# GROUP 10

# INVENTION MANAGEMENT SYSTEM

# 

**RELATIONAL SCHEMA**

# INVENTOR ( INVENTOR\_ID , F\_NAME , L\_NAME , COUNTRY , JOB\_TYPE , DOB , AGE , QUALIFICATION , SPECIALIZATION\_FIELD , YEAR\_OF\_EXPERIENCE )

INVENTION (INVENTION\_ID, INVENTION\_NAME, CATEGORY, YEAR\_OF\_INVENTION, STORY\_BEHIND)

INVENTS (INVENTION\_ID, INVENTOR\_ID)

PANEL (PANEL\_ID , YEAR, CATEGORY)

JURY (PANEL\_ID, JURY\_ID , JURY\_NAME , QUALIFICATION , YEAR\_OF\_EXPERIENCE )

NOMINATIONS (PANEL\_ID, INVENTION\_NAME, MARKS)

AWARDS (AWARD\_ID, AWARD\_NAME, CATEGORY,

REWARD\_AMOUNT, SPONSERED\_BY)

WINNER (INVENTION\_ID , PANEL\_ID , AWARD\_ID )

**CREATE TABLE QUERY**

**CREATE TABLE INVENTOR**

(INVENTOR\_ID VARCHAR (10) PRIMARY KEY,

F\_NAME VARCHAR (20),

L\_NAME VARCHAR (20),

COUNTRY VARCHAR (20),

JOB\_TYPE VARCHAR (20),

DOB DATE,

QUALIFICATION VARCHAR (20),

SPECIALIZATION\_FIELD VARCHAR (20),

YEAR\_OF\_EXPERIENCE INT)

**CREATE TABLE INVENTION**

(INVENTION\_ID VARCHAR (10) PRIMARY KEY,

INVENTION\_NAME VARCHAR (30),

CATEGORY VARCHAR (20),

YEAR\_OF\_INVENTION INT,

STORY\_BEHIND VARCHAR (100))

**CREATE TABLE AWARDS**

(AWARD\_ID VARCHAR (10) PRIMARY KEY,

AWARD\_NAME VARCHAR (20),

CATEGORY VARCHAR (20),

REWARD\_AMOUNT INT,

SPONSORED\_BY VARCHAR (20))

**CREATE TABLE PANEL**

(PANEL\_ID VARCHAR (10) PRIMARY KEY,

CATEGORY VARCHAR (20),

YEAR INT)

**CREATE TABLE JURY**

(JURY\_ID VARCHAR (10) PRIMARY KEY,

JURY\_NAME VARCHAR (20),

QUALIFICATION VARCHAR (20),

YEAR\_OF\_EXPERIENCE INT,

PANEL\_ID VARCHAR (10) REFERENCES PANEL(PANEL\_ID))

**CREATE TABLE NOMINATIONS**

(INVENTION\_NAME VARCHAR (30),

PANEL\_ID VARCHAR (10),

MARKS INT,

PRIMARY KEY (INVENTION\_NAME, PANEL\_ID),

FOREIGN KEY (PANEL\_ID) REFERENCES PANEL)

**CREATE TABLE INVENTS**

(INVENTION\_ID VARCHAR (10) REFERENCES INVENTION(INVENTION\_ID),

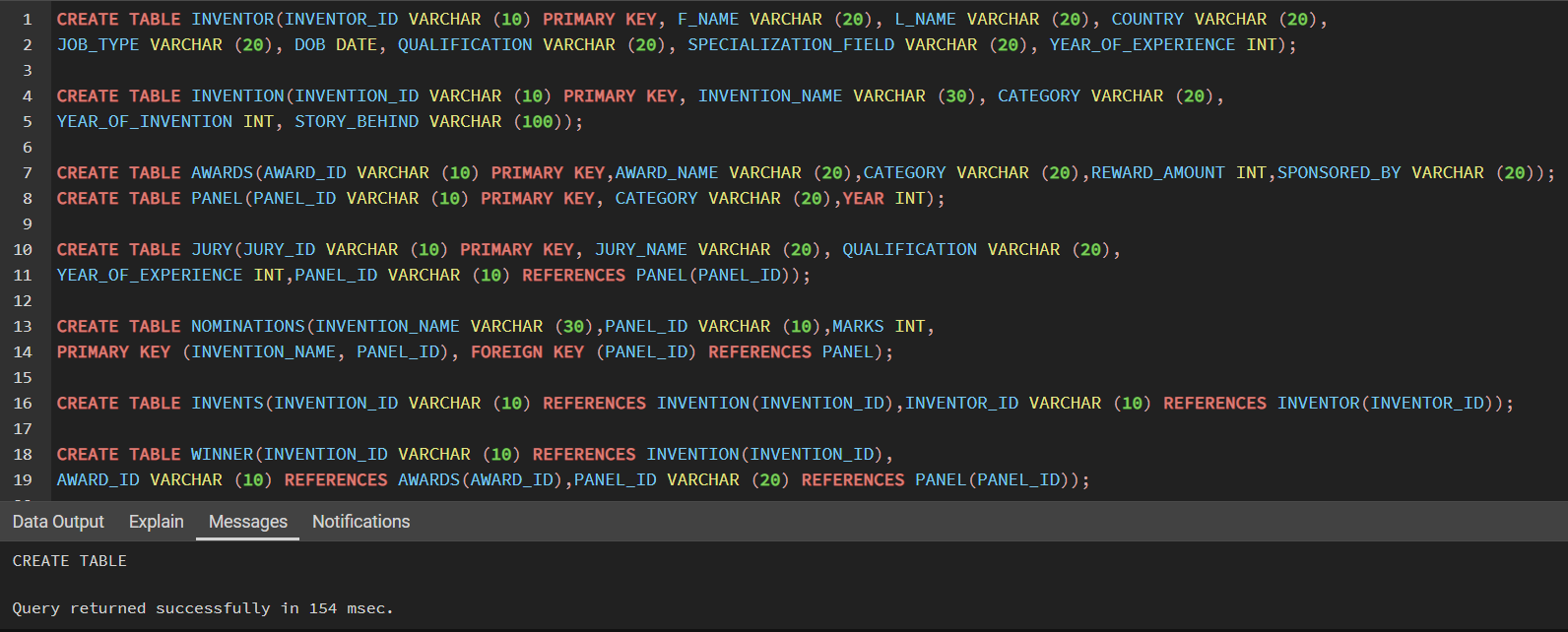
INVENTOR\_ID VARCHAR (10) REFERENCES INVENTOR(INVENTOR\_ID))

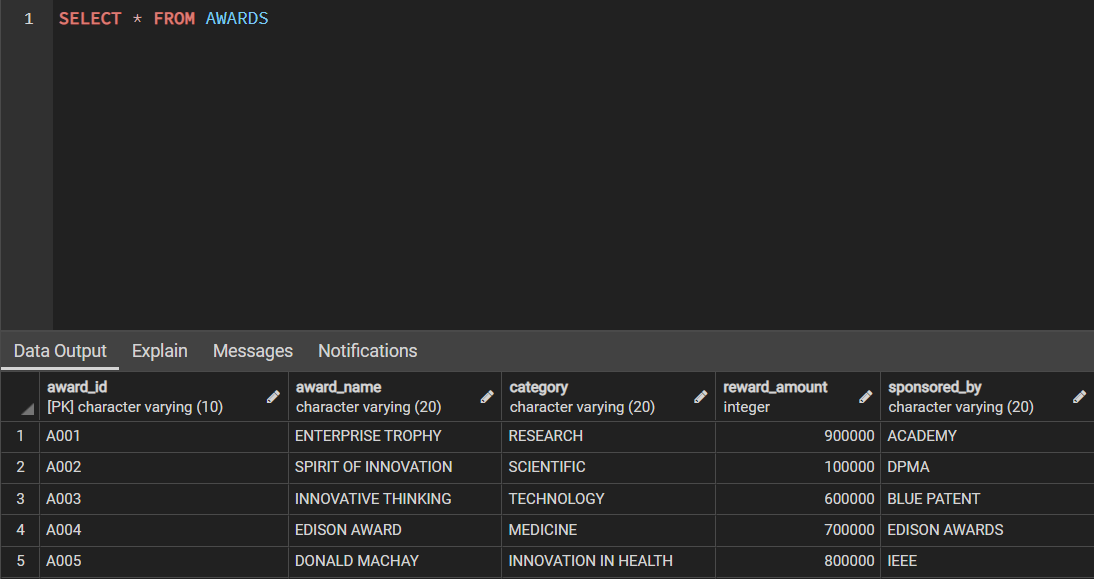
**CREATE TABLE WINNER**

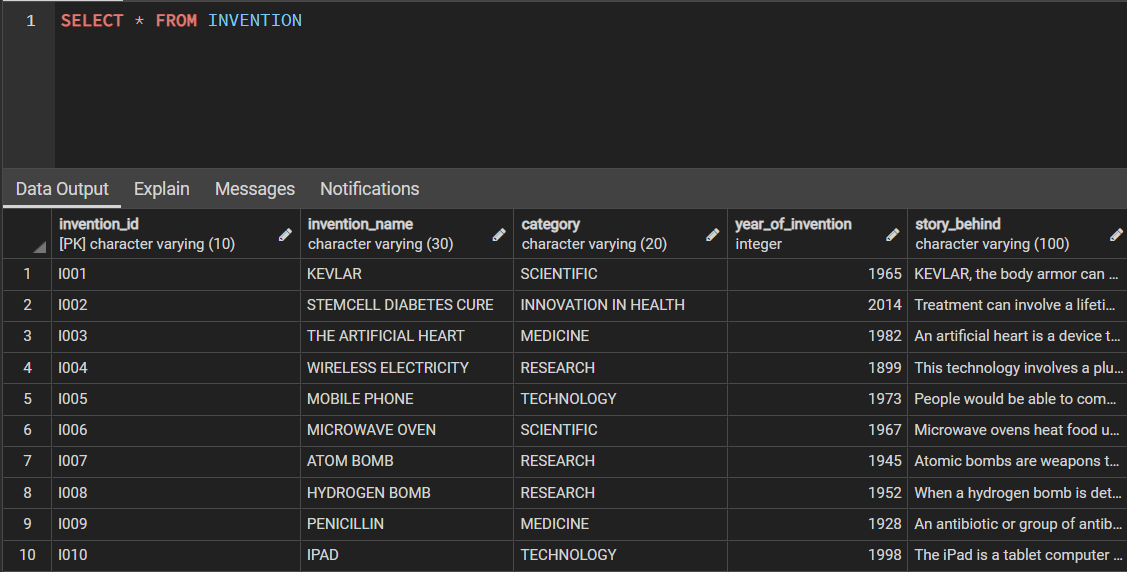
(INVENTION\_ID VARCHAR (10) REFERENCES INVENTION(INVENTION\_ID),

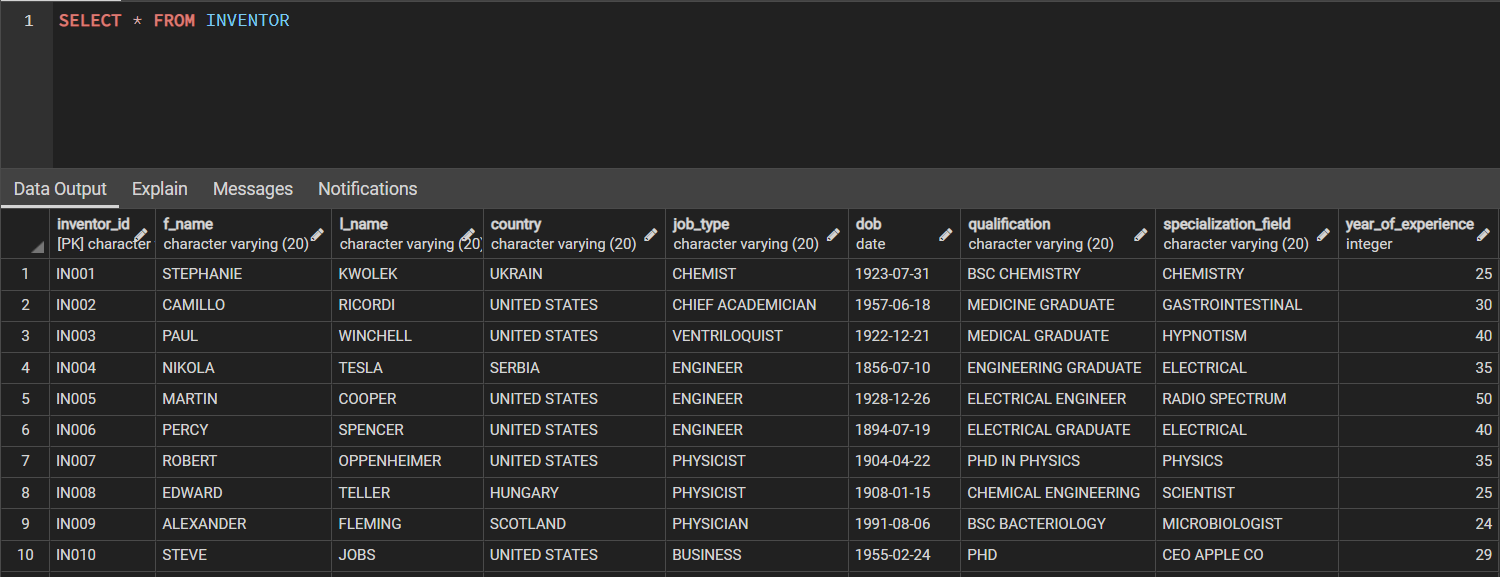
AWARD\_ID VARCHAR (10) REFERENCES AWARDS(AWARD\_ID),

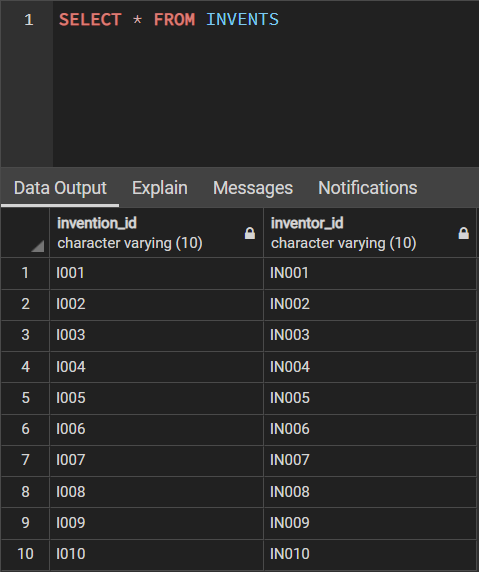
PANEL\_ID VARCHAR (20) REFERENCES PANEL(PANEL\_ID))

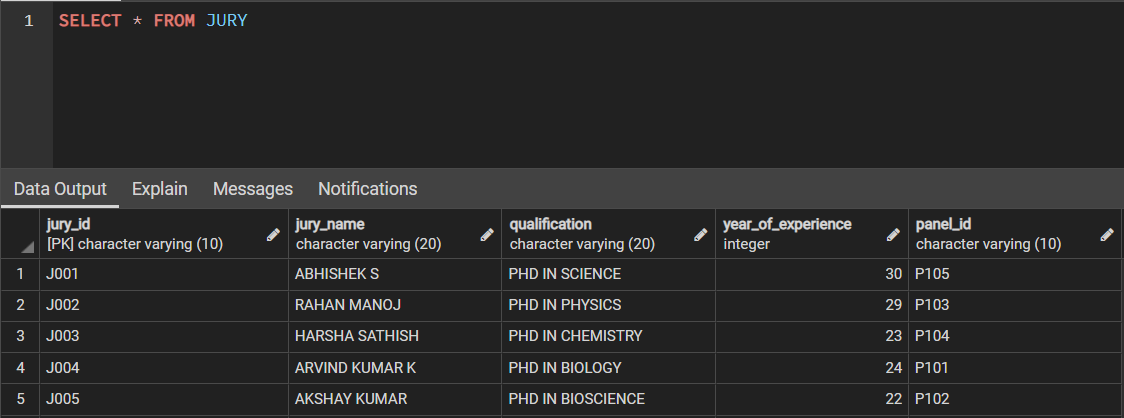


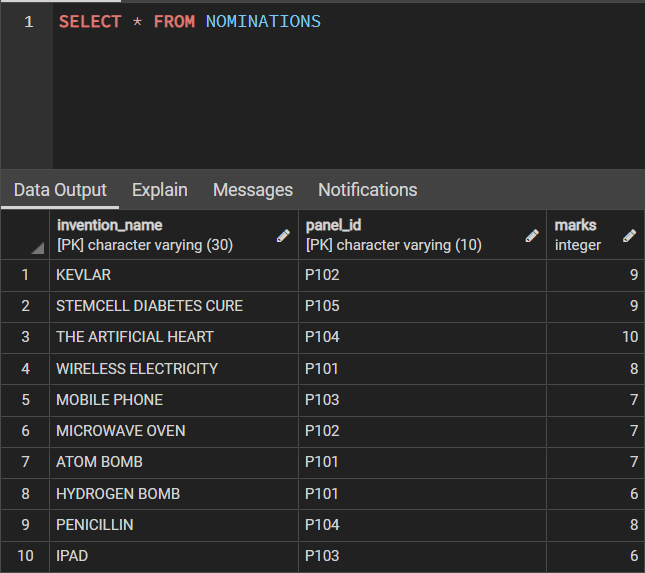


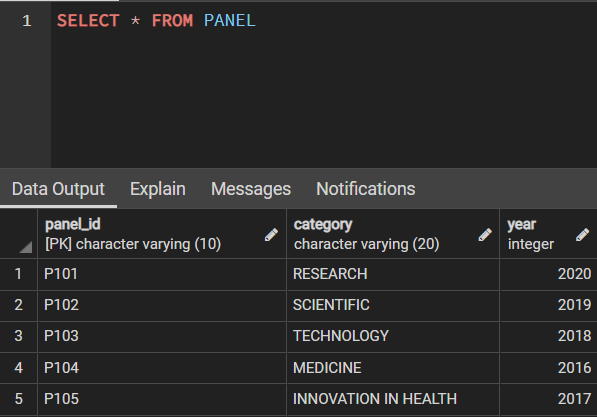


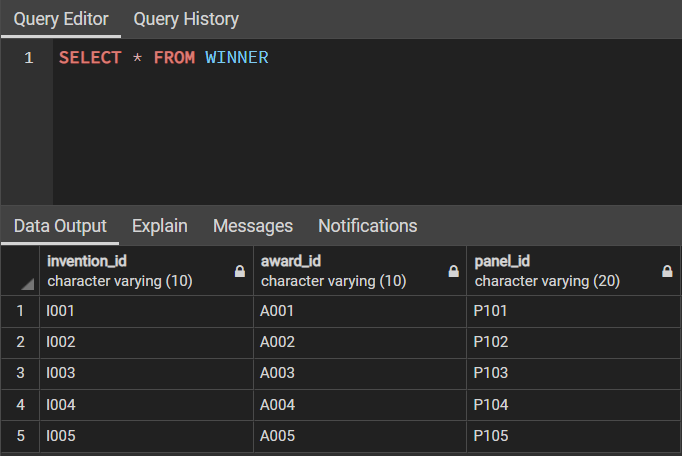




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**INSERTING DATA**

**INSERT INTO INVENTOR VALUES ('IN001','STEPHANIE','KWOLEK','UKRAIN','CHEMIST','31-07-1923','BSC CHEMISTRY','CHEMISTRY',25),**

**('IN002','CAMILLO','RICORDI','UNITED STATES','CHIEF ACADEMICIAN','18-06-1957','MEDICINE GRADUATE','GASTROINTESTINAL',30),**

**('IN003','PAUL','WINCHELL','UNITED STATES','VENTRILOQUIST','21-12-1922','MEDICAL GRADUATE','HYPNOTISM',40),**

**('IN004','NIKOLA','TESLA','SERBIA','ENGINEER','10-07-1856','ENGINEERING GRADUATE','ELECTRICAL',35),**

**('IN005','MARTIN','COOPER','UNITED STATES','ENGINEER','26-12-1928','ELECTRICAL ENGINEER','RADIO SPECTRUM',50),**

**('IN006','PERCY','SPENCER','UNITED STATES','ENGINEER','19-07-1894','ELECTRICAL GRADUATE','ELECTRICAL',40),**

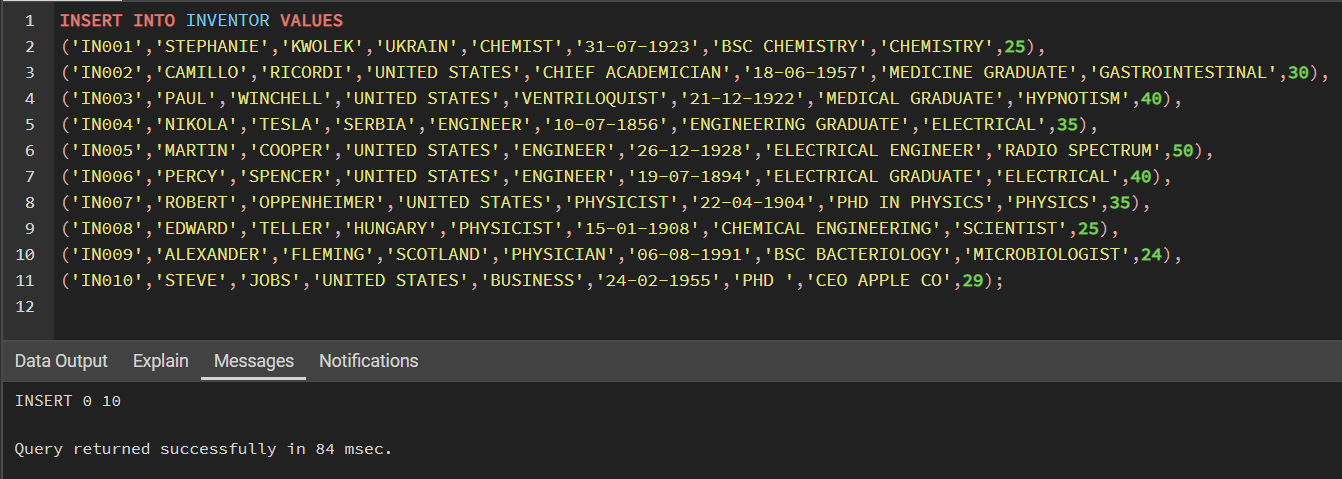
**('IN007','ROBERT','OPPENHEIMER','UNITED STATES','PHYSICIST','22-04-1904','PHD IN PHYSICS','PHYSICS',35),**

**('IN008','EDWARD','TELLER','HUNGARY','PHYSICIST','15-01-1908','CHEMICAL ENGINEERING','SCIENTIST',25),**

**('IN009','ALEXANDER','FLEMING','SCOTLAND','PHYSICIAN','06-08-1991','BSC BACTERIOLOGY','MICROBIOLOGIST',24),**

**('IN010','STEVE','JOBS','UNITED STATES','BUSINESS','24-02-1955','PHD ','CEO APPLE CO',29);**

* THIS QUERY IS USED TO INSERT VALUES INTO THE INVERTOR TABLE.
* THE PRIMARY KEY IS INVERTOR\_ID BECAUSE IT WILL BE ONLY HAVING UNIQUE NUMBERS COMPARED TO THE OTHER ATTRIBUTES WHICH MAY BE SIMILAR
* THE ATTRIBUTES OF INVENTOR ARE:
  + - INVENTOR\_ID
    - F\_NAME
    - L\_NAME
    - COUNTRY
    - JOB\_TYPE
    - DOB DATE
    - QUALIFICATION
    - SPECIALIZATION\_FIELD
    - YEAR\_OF\_EXPERIENCE



**INSERT INTO INVENTION VALUES ('I001','KEVLAR','SCIENTIFIC',1965,'KEVLAR, the body armor can protect from fatal attacks.'),**

**('I002','STEMCELL DIABETES CURE','INNOVATION IN HEALTH',2014,'Treatment can involve a lifetime of careful eating, insulin injections tests.'),**

**('I003','THE ARTIFICIAL HEART','MEDICINE',1982,'An artificial heart is a device that replaces the heart.'),**

**('I004','WIRELESS ELECTRICITY','RESEARCH',1899,'This technology involves a plug-in coil that creates a magnetic field.'),**

**('I005','MOBILE PHONE','TECHNOLOGY',1973,'People would be able to communicate free of the restriction of wires and cables.'),**

**('I006','MICROWAVE OVEN','SCIENTIFIC',1967,'Microwave ovens heat food using microwaves, a form of electromagnetic radiation.'),**

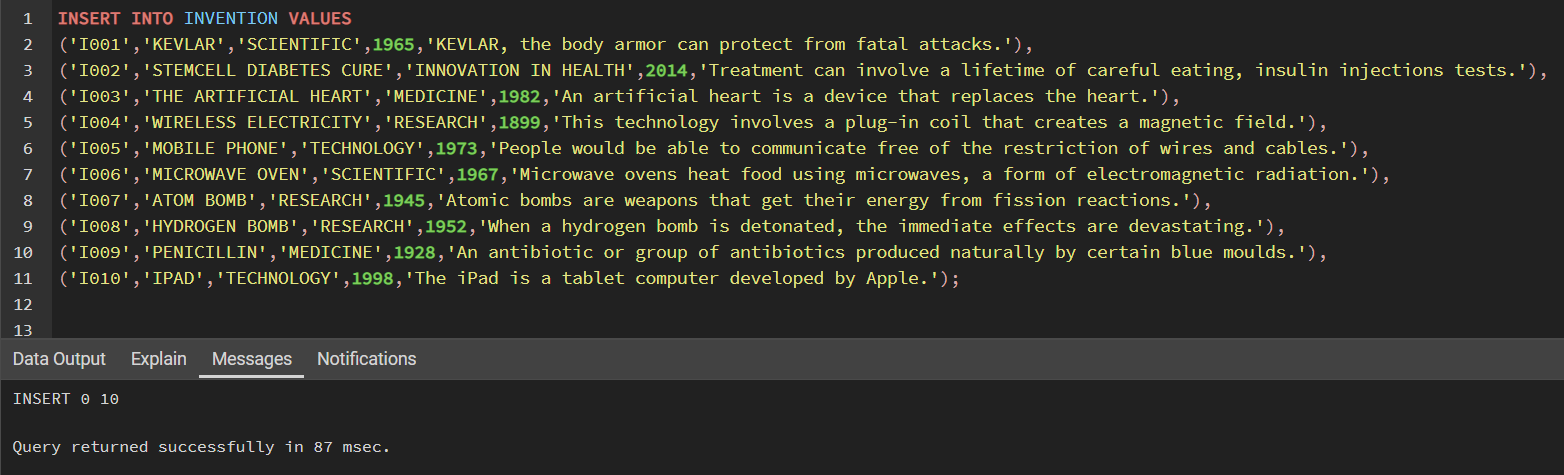
**('I007','ATOM BOMB','RESEARCH',1945,'Atomic bombs are weapons that get their energy from fission reactions.'),**

**('I008','HYDROGEN BOMB','RESEARCH',1952,'When a hydrogen bomb is detonated, the immediate effects are devastating.'),**

**('I009','PENICILLIN','MEDICINE',1928,'An antibiotic or group of antibiotics produced naturally by certain blue moulds.'),**

**('I010','IPAD','TECHNOLOGY',1998,'The iPad is a tablet computer developed by Apple.');**

* THIS QUERY IS USED TO INSERT VALUES INTO THE INVENTION TABLE
* THE PRIMARY KEY IS INVENTION\_ID AS IT IS INDIVIDUAL AND PECULIAR.
* THE ATTRIBUTES OF INVENTION ARE:
  + INVENTION\_ID
  + INVENTION\_NAME
  + CATEGORY
  + YEAR\_OF\_INVENTION
  + STORY\_BEHIND



**INSERT INTO AWARDS VALUES**

**('A001','ENTERPRISE TROPHY','RESEARCH',900000,'ACADEMY'),**

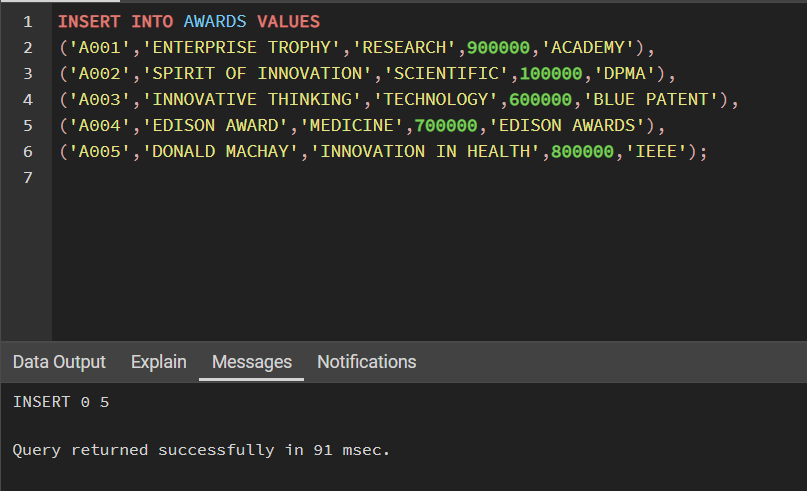
**('A002','SPIRIT OF INNOVATION','SCIENTIFIC',100000,'DPMA'),**

**('A003','INNOVATIVE THINKING','TECHNOLOGY',600000,'BLUE PATENT'),**

**('A004','EDISON AWARD','MEDICINE',700000,'EDISON AWARDS'),**

**('A005','DONALD MACHAY','INNOVATION IN HEALTH',800000,'IEEE');**

* THIS QUERY IS USED TO INSERT VALUES INTO THE AWARDS TABLE.
* THE PRIMARY KEY IS AWARD\_ID BECAUSE IT WILL BE UNIQUE COMPARED TO AWARD\_NAME BECAUSE AWARD\_NAME CAN BE SAME.
* THE ATTRIBUTES OF AWARDS ARE:
* AWARD\_ID
* AWARD\_NAME
* CATEGORY
* REWARD\_AMOUNT
* SPONSORED\_BY



**INSERT INTO PANEL VALUES**

**('P101','RESEARCH',2020),**

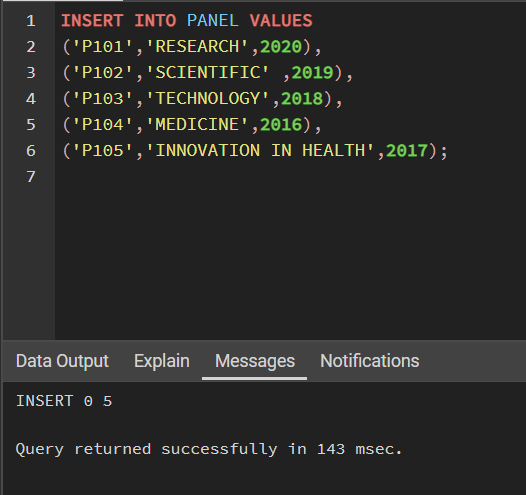
**('P102','SCIENTIFIC' ,2019),**

**('P103','TECHNOLOGY',2018),**

**('P104','MEDICINE',2016),**

**('P105','INNOVATION IN HEALTH',2017);**

* THIS QUERY IS USED TO INSERT VALUES INTO THE PANEL TABLE
* THE PRIMARY KEY IS PANEL\_ID BECAUSE IT IS THE ONE WHICH IS UNIQUE FROM THE ABOVE ATTRIBUTES
* THE ATTRIBUTES OF PANEL ARE
  + - PANEL\_ID
    - CATEGORY
    - YEAR



**INSERT INTO JURY VALUES**

**('J001','ABHISHEK S','PHD IN SCIENCE',30,'P105'),**

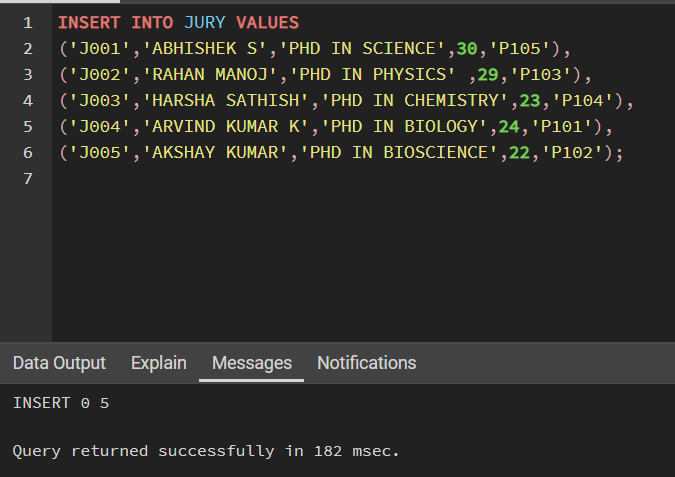
**('J002','RAHAN MANOJ','PHD IN PHYSICS' ,29,'P103'),**

**('J003','HARSHA SATHISH','PHD IN CHEMISTRY',23,'P104'),**

**('J004','ARVIND KUMAR K','PHD IN BIOLOGY',24,'P101'),**

**('J005','AKSHAY KUMAR','PHD IN BIOSCIENCE',22,'P102');**

* THIS QUERY IS USED TO INSERT VALUES INTO THE JURY TABLE.
* THE PRIMARY KEY IS JURY\_ID AS JURY MAY CONTAIN MANY REPEATED NAMES HERE ID IS BEING SELECTED AS PRIMARY KEY
* THE ATTRIBUTES OF JURY ARE:
  + JURY\_ID
  + JURY\_NAME
  + QUALIFICATION
  + YEAR\_OF\_EXPERIENCE
  + PANEL\_ID - REFERENCES PANEL(PANEL\_ID)



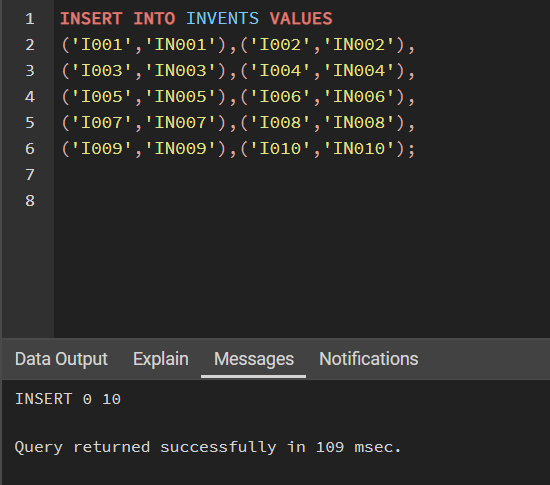
**INSERT INTO INVENTS VALUES ('I001','IN001'),**

**('I002','IN002'), ('I003','IN003'),('I004','IN004'),('I005','IN005'),**

**('I006','IN006'), ('I007','IN007'),('I008','IN008'),('I009','IN009'),**

**('I010','IN010');**

* THIS QUERY IS USED TO INSERT VALUES INTO THE INVENTS TABLE.
* THE ATTRIBUTES OF INVENTS ARE:
  + INVENTION\_ID - REFERENCES INVENTION(INVENTION\_ID)
  + INVENTOR\_ID - REFERENCES INVENTOR(INVENTOR\_ID)



**INSERT INTO NOMINATIONS VALUES**

**('KEVLAR', 'P102' ,9),**

**('STEMCELL DIABETES CURE', 'P105' , 9),**

**('THE ARTIFICIAL HEART', 'P104' ,10),**

**('WIRELESS ELECTRICITY', 'P101' ,8),**

**('MOBILE PHONE', 'P103', 7),**

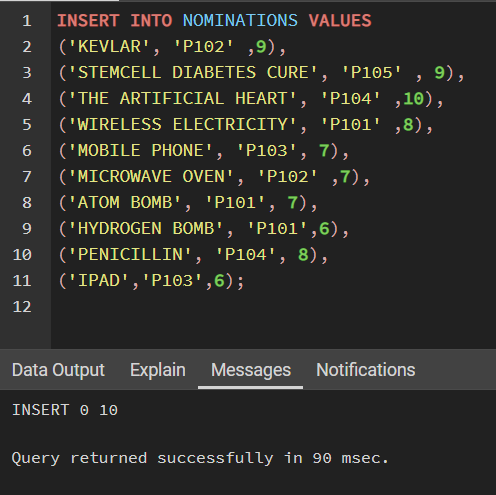
**('MICROWAVE OVEN', 'P102' ,7),**

**('ATOM BOMB', 'P101', 7),**

**('HYDROGEN BOMB', 'P101',6),**

**('PENICILLIN', 'P104', 8),**

**('IPAD’, 'P103' ,6);**



**INSERT INTO WINNER VALUES**

**('I001','A001','P101',),**

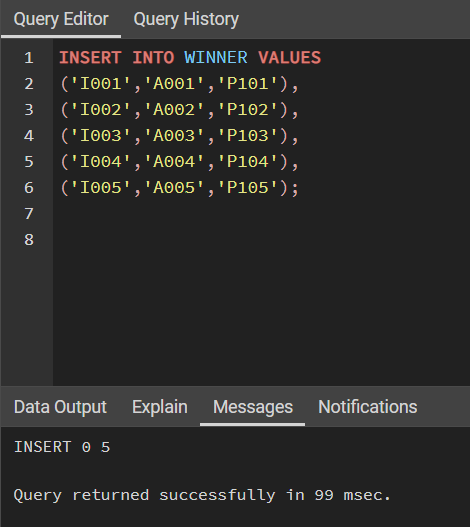
**('I002','A002','P102'),**

**('I003','A003','P103'),**

**('I004','A004','P104'),**

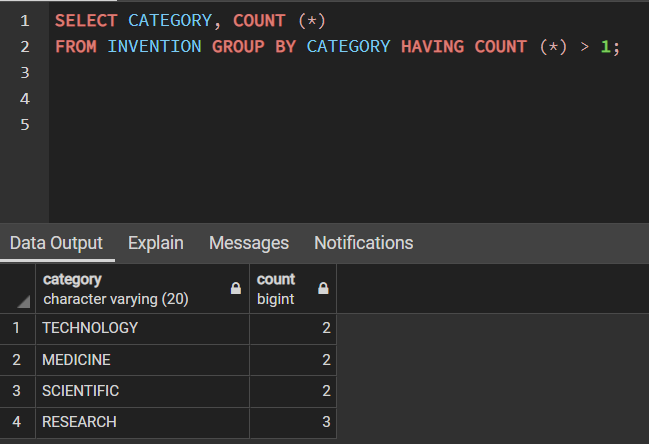
**('I005','A005','P105');**

* THIS QUERY IS USED TO INSERT VALUES INTO THE WINNER TABLE
* THE ATTRIBUTE OF WINNER ARE:
  + INVENTION\_ID - REFERENCES INVENTION(INVENTION\_ID)
  + AWARD\_ID - REFERENCES AWARDS(AWARD\_ID)
  + PANEL\_ID - REFERENCES PANEL(PANEL\_ID))

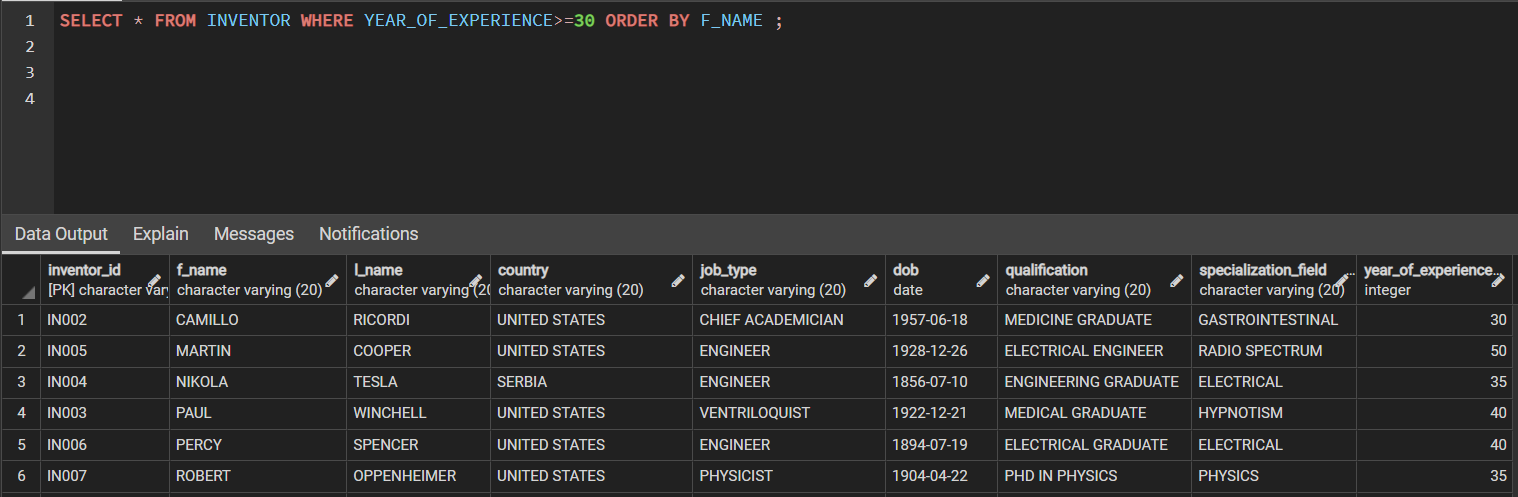


**QUERIES**

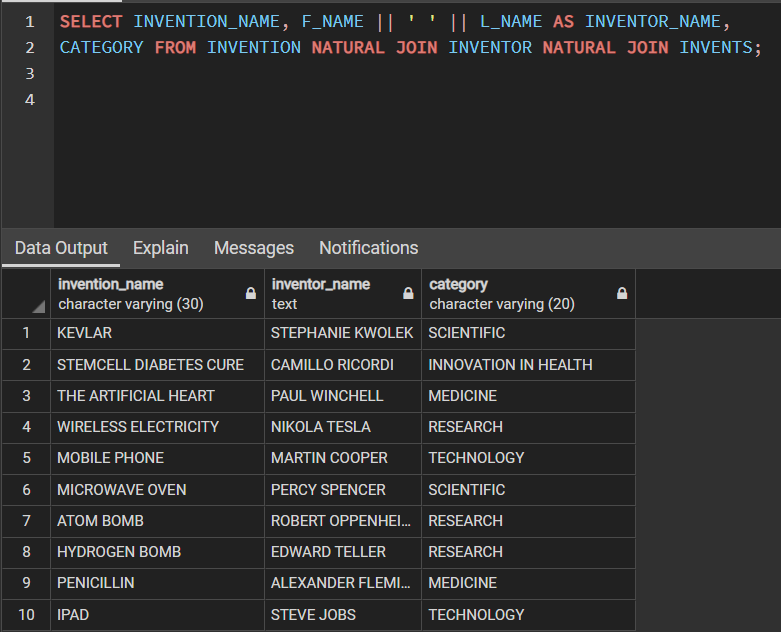
* **SELECT CATEGORY, COUNT (\*) FROM INVENTION GROUP BY CATEGORY HAVING COUNT (\*) > 1;**



* This query is used to view the count of the Inventions which belongs to the same category with count greater than 1.
* **SELECT \* FROM INVENTOR ORDER BY F\_NAME;**

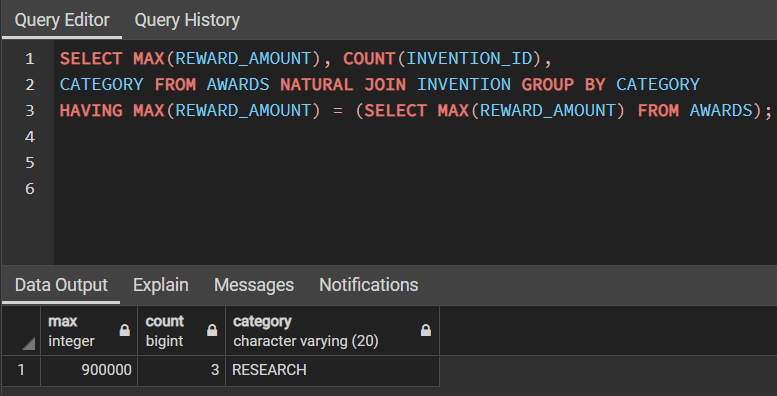


* This query is used to select all the tuples of INVENTOR table which is sorted alphabetically with respect to F\_NAME and having more than 30 or more years’ experience.
* **SELECT INVENTION\_NAME, F\_NAME || ' ' || L\_NAME AS INVENTOR\_NAME, CATEGORY FROM INVENTION NATURAL JOIN INVENTOR NATURAL JOIN INVENTS;**



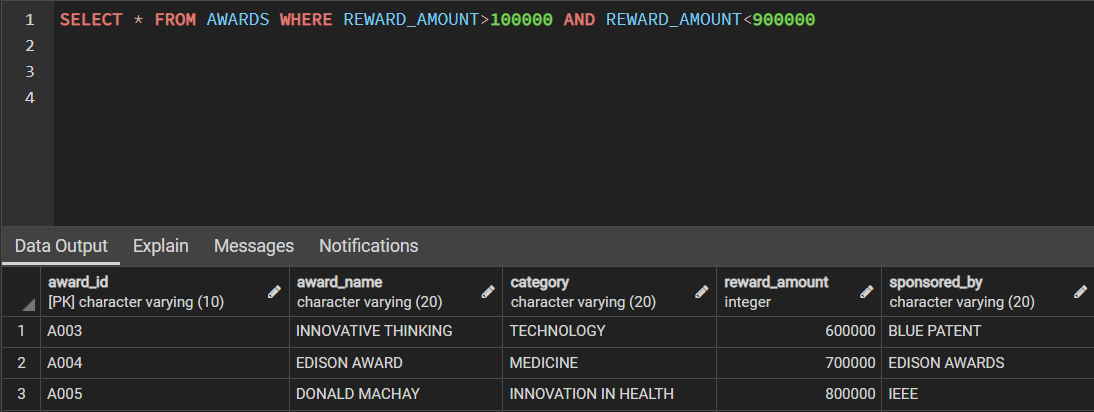
* This query is used to obtain Inventor Name and the name of their Inventions along with its category.
* **SELECT MAX(REWARD\_AMOUNT), COUNT(INVENTION\_ID), CATEGORY FROM AWARDS NATURAL JOIN INVENTION GROUP BY CATEGORY HAVING MAX(REWARD\_AMOUNT) =**

**(SELECT MAX(REWARD\_AMOUNT) FROM AWARDS)**

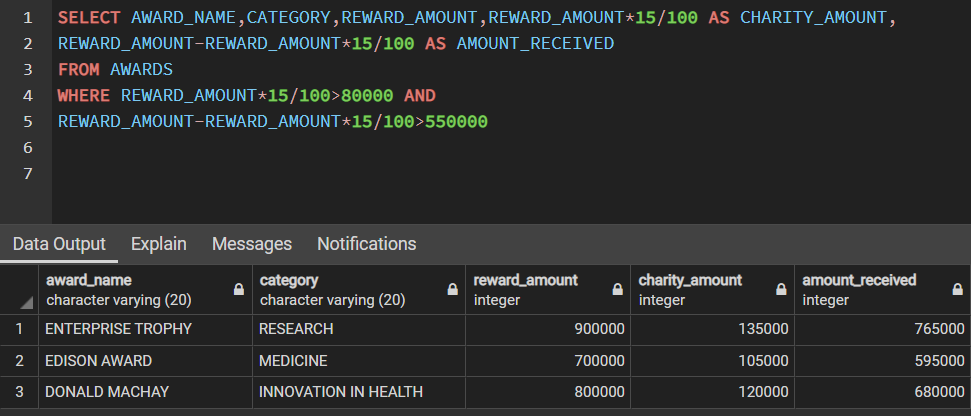


* This query is used to obtain the maximum reward amount among all inventions and the number of inventions which received the maximum reward amount along with its category.

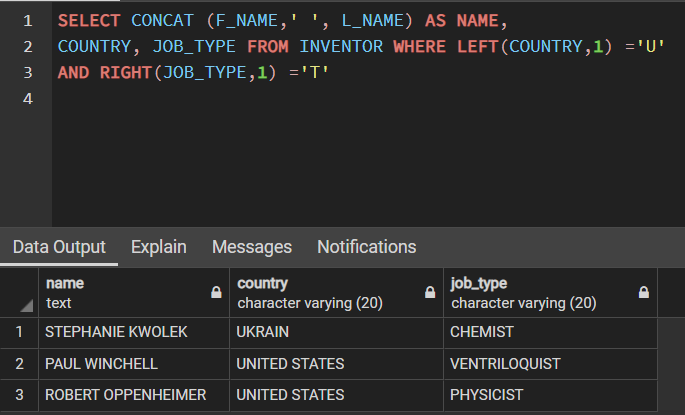
* **SELECT \* FROM AWARDS WHERE REWARD\_AMOUNT>100000 AND REWARD\_AMOUNT<900000**



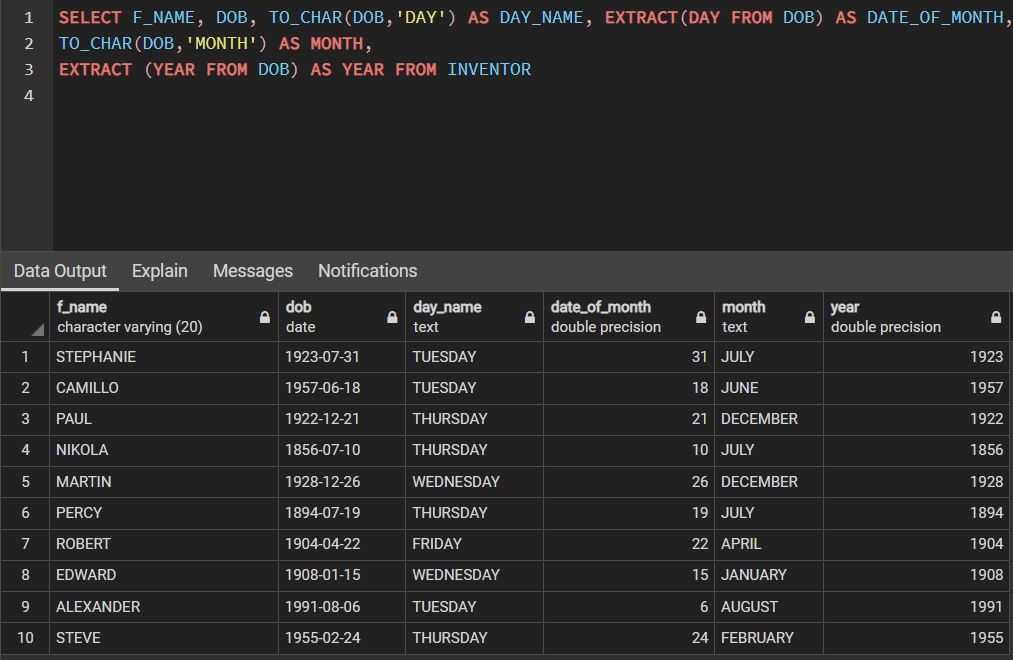
* This query displays details of all awards whose reward amount is more than 100000 and less than 900000.
* **SELECT AWARD\_NAME, CATEGORY, REWARD\_AMOUNT, REWARD\_AMOUNT\*15/100 AS CHARITY\_AMOUNT, REWARD\_AMOUNT-REWARD\_AMOUNT\*15/100 AS AMOUNT\_RECEIVED FROM AWARDS WHERE REWARD\_AMOUNT\*15/100>80000 AND REWARD\_AMOUNT-REWARD\_AMOUNT\*15/100>550000**



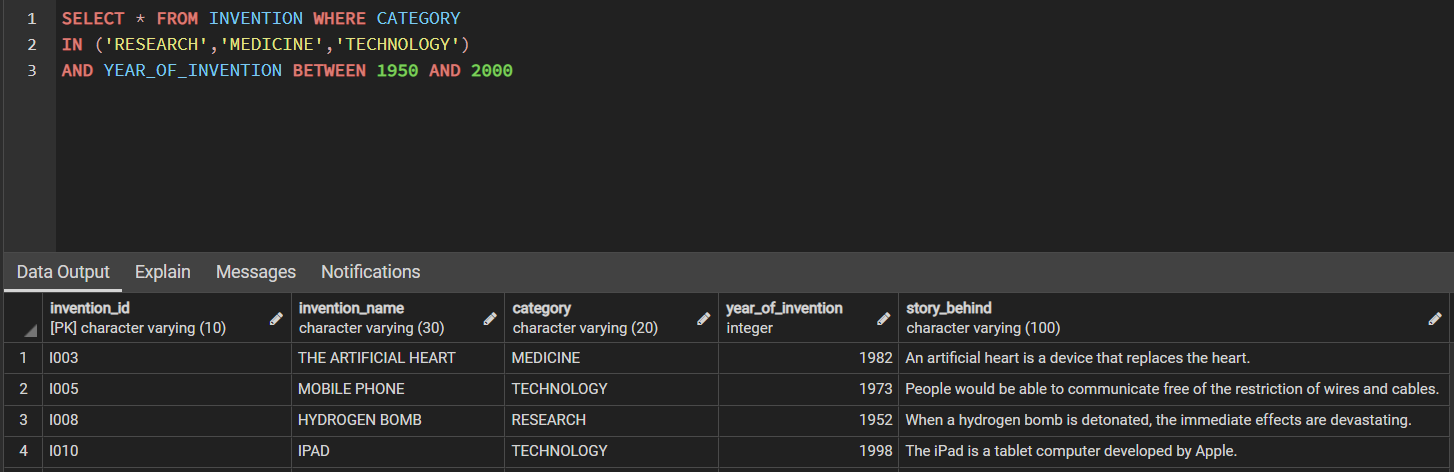
* In this query, 15% of REWARD\_AMOUNT is given as CHARITY\_AMOUNT.
* 100-15 = 85% is taken as AMOUNT\_RECEIVED
* This query displays AWARD\_NAME, CATEGORY of AWARDS table whose CHARITY\_AMOUNT > 80000 and AMOUNT\_RECIEVED > 550000.
* **SELECT CONCAT (F\_NAME,' ', L\_NAME) AS NAME, COUNTRY, JOB\_TYPE FROM INVENTOR WHERE LEFT(COUNTRY,1) ='U' AND RIGHT(JOB\_TYPE,1) ='T'**

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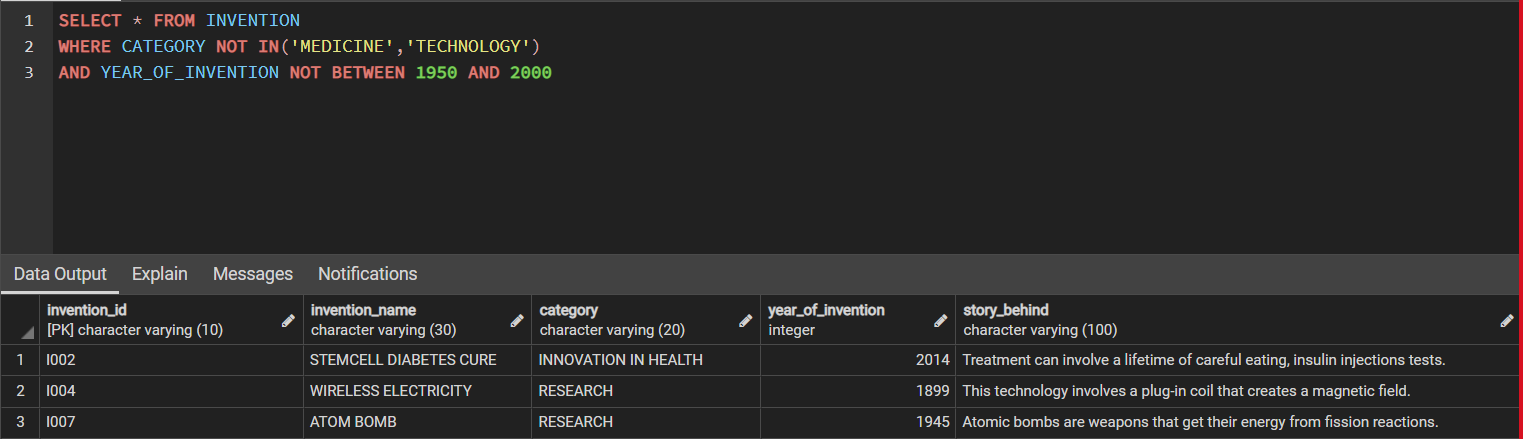
* In this query, first we concatenate the F\_NAME and L\_NAME separated by a space and it is renamed as NAME.
* We obtain the NAME along with the COUNTRY and JOB\_TYPE of the inventor whose COUNTRY starts with ‘U’ and JOB\_TYPE ends with ‘T’.
* **SELECT F\_NAME, DOB, TO\_CHAR(DOB,'DAY') AS DAY\_NAME, TO\_CHAR(DOB,'DD') AS DAY\_OF\_MONTH, TO\_CHAR(DOB,'MONTH') AS MONTH, EXTRACT (YEAR FROM DOB) AS YEAR FROM INVENTOR**



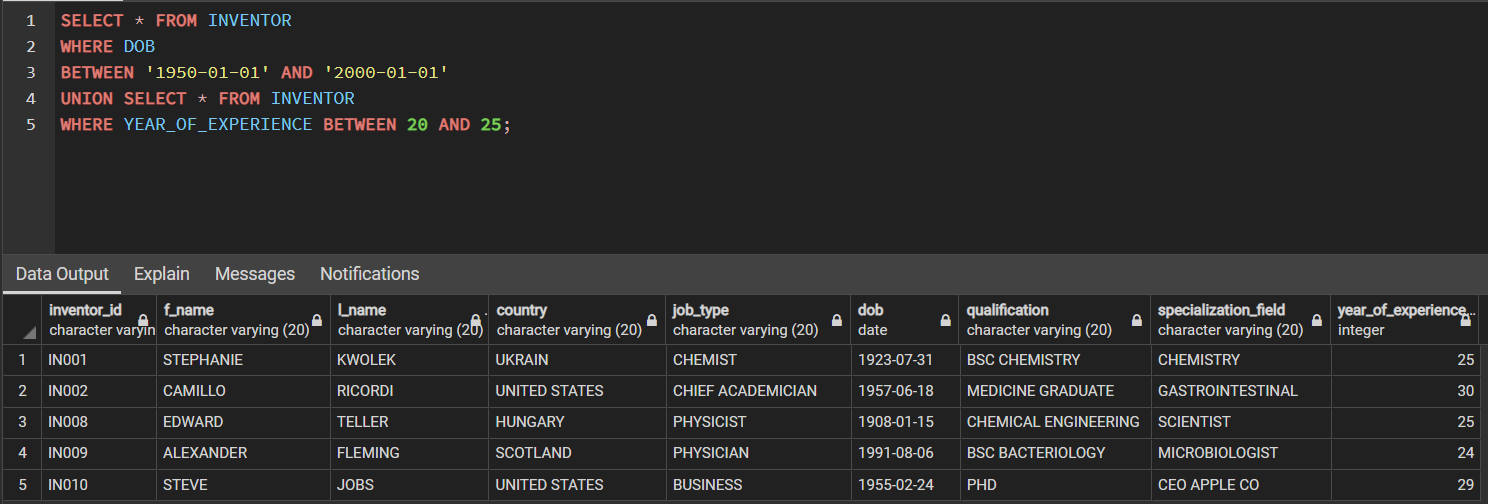
* It obtains the F\_NAME, DOB, name of the day, date of the month, name of the month and the year in which the Inventor born.
* **SELECT \* FROM INVENTION WHERE CATEGORY IN ('RESEARCH','MEDICINE','TECHNOLOGY') AND YEAR\_OF\_INVENTION BETWEEN 1950 AND 2000**



* This query selects all the tuples from the INVENTION table whose CATEGORY is one among RESEARCH, MEDICINE, TECHNOLOGY and the YEAR\_OF\_INVENTION should be in between 1950 and 2000.
* **SELECT \* FROM INVENTION WHERE CATEGORY NOT IN('MEDICINE','TECHNOLOGY') AND YEAR\_OF\_INVENTION NOT BETWEEN 1950 AND 2000**



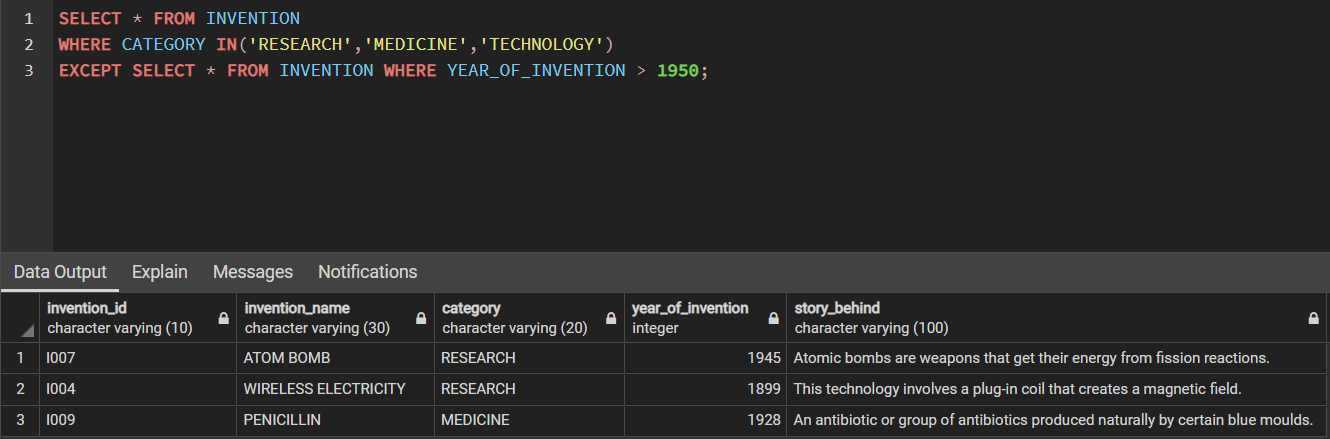
* This query selects all the tuples from INVENTION table whose CATEGORY is not MEDICINE and TECHNOLOGY and the YEAR\_OF\_INVENTION should not be in between 1950 and 2000.
* **SELECT \* FROM INVENTOR WHERE DOB BETWEEN '1950-01-01' AND '2000-01-01' UNION SELECT \* FROM INVENTOR WHERE YEAR\_OF\_EXPERIENCE BETWEEN 20 AND 25;**



* This query selects all the tuples from INVENTOR table whose DOB should be in between 1st January 1950 and 1st January 2000 and we also select all tuples from INVENTOR whose YEAR\_OF\_EXPERIENCE should be in between 20 and 25.
* We use UNION to combine these 2 select queries, where any duplicate row will be removed.
* **SELECT \* FROM INVENTION WHERE CATEGORY='RESEARCH' INTERSECT SELECT \* FROM INVENTION WHERE YEAR\_OF\_INVENTION BETWEEN 1900 AND 2000;**



* This query displays all data from INVENTION whose CATEGORY is RESEARCH and YEAR\_OF\_INVENTION is in between 1900 and 2000.
* Here, INTERSECT is used to join the 2 select queries, but only the common tuples are returned.
* **SELECT \* FROM INVENTION WHERE CATEGORY IN('RESEARCH','MEDICINE','TECHNOLOGY') EXCEPT SELECT \* FROM INVENTION WHERE YEAR\_OF\_INVENTION > 1950;**



* This query selects all the tuples from INVENTION whose CATEGORY is one among RESEARCH, MEDICINE, TECHNOLOGY and the YEAR\_OF\_INVENTION should not be >1950.
* The EXCEPT operator returns distinct rows from the first (left) query that are not in the output of the second (right) query.

**THANK YOU!!**

**DONE BY**

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HARSHA SATHISH - AM.EN.U4CSE19123

ARVIND KUMAR K - AM.EN.U4CSE19109

S. ABHISHEK - AM.EN.U4CSE19147