Part A.

Q1. Explain each data type used in the code to create table whatshappening briefly.

There are three types of data: string, numeric, date and time. Varchar stands for a variable length string, which can consist of numbers, letters and special characters. It is a character data type and stores string type data. Date stands for date, where you can store a date. Text stands for text, it is a variable width character string. Varchar and text are string data types, and date is a date and time data type. Serial lets you generate unique integer numbers for a column, it is an integer type and lets you store sequential integer data.

Q2. Explain each attribute's data type and constraints used in the code to create table city briefly.

There are three types of data: string, numeric, date and time. Varchar stands for a variable length string, which can consist of numbers, letters and special characters. It is a character data type and stores string type data. Serial lets you generate unique integer numbers for a column, it is an integer type and lets you store sequential integer data. Float is a numeric data type, it stands for floating point number. It is used to store double precision floating point numbers. The NOT NULL is a constraint that ensures a column will not accept NULL values. The primary key is another constraint, it is a column that has the same properties as a unique constraint.

Q3. Explain the above code (Step 4 number 3) in plain text.

Alter is used to change the whatshappening table. There is a foreign key constraint being added to one of the columns in the table, the cityid column. The cityid column in the whatshappening table is referencing the cityid column of the city table. This means that the cityidk column in the whatshappening table can only have room for values that are already available in the cityid column in the city table. On delete cascade means that if any entry in the cityid column of the city table that also happens to be available in the cityid column of the whatshappening table is deleted, then the entry in the second table, the whatshappening table, is also deleted.

Q4. Produce an SQL code for this. You will use the keyword – JOIN here

SELECT city.name, city.lat, city.long, city.cityid, whatshappening.cityid, whatshappening.hDate, whatshappening.content, whatshappening.source
FROM city
JOIN whatshappening
ON city.cityid = whatshappening.cityid

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Query Editor   Query History   Scratch Pad

```
38
39    SELECT city.name, city.lat, city.long, city.cityid, whatshappening.cityid, whatshappening.hDate, whatshap
40    FROM city
41    JOIN whatshappening
42    ON city.cityid = whatshappening.cityid
43
44    CREATE VIEW whatwhere AS
45    SELECT * FROM whatshappening
46    INNER JOIN city USING (cityid);
47
48    SELECT * FROM whatwhere;
49
50    |
51
```

Data Output   Explain   Messages   Notifications

	cityid integer	id integer	hdate date	content character varying (200)	source text	name character varying (20)	lat double precision	long double precision
1	1	1	2020-04-...	What coronavirus tells us abo...	https://ww...	Seattle	47.608013	-122.33516

Part B

Articles:

Pfizer CEO: Biden-backed Covid vaccine patent waiver will cause problems

```
CREATE TABLE whatshappening2 (
        id serial PRIMARY KEY,
        location varchar(20) NOT NULL,
        hdate date,
        content varchar(200),
        source text);

CREATE TABLE city2 (
        patentid serial PRIMARY KEY,
        name varchar(20) NOT NULL,
                        lat float NOT NULL,
                        long float NOT NULL);

INSERT INTO whatsHappening2 (location, hDate, content, source)
        VALUES ('WashingtonDC','2021-05-07','Pfizer CEO: Biden-backed Covid vaccine patent
waiver will cause
problems','https://www.cnbc.com/2021/05/07/pfizer-ceo-biden-backed-covid-vaccine-patent-waiv
er-will-cause-problems.html');

SELECT * FROM whatshappening2;

INSERT INTO city2 (name, lat, long)
        VALUES ('WashingtonDC', 38.9072, 77.0369);

ALTER TABLE whatshappening2 ADD COLUMN patentid INTEGER;

UPDATE whatshappening2
SET patentid=1
WHERE ID =1;

ALTER TABLE whatshappening2
ADD CONSTRAINT constraint_fk2
FOREIGN KEY (patentid)
REFERENCES city2(patentid)
ON DELETE CASCADE;
```

SELECT * FROM whatwhere;

Cryptocurrency investors should be prepared to lose all their money, Bank of England governor says

```
CREATE TABLE whatshappening3 (
      id serial PRIMARY KEY,
      location varchar(20) NOT NULL,
      hdate date,
      content varchar(200),
```

```sql
        source text);

CREATE TABLE city3 (
        currencyid serial PRIMARY KEY,
        name varchar(20) NOT NULL,
                        lat float NOT NULL,
                        long float NOT NULL);

INSERT INTO whatshappening3 (location, hDate, content, source)
        VALUES ('England','2021-05-07','Cryptocurrency investors should be prepared to lose all
their money, Bank of England governor says
','https://www.cnbc.com/2021/05/07/pfizer-ceo-biden-backed-covid-vaccine-patent-waiver-will-ca
use-problems.html');

SELECT * FROM whatshappening3;

INSERT INTO city3 (name, lat, long)
        VALUES ('England', 52.3555, 1.1743);

ALTER TABLE whatshappening3 ADD COLUMN currencyid INTEGER;

UPDATE whatshappening3
SET currencyid=1
WHERE ID =1;

ALTER TABLE whatshappening3
ADD CONSTRAINT constraint_fk3
FOREIGN KEY (currencyid)
REFERENCES city3(currencyid)
ON DELETE CASCADE;

SELECT * FROM whatwhere;
```
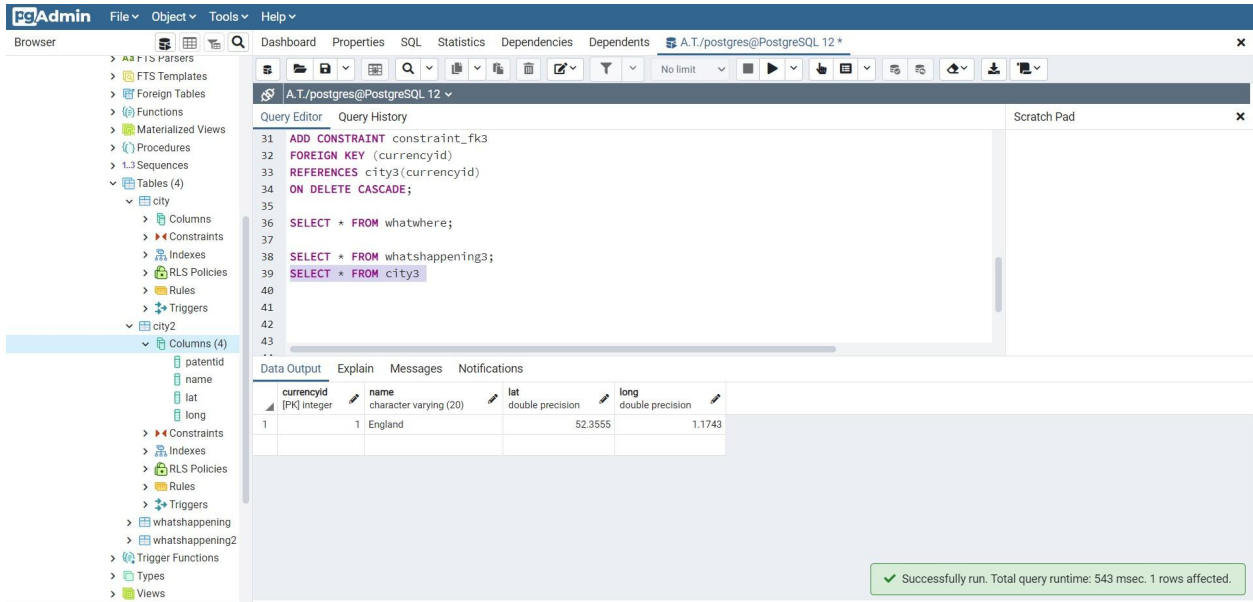
Germany's move to electric vehicles will affect thousands of workers, new study says

```sql
CREATE TABLE whatshappening4 (
        id serial PRIMARY KEY,
        location varchar(20) NOT NULL,
        hdate date,
        content varchar(200),
        source text);


CREATE TABLE city4 (
```

```
            electricid serial PRIMARY KEY,
            name varchar(20) NOT NULL,
                            lat float NOT NULL,
                            long float NOT NULL);
```

```
INSERT INTO whatshappening4 (location, hDate, content, source)
        VALUES ('Germany','2021-05-07','Germany's move to electric vehicles will affect
thousands of workers, new study says','Germany's move to EVs to affect thousands of workers,
new study says (cnbc.com)');
```

```
SELECT * FROM whatshappening4;
```

```
INSERT INTO city4 (name, lat, long)
        VALUES ('Germany', 51.1657, 10.4515);
```

```
ALTER TABLE whatshappening4 ADD COLUMN electricid INTEGER;
```

```
UPDATE whatshappening4
SET electricid=1
WHERE ID =1;
```

```
ALTER TABLE whatshappening4
ADD CONSTRAINT constraint_fk3
FOREIGN KEY (electricid)
REFERENCES city4(electricid)
ON DELETE CASCADE;
```

```
SELECT * FROM whatwhere;
```

Browser

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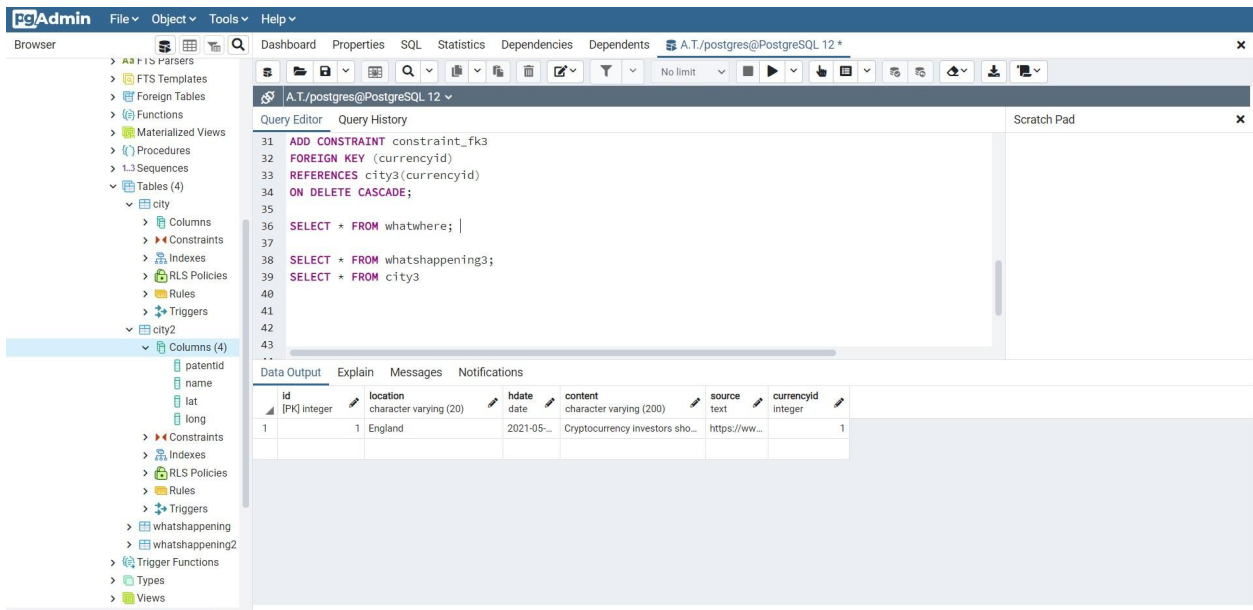Query Editor   Query History   Scratch Pad

```
29   ADD CONSTRAINT constraint_fk3
30   FOREIGN KEY (electricid)
31   REFERENCES city4(electricid)
32   ON DELETE CASCADE;
33
34   SELECT * FROM whatwhere;
35
36
37
38   SELECT * FROM whatshappening4;
39   SELECT * FROM city4
40
41
```

Data Output   Explain   Messages   Notifications

	electricid [PK] integer	name character varying (20)	lat double precision	long double precision
1	1	Germany	51.1657	10.4515
2	2	Germany	51.1657	10.4515

✓ Successfully run. Total query runtime: 46 msec. 2 rows affected.

Browser

Dashboard   Properties   SQL   Statistics   Dependencies   Dependents   A.T./postgres@PostgreSQL 12 *

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Query Editor   Query History   Scratch Pad

```
29   ADD CONSTRAINT constraint_fk3
30   FOREIGN KEY (electricid)
31   REFERENCES city4(electricid)
32   ON DELETE CASCADE;
33
34   SELECT * FROM whatwhere;
35
36
37
38   SELECT * FROM whatshappening4;
39   SELECT * FROM city4
40
41
```

Data Output   Explain   Messages   Notifications

	id [PK] integer	location character varying (20)	hdate date	content character varying (200)	source text	electricid integer
1	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]
2	1	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	1

✓ Successfully run. Total query runtime: 48 msec. 2 rows affected.

Part C

Browser

Dashboard Properties SQL Statistics Dependencies Dependents A.T./postgres@PostgreSQL 12 *

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Query Editor Query History · Scratch Pad

```sql
38
39
40
41  CREATE VIEW whatwhere AS
42  SELECT * FROM whatshappening3, whatshappening2, whatshappening4, whatshappening
43  INNER JOIN city USING (cityid);
44  SELECT * FROM whatwhere;
45
46  CREATE VIEW whatwhere2 AS
47  SELECT * FROM whatshappening, whatshappening2, whatshappening3, whatshappening4
48  INNER JOIN city USING (cityid);
49  SELECT * FROM whatwhere2;
50
51
```

Data Output Explain Messages Notifications

	id integer	location character varying (20)	hdate date	content character varying (200)	source text	currencyid integer	id integer	hdate date	content character varying (200)	source text	patentid integer	id inter
1	1	England	2021-05-...	Cryptocurrency investors sho...	https://ww...	1	2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]	
2	1	England	2021-05-...	Cryptocurrency investors sho...	https://ww...	1	2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]	
3	1	England	2021-05-...	Cryptocurrency investors sho...	https://ww...	1	2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]	
4	1	England	2021-05-...	Cryptocurrency investors sho...	https://ww...	1	2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]	
5	1	England	2021-05-...	Cryptocurrency investors sho...	https://ww...	1	1	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	1	
6	1	England	2021-05-...	Cryptocurrency investors sho...	https://ww...	1	1	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	1	
7	1	England	2021-05-...	Cryptocurrency investors sho...	https://ww...	1	1	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	1	
8	1	England	2021-05-...	Cryptocurrency investors sho...	https://ww...	1	1	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	1	
9	1	England	2021-05-...	Cryptocurrency investors sho...	https://ww...	2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]		

Browser

Dashboard Properties SQL Statistics Dependencies Dependents A.T./postgres@PostgreSQL 12 *

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Query Editor Query History · Scratch Pad

```sql
38
39
40
41  CREATE VIEW whatwhere AS
42  SELECT * FROM whatshappening3, whatshappening2, whatshappening4, whatshappening
43  INNER JOIN city USING (cityid);
44  SELECT * FROM whatwhere;
45
46  CREATE VIEW whatwhere2 AS
47  SELECT * FROM whatshappening, whatshappening2, whatshappening3, whatshappening4
48  INNER JOIN city USING (cityid);
49  SELECT * FROM whatwhere2;
50
51
```

Data Output Explain Messages Notifications

id integer	hdate date	content character varying (200)	source text	patentid integer	id integer	location character varying (20)	hdate date	content character varying (200)	source text	electricid integer	id integer
2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	
2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	
2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	
2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	
2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	1	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	
1	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	1	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	
1	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	1	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	
1	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	1	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	
2	2021-05-...	Pfizer CEO: Biden-backed Covi...	https://ww...	[null]	1	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	1	

> A3 FTS Parsers
> FTS Templates
> Foreign Tables
> Functions
> Materialized Views
> Procedures
> 1.3 Sequences
∨ Tables (4)
  ∨ city
    > Columns
    > Constraints
    > Indexes
    > RLS Policies
    > Rules
    > Triggers
  ∨ city2
    ∨ Columns (4)
      patentid
      name
      lat
      long
    > Constraints
    > Indexes
    > RLS Policies
    > Rules
    > Triggers
  > whatshappening
  > whatshappening2
> Trigger Functions
> Types
> Views

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Query Editor   Query History | Scratch Pad   ✕

```
38
39
40
41  CREATE VIEW whatwhere AS
42  SELECT * FROM whatshappening3, whatshappening2, whatshappening4, whatshappening
43  INNER JOIN city USING (cityid);
44  SELECT * FROM whatwhere;
45
46  CREATE VIEW whatwhere2 AS
47  SELECT * FROM whatshappening, whatshappening2, whatshappening3, whatshappening4
48  INNER JOIN city USING (cityid);
49  SELECT * FROM whatwhere2;
50
51
```

Data Output   Explain   Messages   Notifications

tentid	id	location	hdate	content	source	electricid	id	hdate	content	source	cityid
eger	integer	character varying (20)	date	character varying (200)	text	integer	integer	date	character varying (200)	text	integer
[null]	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	2	2020-04-...	What coronavirus tells us abo...	https://ww...	[null]
[null]	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	3	2020-04-...	What coronavirus tells us abo...	https://ww...	[null]
[null]	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	4	2020-04-...	What coronavirus tells us abo...	https://ww...	[null]
[null]	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	1	2020-04-...	What coronavirus tells us abo...	https://ww...	[null]
1	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	2	2020-04-...	What coronavirus tells us abo...	https://ww...	[null]
1	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	3	2020-04-...	What coronavirus tells us abo...	https://ww...	[null]
1	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	4	2020-04-...	What coronavirus tells us abo...	https://ww...	[null]
1	2	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	[null]	1	2020-04-...	What coronavirus tells us abo...	https://ww...	1
[null]	1	Germany	2021-05-...	Germany's move to electric ve...	https://ww...	1	2	2020-04-...	What coronavirus tells us abo...	https://ww...	[null]