Kathmandu University

Department of Computer Science and Engineering Dhulikhel, Kavre

A Report on ‘Lab Work 5’ [COMP 232]

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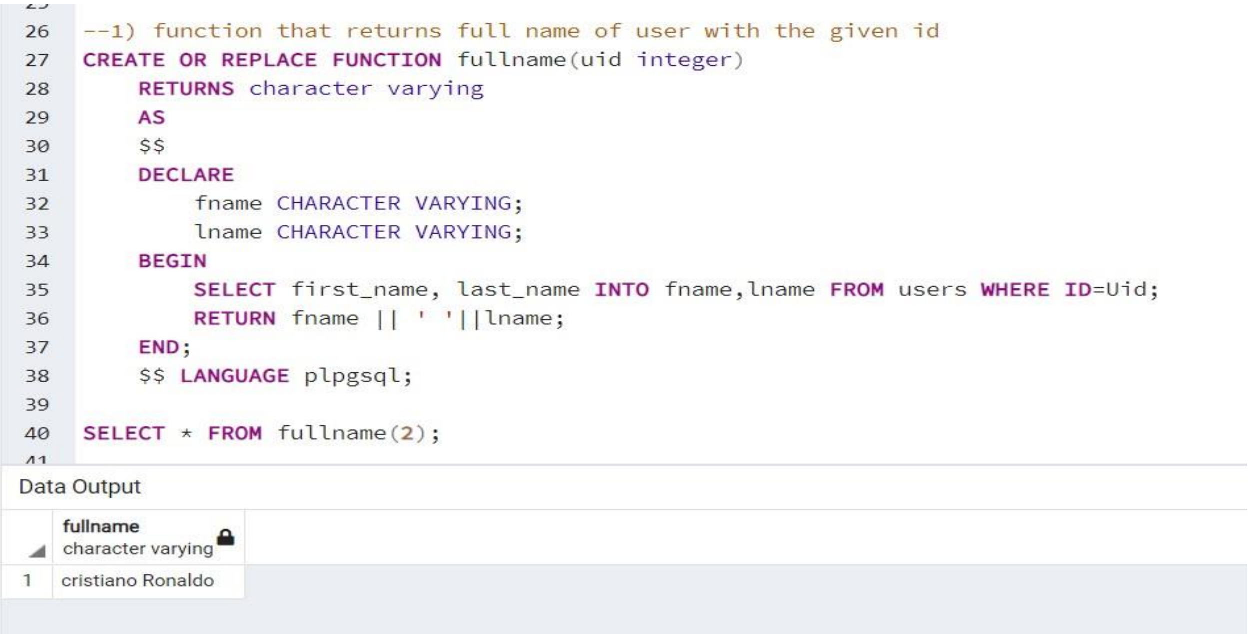
LAB-5

1. Create a table that stores the following information about users:
   1. ID
   2. Username
   3. Email
   4. First name
   5. Last name
   6. Date of birth
   7. Age
2. Create a table named user_logs with the following columns:
   1. ID
   2. Old_value
   3. New_value
   4. Description
   5. Log_time
3. Create the following functions
   1. Function that returns the full name of the user with the given ID
   2. Function that returns the number of users
   3. Function that returns the age of the user with the given ID
4. Create the following stored procedures
   1. SP to update the full name of the user with the given ID
   2. SP to update the age of the user with the given ID
5. Create the following triggers
   1. Trigger that populates full name on adding a new user
   2. Trigger that populates age on adding a new user
   3. Trigger that inserts a new row in user_logs if any value is updated in users table. If last name of a user is updated, the following values must be inserted into the user_logs table:
      <old last name>, <new last name>, 'Last name updated', current time

3) Create the following functions

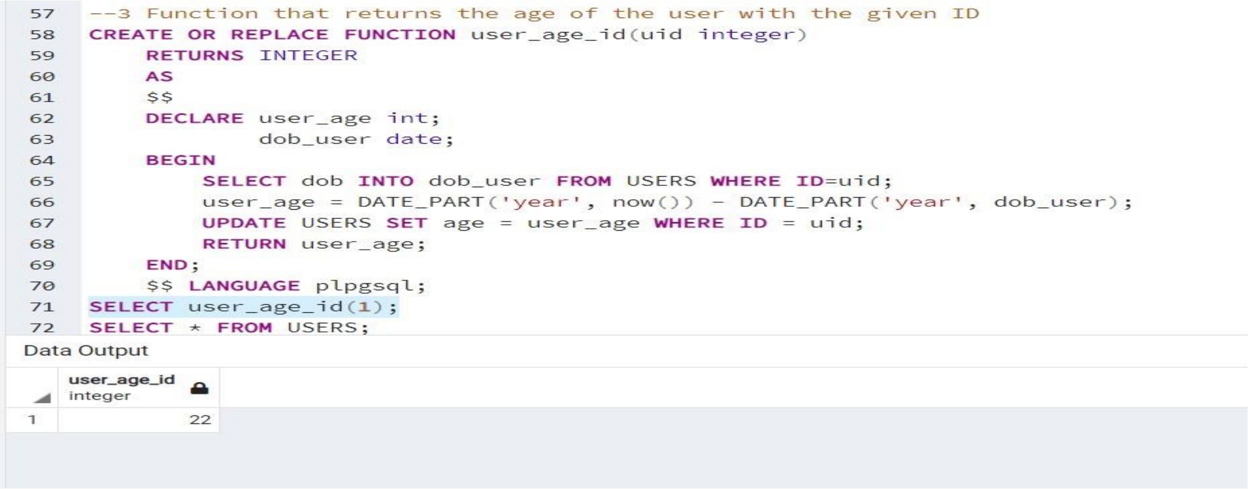
1. Function that returns the full name of the user with the given ID



```
--1) function that returns full name of user with the given id
CREATE OR REPLACE FUNCTION fullname(uid integer)
    RETURNS character varying
    AS
    $$
    DECLARE
        fname CHARACTER VARYING;
        lname CHARACTER VARYING;
    BEGIN
        SELECT first_name, last_name INTO fname,lname FROM users WHERE ID=Uid;
        RETURN fname || ' '||lname;
    END;
    $$ LANGUAGE plpgsql;

SELECT * FROM fullname(2);
```

```
Data Output

     fullname
     character varying
1    cristiano Ronaldo
```

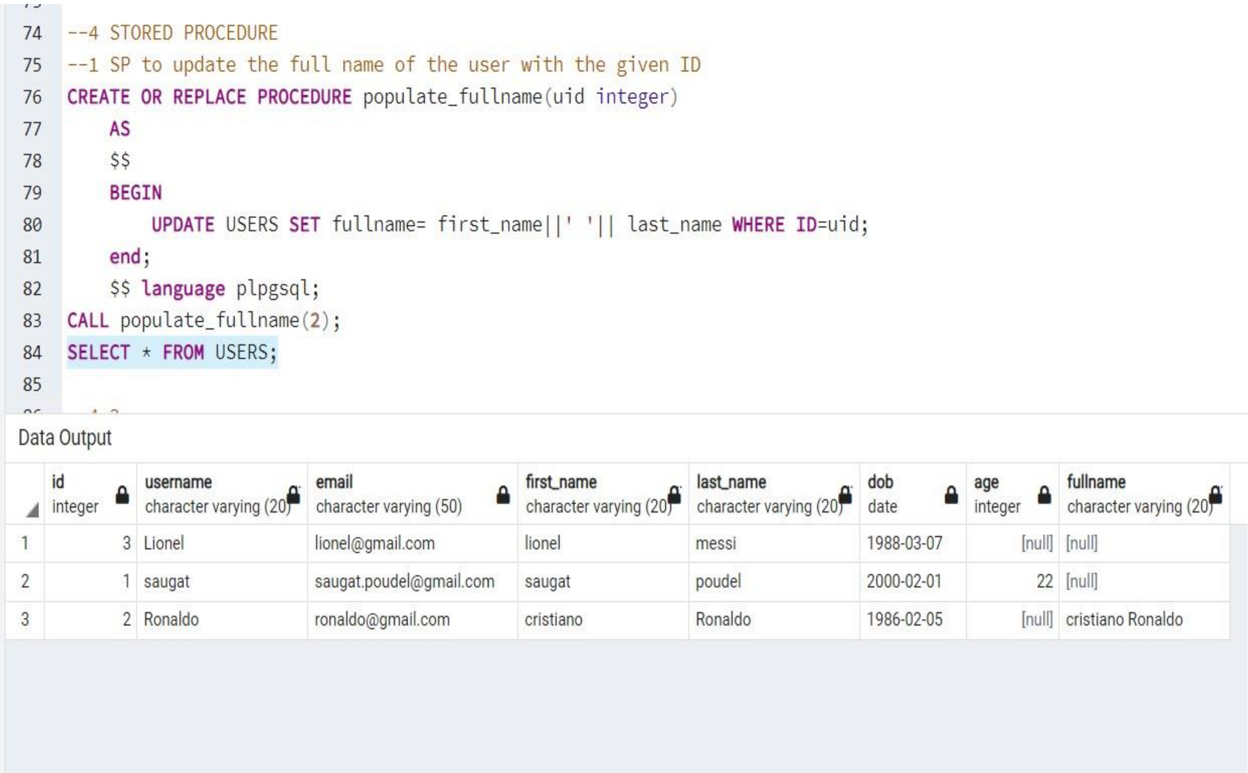
2. Function that returns the age of the user with given ID



```
--3 Function that returns the age of the user with the given ID
CREATE OR REPLACE FUNCTION user_age_id(uid integer)
    RETURNS INTEGER
    AS
    $$
    DECLARE user_age int;
            dob_user date;
    BEGIN
        SELECT dob INTO dob_user FROM USERS WHERE ID=uid;
        user_age = DATE_PART('year', now()) - DATE_PART('year', dob_user);
        UPDATE USERS SET age = user_age WHERE ID = uid;
        RETURN user_age;
    END;
    $$ LANGUAGE plpgsql;
SELECT user_age_id(1);
SELECT * FROM USERS;
```

```
Data Output

     user_age_id
     integer
1             22
```

4.1

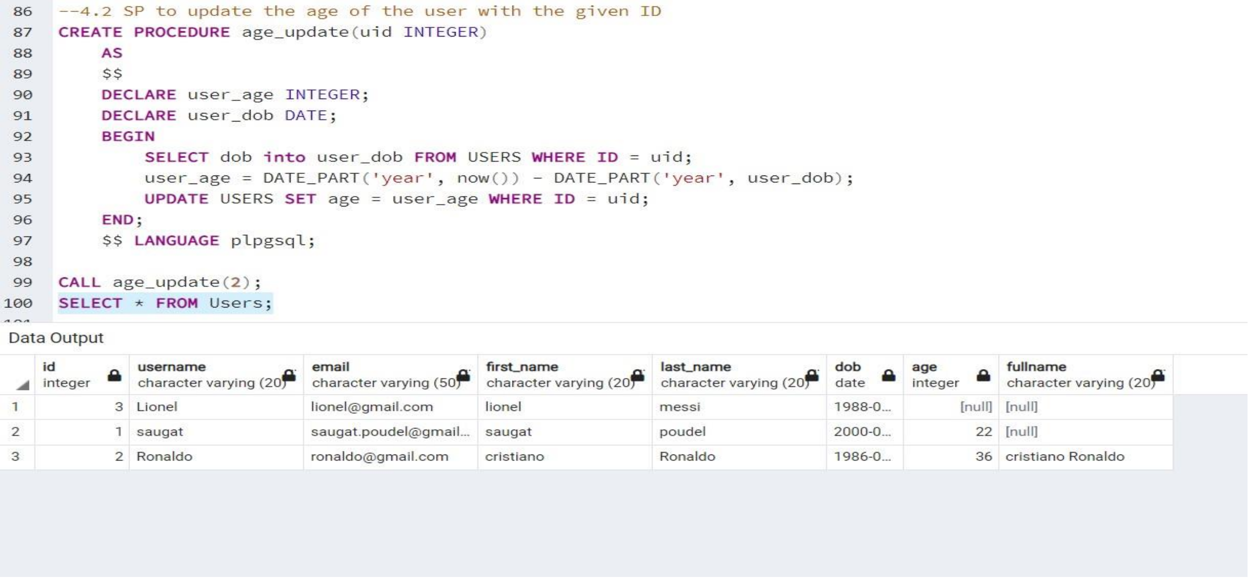


```
--4 STORED PROCEDURE
--1 SP to update the full name of the user with the given ID
CREATE OR REPLACE PROCEDURE populate_fullname(uid integer)
    AS
    $$
    BEGIN
        UPDATE USERS SET fullname= first_name||' '|| last_name WHERE ID=uid;
    end;
    $$ language plpgsql;
CALL populate_fullname(2);
SELECT * FROM USERS;
```

Data Output

	id	username	email	first_name	last_name	dob	age	fullname
	integer	character varying (20)	character varying (50)	character varying (20)	character varying (20)	date	integer	character varying (20)
1	3	Lionel	lionel@gmail.com	lionel	messi	1988-03-07	[null]	[null]
2	1	saugat	saugat.poudel@gmail.com	saugat	poudel	2000-02-01	22	[null]
3	2	Ronaldo	ronaldo@gmail.com	cristiano	Ronaldo	1986-02-05	[null]	cristiano Ronaldo

4.2

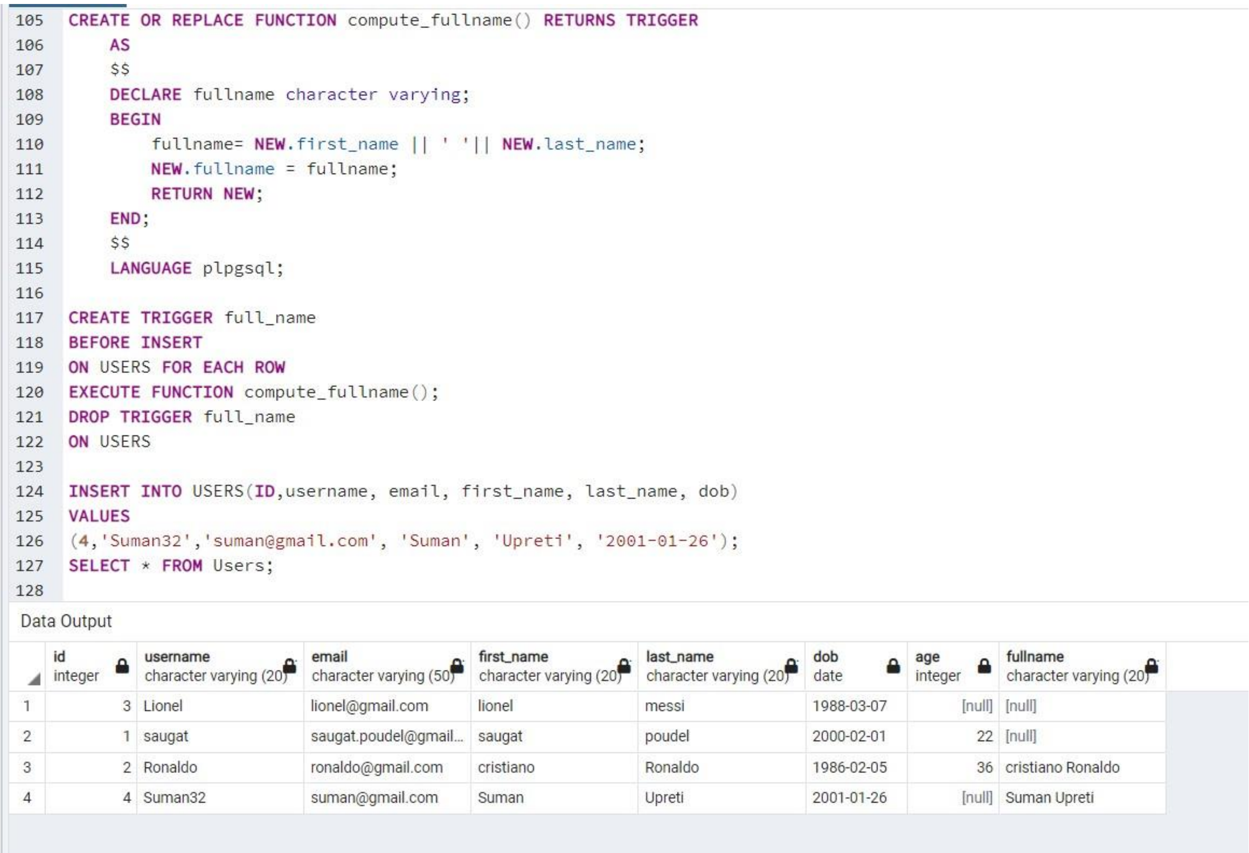


```
--4.2 SP to update the age of the user with the given ID
CREATE PROCEDURE age_update(uid INTEGER)
    AS
    $$
    DECLARE user_age INTEGER;
    DECLARE user_dob DATE;
    BEGIN
        SELECT dob into user_dob FROM USERS WHERE ID = uid;
        user_age = DATE_PART('year', now()) - DATE_PART('year', user_dob);
        UPDATE USERS SET age = user_age WHERE ID = uid;
    END;
    $$ LANGUAGE plpgsql;

CALL age_update(2);
SELECT * FROM Users;
```

Data Output

	id	username	email	first_name	last_name	dob	age	fullname
	integer	character varying (20)	character varying (50)	character varying (20)	character varying (20)	date	integer	character varying (20)
1	3	Lionel	lionel@gmail.com	lionel	messi	1988-0...	[null]	[null]
2	1	saugat	saugat.poudel@gmail...	saugat	poudel	2000-0...	22	[null]
3	2	Ronaldo	ronaldo@gmail.com	cristiano	Ronaldo	1986-0...	36	cristiano Ronaldo

5.1

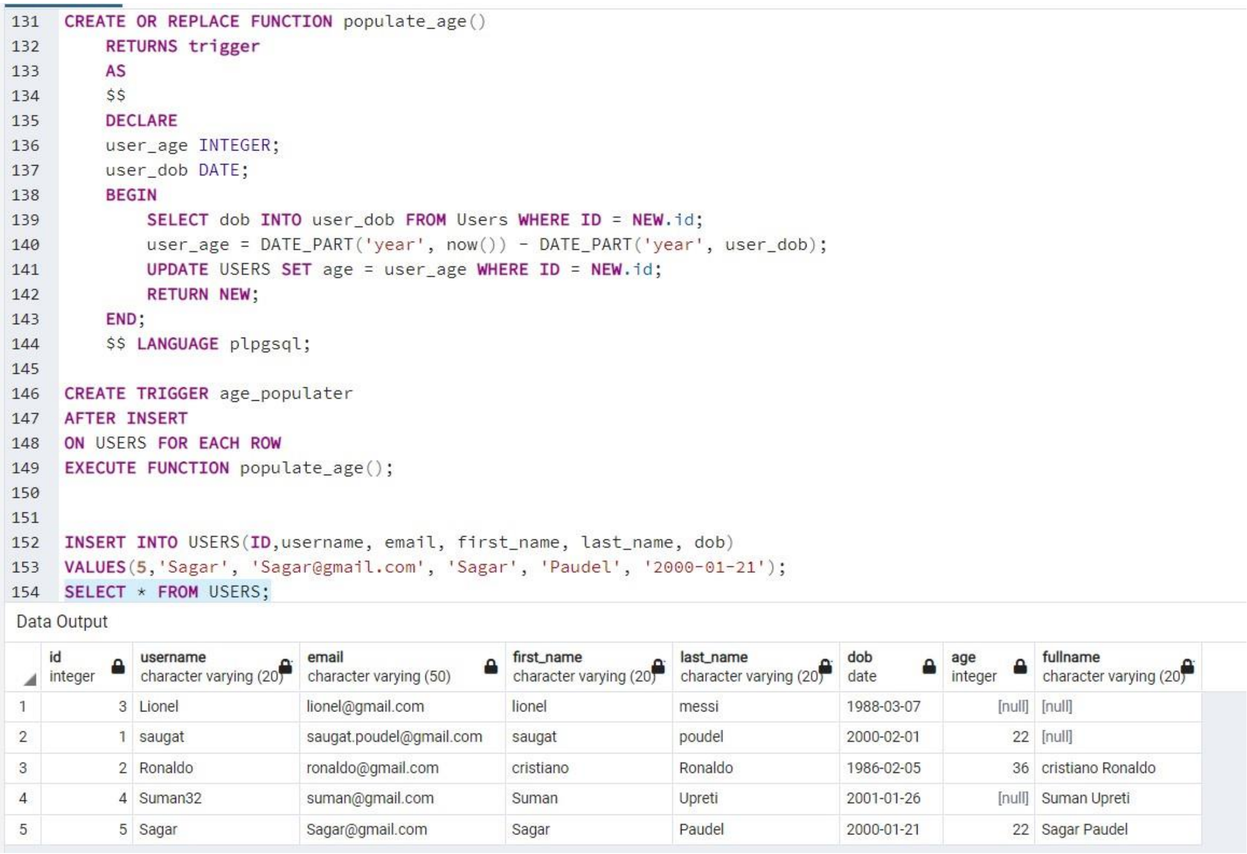


```
CREATE OR REPLACE FUNCTION compute_fullname() RETURNS TRIGGER
    AS
    $$
    DECLARE fullname character varying;
    BEGIN
        fullname= NEW.first_name || ' '|| NEW.last_name;
        NEW.fullname = fullname;
        RETURN NEW;
    END;
    $$
    LANGUAGE plpgsql;

CREATE TRIGGER full_name
BEFORE INSERT
ON USERS FOR EACH ROW
EXECUTE FUNCTION compute_fullname();
DROP TRIGGER full_name
ON USERS

INSERT INTO USERS(ID,username, email, first_name, last_name, dob)
VALUES
(4,'Suman32','suman@gmail.com', 'Suman', 'Upreti', '2001-01-26');
SELECT * FROM Users;

```

Data Output

	id integer	username character varying (20)	email character varying (50)	first_name character varying (20)	last_name character varying (20)	dob date	age integer	fullname character varying (20)
1	3	Lionel	lionel@gmail.com	lionel	messi	1988-03-07	[null]	[null]
2	1	saugat	saugat.poudel@gmail...	saugat	poudel	2000-02-01	22	[null]
3	2	Ronaldo	ronaldo@gmail.com	cristiano	Ronaldo	1986-02-05	36	cristiano Ronaldo
4	4	Suman32	suman@gmail.com	Suman	Upreti	2001-01-26	[null]	Suman Upreti

5.2

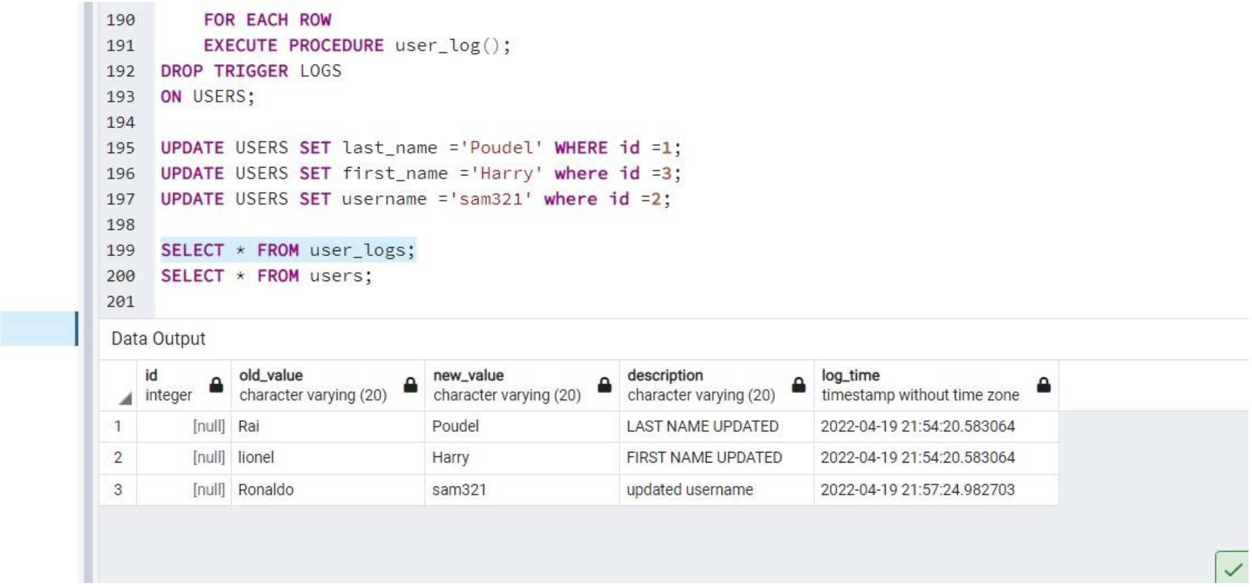


```
CREATE OR REPLACE FUNCTION populate_age()
    RETURNS trigger
    AS
    $$
    DECLARE
    user_age INTEGER;
    user_dob DATE;
    BEGIN
        SELECT dob INTO user_dob FROM Users WHERE ID = NEW.id;
        user_age = DATE_PART('year', now()) - DATE_PART('year', user_dob);
        UPDATE USERS SET age = user_age WHERE ID = NEW.id;
        RETURN NEW;
    END;
    $$ LANGUAGE plpgsql;

CREATE TRIGGER age_populater
AFTER INSERT
ON USERS FOR EACH ROW
EXECUTE FUNCTION populate_age();


INSERT INTO USERS(ID,username, email, first_name, last_name, dob)
VALUES(5,'Sagar', 'Sagar@gmail.com', 'Sagar', 'Paudel', '2000-01-21');
SELECT * FROM USERS;
```

Data Output

	id integer	username character varying (20)	email character varying (50)	first_name character varying (20)	last_name character varying (20)	dob date	age integer	fullname character varying (20)
1	3	Lionel	lionel@gmail.com	lionel	messi	1988-03-07	[null]	[null]
2	1	saugat	saugat.poudel@gmail.com	saugat	poudel	2000-02-01	22	[null]
3	2	Ronaldo	ronaldo@gmail.com	cristiano	Ronaldo	1986-02-05	36	cristiano Ronaldo
4	4	Suman32	suman@gmail.com	Suman	Upreti	2001-01-26	[null]	Suman Upreti
5	5	Sagar	Sagar@gmail.com	Sagar	Paudel	2000-01-21	22	Sagar Paudel

5.3

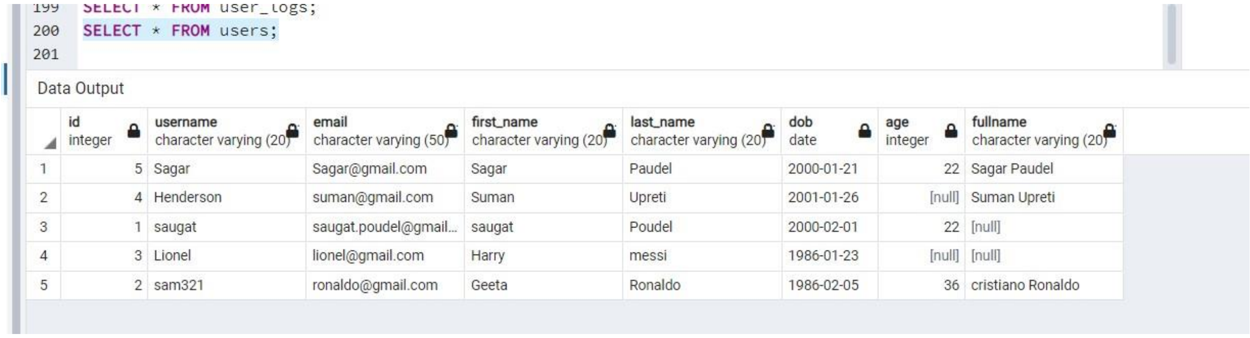


```
    FOR EACH ROW
    EXECUTE PROCEDURE user_log();
DROP TRIGGER LOGS
ON USERS;

UPDATE USERS SET last_name ='Poudel' WHERE id =1;
UPDATE USERS SET first_name ='Harry' where id =3;
UPDATE USERS SET username ='sam321' where id =2;

SELECT * FROM user_logs;
SELECT * FROM users;
```

Data Output

	id integer	old_value character varying (20)	new_value character varying (20)	description character varying (20)	log_time timestamp without time zone
1	[null]	Rai	Poudel	LAST NAME UPDATED	2022-04-19 21:54:20.583064
2	[null]	lionel	Harry	FIRST NAME UPDATED	2022-04-19 21:54:20.583064
3	[null]	Ronaldo	sam321	updated username	2022-04-19 21:57:24.982703

5.3



```
SELECT * FROM user_logs;
SELECT * FROM users;
```

	id	username	email	first_name	last_name	dob	age	fullname
	integer	character varying (20)	character varying (50)	character varying (20)	character varying (20)	date	integer	character varying (20)
1	5	Sagar	Sagar@gmail.com	Sagar	Paudel	2000-01-21	22	Sagar Paudel
2	4	Henderson	suman@gmail.com	Suman	Upreti	2001-01-26	[null]	Suman Upreti
3	1	saugat	saugat.poudel@gmail...	saugat	Poudel	2000-02-01	22	[null]
4	3	Lionel	lionel@gmail.com	Harry	messi	1986-01-23	[null]	[null]
5	2	sam321	ronaldo@gmail.com	Geeta	Ronaldo	1986-02-05	36	cristiano Ronaldo