JAN-2021',7);
 INSERT INTO INVENTORY VALUES(295381,412,'C2103','2-FEB-2021',5);
 INSERT INTO INVENTORY VALUES(295381,90,'C1301','11-FEB-2021',5);
 INSERT INTO INVENTORY VALUES(442737,448,'C1201','14-FEB-2021',5);
 INSERT INTO INVENTORY VALUES(185863,371,'C2102','18-FEB-2021',5);
 INSERT INTO INVENTORY VALUES(295381,77,'C1203','24-MAR-2021',1);
 INSERT INTO INVENTORY VALUES(396114,373,'C1301','3-APR-2021',7);
 INSERT INTO INVENTORY VALUES(295381,183,'C2102','22-APR-2021',5);
 INSERT INTO INVENTORY VALUES(442737,373,'C2103','25-APR-2021',4);
```

VACCINE ID	QUANTITY	CENTER ID	LAST ARRIVED	HOSPITAL ID
729579	295	C1301	18-Jan-2021	202
442737	216	C1302	23-Jan-2021	203
295381	412	C2103	2-Feb-2021	301
295381	90	C1301	11-Feb-2021	423
442737	448	C1201	14-Feb-2021	721
185863	371	C2102	18-Feb-2021	301
295381	77	C1203	24-Mar-2021	721

396114	373	C1301	3-Apr-2021	203
295381	183	C2102	22-Apr-2021	203
442737	373	C2103	25-Apr-2021	423

Supplies:

```
CREATE TABLE SUPPLIES(
 SUPPLIER_ID NUMBER,
 HOSPITAL_ID NUMBER,
PRIMARY KEY(SUPPLIER_ID,HOSPITAL_ID),
FOREIGN KEY (SUPPLIER_ID) REFERENCES SUPPLIERS(ID), FOREIGN
 KEY (HOSPITAL_ID) REFERENCES HOSPITAL(HOSPITAL_ID)
);
INSERT INTO SUPPLIES VALUES( 6327274,202);
 INSERT INTO SUPPLIES VALUES(
 4921885,203); INSERT INTO SUPPLIES
 VALUES( 1445632,301); INSERT INTO
 SUPPLIES VALUES( 1445632,423); INSERT
 INTO SUPPLIES VALUES( 1445632,721);
 INSERT INTO SUPPLIES VALUES(
 4921885,301); INSERT INTO SUPPLIES
 VALUES( 1650092,203); INSERT INTO
 SUPPLIES VALUES( 5155170,203); INSERT
 INTO SUPPLIES VALUES( 4921885,423);
 INSERT INTO SUPPLIES VALUES(
 6327274,721);
```

Supplier id	Hospital ID
6327274	**202**
4921885	**203**

1445632	301
1445632	423
1445632	721
4921885	301
6327274	721
1650092	203
5155170	203
4921885	423

Location:

```
CREATE TABLE LOCATION(
 CITY VARCHAR(20),
  PINCODE NUMBER PRIMARY KEY,
 STATE VARCHAR(30)
);



INSERT INTO LOCATION VALUES( 'Junagadh',362001,'Gujarat');
INSERT INTO LOCATION VALUES( 'Ahmedabad',380001,'Gujarat');
INSERT INTO LOCATION VALUES( 'Lucknow',226001,'UP');
INSERT INTO LOCATION VALUES( 'Warangal',506002,'Telangana');
INSERT INTO LOCATION VALUES( 'Rajkot',360001,'Gujarat');
INSERT INTO LOCATION VALUES( 'Kota',324006,'Rajasthan');
INSERT INTO LOCATION VALUES( 'Jaipur',302003,'Rajasthan');
INSERT INTO LOCATION VALUES( 'Delhi',110001,'Delhi');
INSERT INTO LOCATION VALUES( 'NewMumbai',410206,'Maharashtra');
INSERT INTO LOCATION VALUES( 'Hyderabad',500005,'Telangana');
INSERT INTO LOCATION VALUES( 'Bangalore',560002,'Karnataka');
INSERT INTO LOCATION VALUES( 'Chennai',600002,'Tamil Nadu');
```

```sql
INSERT INTO LOCATION VALUES( 'Jammu',180005,'JandK');
INSERT INTO LOCATION VALUES( 'Patna',800001,'Bihar');
INSERT INTO LOCATION VALUES( 'Goa',403110,'Goa');
INSERT INTO LOCATION VALUES( 'Rourkela',769001,'Odisha');
INSERT INTO LOCATION VALUES( 'Ranchi',834002,'Jharkhand');
INSERT INTO LOCATION VALUES( 'Shimla',171003,'HimachalPradesh');
INSERT INTO LOCATION VALUES( 'Jamshedpur',831001,'Jharkhand');
INSERT INTO LOCATION VALUES( 'Agra',282003,'UP');
INSERT INTO LOCATION VALUES( 'Bhopal',462001,'MP');
```

City	Pincode	State
Junagadh	**362001**	Gujarat
Ahmedabad	**380001**	Gujarat
Lucknow	**226001**	UP
Warangal	**506002**	Telangana
Rajkot	**360001**	Gujarat
Kota	**324006**	Rajasthan
Jaipur	**302003**	Rajasthan
Delhi	**110001**	Delhi
New Mumbai	**410206**	Maharashtra
Hyderabad	**500005**	Telangana
Bangalore	**560002**	Karnataka
Chennai	**600002**	Tamil Nadu
Jammu	**180005**	J & K
Patna	**800001**	Bihar
Goa	**403110**	Goa
Rourkela	**769001**	Odisha
Ranchi	**834002**	Jharkhand

Shimla	**171003**	Himachal Pradesh
Jamshedpur	**831001**	Jharkhand
Agra	**282003**	UP
Bhopal	**462001**	MP

Vaccination_Center:

```
CREATE TABLE VACCINATION_CENTER(
    CENTER_ID VARCHAR(5) PRIMARY KEY,
    AREA VARCHAR(40),
    PINCODE NUMBER ,
    FOREIGN KEY (PINCODE) REFERENCES LOCATION(PINCODE)
);

INSERT INTO VACCINATION_CENTER VALUES( 'C1301','Laxminagar',362001);
```

```
INSERT INTO VACCINATION_CENTER VALUES( 'C1302','Talav Street',362001);
INSERT INTO VACCINATION_CENTER VALUES( 'C1303','Railway Station',362001);
INSERT INTO VACCINATION_CENTER VALUES( 'C1304',' Gokulnagar',362001);
INSERT INTO VACCINATION_CENTER VALUES( 'C1201','Sabarmati Ashram',380001);
INSERT INTO VACCINATION_CENTER VALUES( 'C1202','Kankaria Lake',380001);
INSERT INTO VACCINATION_CENTER VALUES( 'C1203','CG road',380001);
INSERT INTO VACCINATION_CENTER VALUES( 'C2101','Hasanganj',226001);
INSERT INTO VACCINATION_CENTER VALUES( 'C2102','Indira Nagar',226001);
INSERT INTO VACCINATION_CENTER VALUES( 'C2103','Kakori',226001);
INSERT INTO VACCINATION_CENTER VALUES( 'C5104','Rajendra Nagar',110001);
INSERT INTO VACCINATION_CENTER VALUES( 'C3301','Kazipet',506002);
INSERT INTO VACCINATION_CENTER VALUES( 'C3302','NIT Warangal',506002);
INSERT INTO VACCINATION_CENTER VALUES( 'C1401','Raiya Circle',360001);
INSERT INTO VACCINATION_CENTER VALUES( 'C1402','Gondal Circle',360001);
INSERT INTO VACCINATION_CENTER VALUES( 'C1403',' KKV Circle',360001);
INSERT INTO VACCINATION_CENTER VALUES( 'C3201','Ganesh Nagar',324006);
INSERT INTO VACCINATION_CENTER VALUES( 'C3202',' Ahuja Nagar',324006);
INSERT INTO VACCINATION_CENTER VALUES( 'C5301','Vaishali Nagar',462001);
INSERT INTO VACCINATION_CENTER VALUES( 'C5215','Mahaveer Nagar',462001);
INSERT INTO VACCINATION_CENTER VALUES( 'C4201','Vasant Kunj',769001);
INSERT INTO VACCINATION_CENTER VALUES( 'C5101','Charminar',110001);
INSERT INTO VACCINATION_CENTER VALUES( 'C5302','SSH road',180005);
INSERT INTO VACCINATION_CENTER VALUES( 'C6210','KS area',302003);
INSERT INTO VACCINATION_CENTER VALUES( 'C7256','Magic Street',769001);
INSERT INTO VACCINATION_CENTER VALUES( 'C6201','Nehru Nagar',282003);
```

Center ID	Area	Pincode
C1301	Laxmi Nagar Soc.	362001
C1302	Talav Street	362201
C1303	Railway Station	362001
C1304	Gokul nagar Soc.	362001

C1201	Sabarmati Ashram	380001
C1202	Kankaria Lake	380001
C1203	CG road	380001
C2101	Hasanganj	226001
C2102	Indira Nagar	226001
C2103	Kakori	226001
C5104	Rajendra Nagar	110001
C3301	Kazipet	506002
C3302	NIT Warangal	506002
C1401	Raiya Circle	360001
C1402	Gondal Circle	360001
C1403	KKV Circle	360001
C3201	Ganesh Nagar	324006
C3202	Ahuja Nagar	324006
C5301	Vaishali Nagar	462001
C5215	Mahaveer Nagar	462001
C4201	Vasant Kunj	769001
C5101	Charminar	110001
C5302	SSH road	180005
C6210	KS area	302003
C7256	Magic Street	769001
C6201	Nehru Nagar	282003

Hospitals:

```
CREATE TABLE HOSPITAL(
 NAME VARCHAR(50),
HOSPITAL_ID NUMBER PRIMARY KEY,
 PINCODE NUMBER,
FOREIGN KEY (PINCODE) REFERENCES LOCATION(PINCODE)
);

INSERT INTO HOSPITAL VALUES( 'Walkhart',202,360001);
 INSERT INTO HOSPITAL VALUES( 'Milestone',203,600002);
 INSERT INTO HOSPITAL VALUES( 'Newlife',301,560002);
 INSERT INTO HOSPITAL VALUES( 'CareNCure',401,560002);
 INSERT INTO HOSPITAL VALUES( 'Healthywave',501,834002);
 INSERT INTO HOSPITAL VALUES( 'Redstar',611,500005);
 INSERT INTO HOSPITAL VALUES( 'WestvaLley',721,282003);
 INSERT INTO HOSPITAL VALUES( 'Springedge',811,380001);
 INSERT INTO HOSPITAL VALUES( 'Mapleheart',215,362001);
 INSERT INTO HOSPITAL VALUES( 'HealVibe',916,831001);
 INSERT INTO HOSPITAL VALUES( 'Hope',326,324006);
INSERT  INTO  HOSPITAL  VALUES(  'TwinTulip',235,600002);
 INSERT  INTO  HOSPITAL  VALUES(  'UltraCare',423,834002);
 INSERT          INTO          HOSPITAL          VALUES(
 'Flowerence',621,462001);
INSERT INTO HOSPITAL VALUES( 'Soulbless',468,226001);
```

Name	Hospital ID	Pincode
Walkhart	**202**	360001

Milestone	**203**	600002
Newlife	**301**	560002
CareNCure	**401**	560002
Healthywage	**501**	834002
Redstar	**611**	500005
Westvalley	**721**	282003
Springedge	**811**	380001
Mapleheart	**215**	362001
HealVibe	**916**	831001
Hope	**326**	324006
TwinTulip	**235**	600002
UltraCare	**423**	834002
Flowerence	**621**	462001
Soulless	**468**	226001

Health_Workers:

```
CREATE TABLE HEALTH
WORKERS( WORKER_ID NUMBER
PRIMARY KEY, POST
VARCHAR(30),
HOSPITAL_ID
NUMBER,
AADHAR_NUMBER
NUMBER,
FOREIGN KEY (HOSPITAL_ID) REFERENCES HOSPITAL(HOSPITAL_ID),
FOREIGN KEY (AADHAR_NUMBER) REFERENCES CITIZENS(AADHAR_NUMBER)
)
INSERT INTO HEALTH WORKERS VALUES(
101,'Compounder',202,432156781111); INSERT INTO HEALTH WORKERS
VALUES( 201,'nurse',203,432156781111); INSERT INTO HEALTH WORKERS
VALUES( 301,'Compounder',301,123409082001); INSERT INTO HEALTH
WORKERS VALUES( 401,'doctor',401,432156785282);
INSERT INTO HEALTH WORKERS VALUES(
501,'seniorCompounder',501,432256782221); INSERT INTO HEALTH WORKERS
VALUES( 601,'Compounder',611,749856781111); INSERT INTO HEALTH WORKERS
VALUES( 701,'nurse',721,433454781441);
INSERT INTO HEALTH WORKERS VALUES(
```

```
801,'Compounder',811,442156781441); INSERT INTO HEALTH WORKERS
VALUES( 901,'Compounder',468,432156781111);
```

```
INSERT INTO HEALTHWORKERS VALUES(
 108,'Compounder',423,438106781111); INSERT INTO HEALTHWORKERS
 VALUES( 118,'Compounder',215,930150781111);
```

Worker_ID	Post	Hospital_ID	Aadhar_Number
101	Compounder	202	4321 5678 1111
201	nurse	203	4321 5678 1111
301	Compounder	301	1234 0908 2001
401	doctor	401	4321 5678 5282
501	senior Compounder	501	4322 5678 2221
601	Compounder	611	7498 5678 1111
701	nurse	721	4334 5478 1441
801	Compounder	811	4421 5678 1441
901	Compounder	468	4321 5678 1111
108	Compounder	423	4381 0678 1111
118	Compounder	215	9301 5078 1111

Vaccination_Record:

```
CREATE TABLE VACCINATION_RECORD
 (
AADHAR_NUMBER NUMBER,
 WORKER_ID NUMBER,
 CENTER_ID VARCHAR(5),
 DATEANDTIME TIMESTAMP,
REFERENCE_ID NUMBER PRIMARY KEY,
AGE NUMBER,
```

```
VACCINE_ID NUMBER,
FOREIGN KEY (AADHAR_NUMBER) REFERENCES
CITIZENS(AADHAR_NUMBER), FOREIGN KEY (CENTER_ID) REFERENCES
VACCINATION_CENTER(CENTER_ID), FOREIGN KEY (WORKER_ID)
REFERENCES HEALTHWORKERS(WORKER_ID), FOREIGN KEY (VACCINE_ID)
REFERENCES VACCINE(VACCINE_ID)
)


INSERT INTO VACCINATION_RECORD VALUES(
432156781111,101,'C1301','01-01- 2020 01:00:01',101,30,729579);
INSERT INTO VACCINATION_RECORD VALUES(
123409082001,201,'C1302','01-11- 2001 01:00:01',102,33,442737);
INSERT INTO VACCINATION_RECORD VALUES(
442156781441,301,'C1303','14-02- 2020 01:00:01',103,28,295381);
INSERT INTO VACCINATION_RECORD VALUES(
452156781451,401,'C1304','01-11- 2001 08:00:01',104,20,367852);
INSERT INTO VACCINATION_RECORD VALUES(
462156781461,501,'C1201','11-12- 2020 12:00:01',114,55,310900);
INSERT INTO VACCINATION_RECORD VALUES(
472156781471,601,'C1202','06-07- 2020 11:00:01',105,39,185863);
INSERT INTO VACCINATION_RECORD VALUES(
433454781441,701,'C1203','21-12- 2021 09:00:01',106,49,179703);
INSERT INTO VACCINATION_RECORD VALUES(
431256781121,801,'C2101','19-05- 2019 04:00:01',107,35,396114);
INSERT INTO VACCINATION_RECORD VALUES(
432256782221,901,'C3301','11-11- 2021 05:23:21',108,28,939220);
INSERT INTO VACCINATION_RECORD VALUES(
432156781111,108,'C7256','22-03- 2020 01:23:21',109,21,860228);
INSERT INTO VACCINATION_RECORD VALUES(
124356781111,118,'C3202','11-09- 2020 09:23:21',110,20,155557);
INSERT INTO VACCINATION_RECORD VALUES(
897856781111,101,'C5301','11-03- 2021 09:23:21',111,18,375955);
INSERT INTO VACCINATION_RECORD VALUES(
910272112111,201,'C4201','11-11- 2020 01:23:21',112,39,981364);
INSERT INTO VACCINATION_RECORD VALUES(
432156785282,301,'C6201','01-11- 2021 02:23:21',113,49,628928);
```

AADHAR NUMBER	WORKER ID	CENTER ID	DATE TIME	REFERENCE ID	AGE	VACCINATED
432156781111	101	C1301	2020-01-01 00:00:01	101	30	729579
123409082001	201	C1302	2020-11-01 00:00:01	102	33	442737
442156781441	301	C1303	2021-01-11 00:00:01	103	28	295381
452156781451	401	C1304	2021-02-02 20:00:01	104	20	367852
462156781461	501	C1201	2020-05-08 20:00:01	114	55	310900
472156781471	601	C1202	2020-04-04 21:00:01	105	39	185863
433454781441	701	C1203	2021-04-02 23:00:01	106	49	179703
431256781121	801	C2101	2020-03-25 20:00:01	107	35	396114
432256782221	901	C3301	2019-03-12 20:23:21	108	28	939220
432126281111	108	C1403	2020-12-12 21:23:21	109	21	860228
124356781111	118	C3202	2020-12-12 21:23:21	110	20	155557
897856781111	101	C5301	2020-12-22 22:23:21	111	18	375955
910272112111	201	C4201	2020-12-13 12:23:21	112	39	981364
432156785282	301	C6201	2020-11-11 11:23:21	113	49	628928

Citizens:

```
CREATE TABLE
CITIZENS( FNAME
VARCHAR(20), NAME
VARCHAR(20), LNAME
VARCHAR(20),
AADHAR_NUMBER NUMBER PRIMARY
KEY, PINCODE NUMBER,
DOB DATE,
GENDER VARCHAR(1),
FOREIGN KEY (PINCODE) REFERENCES LOCATION(PINCODE)
);
INSERT INTO CITIZENS VALUES(
'Mahesh','LoremIpsum','Garg',432156781111,362001,'0 1-01-1990','M');
INSERT INTO CITIZENS VALUES(
'Ramesh','LoremIpsum','jain',123409082001,380001,'2 1-01-1990','M');
INSERT INTO CITIZENS VALUES(
'Suresh','LoremIpsum','Sharma',442156781441,226001, '01-11-2000','M');
INSERT INTO CITIZENS VALUES( 'Yogesh','LoremIpsum','Piplani',452156781451,506002
,'01-01-1990','M');
INSERT INTO CITIZENS VALUES(
'Jayesh','LoremIpsum','Arora',462156781461,360001,' 01-01-1995','M');
INSERT INTO CITIZENS VALUES(
'Aadhesh','LoremIpsum','adhlakha',472156781471,3240 06,'30-01-2001','M');
INSERT INTO CITIZENS VALUES(
'Amrita','LoremIpsum','Sharma',433454781441,302003, '05-01-1999','F');
INSERT INTO CITIZENS VALUES(
'Shivani','LoremIpsum','Kal',431256781121,110001,'0 1-04-1970','F');
INSERT INTO CITIZENS VALUES(
'Shivansh','LoremIpsum','Rahuja',432256782221,41020 6,'21-11-1989','M');
INSERT INTO CITIZENS VALUES(
'Alexi','LoremIpsum','rivera',433126281111,500005,' 21-11-2001','F');
INSERT INTO CITIZENS VALUES(
'Pooja','LoremIpsum','maheshwari',124356781111,5600 02,'22-11-2004','F');
INSERT INTO CITIZENS VALUES(
'Aadhesh','LoremIpsum','adhlakha',897856781111,2260 01,'11-11-1998','M');
```

```
INSERT INTO CITIZENS VALUES(
'Rakesh','LoremIpsum','sharma',432143211111,410206, '01-12-1991','M');

INSERT INTO CITIZENS VALUES(
'Himesh','LoremIpsum','Jain',438106781111,360001,'0 1-12-1997','M');

INSERT INTO CITIZENS VALUES(
'Santosh','LoremIpsum','kumar',532166788111,226001, '01-12-1997','M');

INSERT INTO CITIZENS VALUES(
'Vishwas','LoremIpsum','Gajawade',932116781111,2260 01,'01-12-1997','M');

INSERT INTO CITIZENS VALUES(
'Ayush','LoremIpsum','naruka',930150781111,410206,' 01-12-1997','M');

INSERT INTO CITIZENS VALUES(
'Seema','LoremIpsum','chhabra',439156781111,360001, '01-12-1997','F');

INSERT INTO CITIZENS VALUES(
'Harish','LoremIpsum','Gopal',910272112111,506002,' 30-03-1996','M');

INSERT INTO CITIZENS VALUES(
'Mahendra','LoremIpsum','adhlakha',436156781111,380 001,'21-02-1998','M');

INSERT INTO CITIZENS VALUES(
'Hiamshu','LoremIpsum','jain',124399831111,360001,' 20-10-2002','M');

INSERT INTO CITIZENS VALUES(
'Govind','LoremIpsum','Galigotla',749856781111,3800 01,'21-05-2001','M');

INSERT INTO CITIZENS VALUES( 'Faran','LoremIpsum','Garg',432129271111,506002,'11
-03-2001','M');

INSERT INTO CITIZENS VALUES( 'Raju','LoremIpsum','Goyal',432156785282,410206,'15
-08-1957','M');

INSERT INTO CITIZENS VALUES(
'Chatur','LoremIpsum','Mohan',432143241111,226001,' 21-07-2007','M');

INSERT INTO CITIZENS VALUES( 'Monu','LoremIpsum','Singh',142356781111,360001,'21
-12-1967','M');

INSERT INTO CITIZENS VALUES(
'Sonu','LoremIpsum','Sharma',413256781111,380001,'1 1-12-2002','F');
```

Fname	Lname	Aadhar	Pincode	DOB	Gender
Mahesh	Garg	4321 5678 1111	362001	01-01-1990	M
Ramesh	jain	1234 0908 2001	380001	21-01-1990	M
Suresh	Sharma	4421 5678 1441	226001	01-11-2000	M
yogesh	Piplani	4521 5678 1451	506002	01-01-1990	M
jayesh	Arora	4621 5678 1461	360001	01-01-1995	M

aadhesh	adlakha	4721 5678 1471	324006	30-01-2001	M
Amrita	Sharma	4334 5478 1441	302003	05-01-1999	F
Shivani	Kal	4312 5678 1121	110001	01-04-1970	F
Shivansh	Rahuja	4322 5678 2221	410206	21-11-1989	M
Alexi	rivera	4321 2628 1111	500005	21-21-2001	F
Pooja	maheshwari	1243 5678 1111	560002	22-11-2004	F
aadhesh	adlakha	8978 5678 1111	226001	11-11-1998	M
Rakesh	sharma	4321 4321 1111	410206	01-12-1991	M
Himesh	Jain	4381 0678 1111	360001	01-12-1997	M
Santosh	kumar	5321 6678 8111	226001	01-12-1997	M
Vishwas	Gajawade	9321 1678 1111	226001	01-12-1997	M
Ayush	naruka	9301 5078 1111	410206	01-12-1997	M
Seema	chhabra	4321 5678 1111	360001	01-12-1997	F
Harish	Gopal	9102 7211 2111	506002	30-03-1996	M
Mahendra	adlakha	4321 5678 1111	380001	21-02-1998	M
HImanshu	jain	1243 9983 1111	360001	20-10-2002	M
Govind	Kaligotla	7498 5678 1111	380001	21-05-2001	M
Faran	Garg	4321 2927 1111	506002	11-03-2001	M
Raju	Goyal	4321 5678 5282	410206	15-08-1957	M
Chatur	Mohan	4321 4324 1111	226001	21-07-2007	M
Monu	Singh	1423 5678 1111	360001	21-12-1967	M

GENERAL QUERIES:

Q1 Which city has the highest vaccination record registered?

```
WITH T AS (
      SELECT *
      FROM LOCATION NATURAL JOIN VACCINATION_CENTER NATURAL JOIN VACCINATION_RECORD)

SELECT CITY
FROM T
GROUP BY CITY HAVING
COUNT(*) IN (
      SELECT MAX(COUNT(*)
      FROM T GROUP BY CITY);
```

[redacted]

```
With t as (Select * from location natural join VACCINATION_CENTER natural join vaccination_record)
Select city from t group by city having count(*) in (select max(count(*)) from t group by city);
```

Script Output | Query Result

SQL | All Rows Fetched: 1 in 0.004 seconds

	CITY
1	Junagadh

Q2 Which age group appears the most in vaccination records?

```
SELECT AGE
FROM VACCINATION_RECORD
GROUP BY AGE
HAVING COUNT(*) IN (
      SELECT MAX(COUNT(*))
      FROM VACCINATION_RECORD
      GROUP BY AGE);
```

```
select age from vaccination_record group by age having count(*) in (select max(count(*)) from vaccination_record group by age);
```

Script Output | Query Result

SQL | All Rows Fetched: 4 in 0.004 seconds

	AGE
1	28
2	20
3	49
4	39

Q3 Community has decided to give a prize to Worker (or workers) which vaccinated the maximum number of people displaying workers detail?

```
SELECT *
FROM CITIZEN
```

```
WHERE AADHAR_NUMBER IN
        ( SELECT
        AADHAR_NUMBER
        FROM
        HEALTHWORKERS
        WHERE WORKER_ID
        IN (
                SELECT WORKER_ID
                FROM
                VACCINATION_RECORD
                HAVING COUNT(*) IN (
                        SELECT MAX(COUNT(*))
                        FROM
                        VACCINATION_RECORD
                        GROUP BY
                        WORKER_ID));
```

```
Select * from citizens where aadhar_number in
(select aadhar_number from HEALTHWORKERS where worker_id in
(select worker_id from vaccination_record  group by worker_id having count(*) in (select max(count(*)) from vaccination_record group by worker_id)));
```

Script Output | Query Result

SQL | All Rows Fetched: 2 in 0.028 seconds

	FNAME	MNAME	LNAME	AADHAR_NUMBER	PINCODE	DOB	GENDER
1	Mahesh	LoremIpsum	Garg	432156781111	362001	01-01-90	M
2	Ramesh	LoremIpsum	jain	123409082001	380001	21-01-90	M

Q4 Display the country to which maximum export take place ?

```
WITH T AS (
        SELECT *
        FROM EXPORT)

SELECT RECIEVER_COUNTRY
FROM T
GROUP BY RECIEVER_COUNTRY
HAVING SUM(QUANTITY)
IN (
        SELECT MAX(SUM(QUANTITY))
```

```
FROM T
GROUP BY RECIEVER_COUNTRY);
```

```
with t as (Select * from EXPORT)
Select RECIEVER_COUNTRY from t group by RECIEVER_COUNTRY
Having sum(quantity) in (select max(sum(quantity)) from t group by RECIEVER_COUNTRY);
```

Script Output × Query Result ×

SQL | All Rows Fetched: 1 in 0.002 seconds

	RECIEVER_COUNTRY
1	GREECE

Q5 Display country and total export of vaccine for each country?

```
SELECT RECIEVER_COUNTRY,SUM(QUANTITY)
FROM EXPORT
GROUP BY RECIEVER_COUNTRY;
```

```
select reciever_country,sum(quantity) from export group by reciever_country;
```

Script Output × Query Result ×

SQL | All Rows Fetched: 6 in 0.004 seconds

	RECIEVER_COUNTRY	SUM(QUANTITY)
1	ROMANIA	991
2	MAURITIOUS	354
3	BRAZIL	342
4	BAHRAIN	130
5	AUSTRIA	156
6	GREECE	1406

Q6 Which hospital do maximum workers belong to?

```
SELECT *
FROM HOSPITAL
WHERE HOSPITAL_ID
IN (
      SELECT HOSPITAL_ID
      FROM HEALTHWORKERS
      GROUP BY HOSPITAL_ID
      HAVING COUNT(*) IN (
            SELECT MAX(COUNT(*))
            FROM HEALTHWORKERS
            GROUP BY HEALTHWORKERS.HOSPITAL_ID));
```

```
select * from  hospital where hospital_id in (select hospital_id from healthworkers group by hospital_id having count(*) in ( select max(count(*)) from healthworkers group by healthworkers.hospital_id));
```

Script Output × Query Result ×

SQL | All Rows Fetched: 11 in 0.012 seconds

	NAME	HOSPITAL_ID	PINCODE
1	Walkhart	202	360001
2	Milestone	203	600002
3	Newlife	301	560002
4	CareNCure	401	560002
5	Healthywave	501	834002
6	Redstar	611	500005
7	WestvaLley	721	282003
8	Springedge	811	380001
9	Mapleheart	215	362001
10	UltraCare	423	834002
11	Soulbless	468	226001

Q7 Which city does the most senior health worker belong?

```
WIT
H T
AS
(
      SELECT *
      FROM HEALTHWORKERS
      NATURAL JOIN
      CITIZENS)

SELEC
T *
FROM
T
WHERE 2021- EXTRACT(YEAR FROM DOB) IN (
      SELECT MAX(2021- EXTRACT(YEAR FROM
      DOB)) FROM T) ;
```

```
with t as (select * from healthworkers natural join citizens)
select * from t where 2021- extract(year from dob) in (select max(2021- extract(year from dob)) from t) ;
```

Script Output × | Query Result ×

SQL | All Rows Fetched: 1 in 0.01 seconds

	AADHAR_NUMBER	WORKER_ID	POST	HOSPITAL_ID	FNAME	MNAME	LNAME	PINCODE	DOB	GENDER
1	432156785282	401	doctor	401	Raju	LoremIpsum	Goyal	410206	15-08-57	M

Q8 Which vaccination center does most of the people appear ?

```
SELECT *
FROM VACCINATION_CENTER
WHERE CENTER_ID IN (
      SELECT CENTER_ID
      FROM VACCINATION_RECORD
      GROUP BY CENTER_ID
      HAVING COUNT(*) IN (
            SELECT MAX(COUNT(*))
            FROM VACCINATION_RECORD
```

```
GROUP BY VACCINATION_RECORD.CENTER_ID ));
```

```
select * from vaccination_center where center_id in (select center_id from vaccination_record group by center_id having count(*) in (select max(count(*)) from vaccination_record group by vaccination_record.center_id ));
```

Script Output × Query Result ×

SQL | All Rows Fetched: 14 in 0.008 seconds

	CENTER_ID	AREA	PINCODE
1	C1301	Laxminagar	362001
2	C1304	Gokulnagar	362001
3	C5301	Vaishali Nagar	462001
4	C1203	CG road	380001
5	C2101	Hasanganj	226001
6	C3301	Kazipet	506002
7	C4201	Vasant Kunj	769001
8	C6201	Nehru Nagar	282003
9	C1303	Railway Station	362001
10	C3202	Ahuja Nagar	324006
11	C1302	Talav Street	362001
12	C1201	Sabarmati Ashram	380001
13	C1202	Kankaria Lake	380001
14	C7256	Magic Street	769001