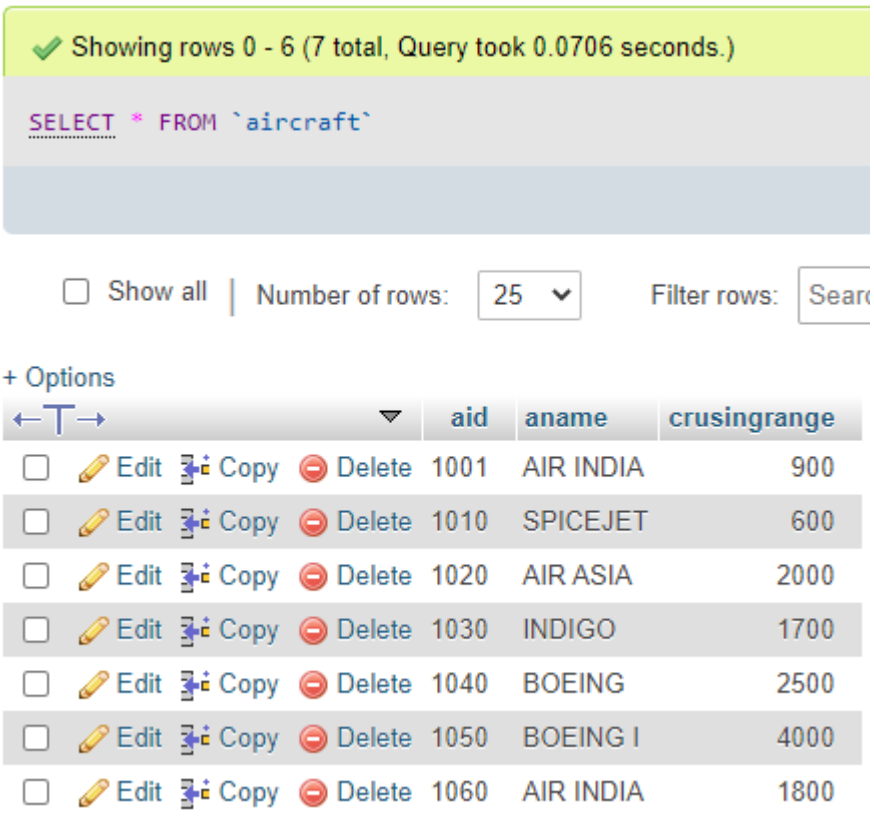
PROGRAM 5. AIRLINE FLIGHT DATABASE

Consider the following database that keeps track of airline flight information:
FLIGHTS (flno: integer, from: string, to: string, distance: integer, departs: time, arrives: time, price: integer)
AIRCRAFT (aid: integer, aname: string, cruisingrange: integer)
CERTIFIED (eid: integer, aid: integer)
EMPLOYEE (eid: integer, ename: string, salary: integer)
Note that the Employees relation describes pilots and other kinds of employees as well; Every pilot is certified
for some aircraft, and only pilots are certified to fly.
Write each of the following queries in SQL.
i. Find the names of aircraft such that all pilots certified to operate them have salaries more than Rs.80,000.
ii. For each pilot who is certified for more than three aircrafts, find the eid and the maximum cruising range of
the aircraft for which she or he is certified.
iii. Find the names of pilots whose salary is less than the price of the cheapest route from Bengaluru to
Frankfurt.
iv. For all aircraft with cruising range over 1000 Kms, find the name of the aircraft and the average salary of
all pilots certified for this aircraft.
v. Find the names of pilots certified for some Boeing aircraft.
vi. Find the aids of all aircraft that can be used on routes from Bengaluru to New Delhi.
vii. A customer wants to travel from Madison to New York with no more than two changes of flight. List the
choice of departure times from Madison if the customer wants to arrive in New York by 6 p.m.
viii. Print the name and salary of every non-pilot whose salary is more than the average salary for pilots.

```
--
-- Database: `airline_flight_db`
-- Table structure for table `aircraft`
--
CREATE TABLE `aircraft` (
  `aid` int(11) NOT NULL,
  `aname` varchar(75) NOT NULL,
  `crusingrange` int(11) NOT NULL
);
-- --------------------------------------------------------

--
```

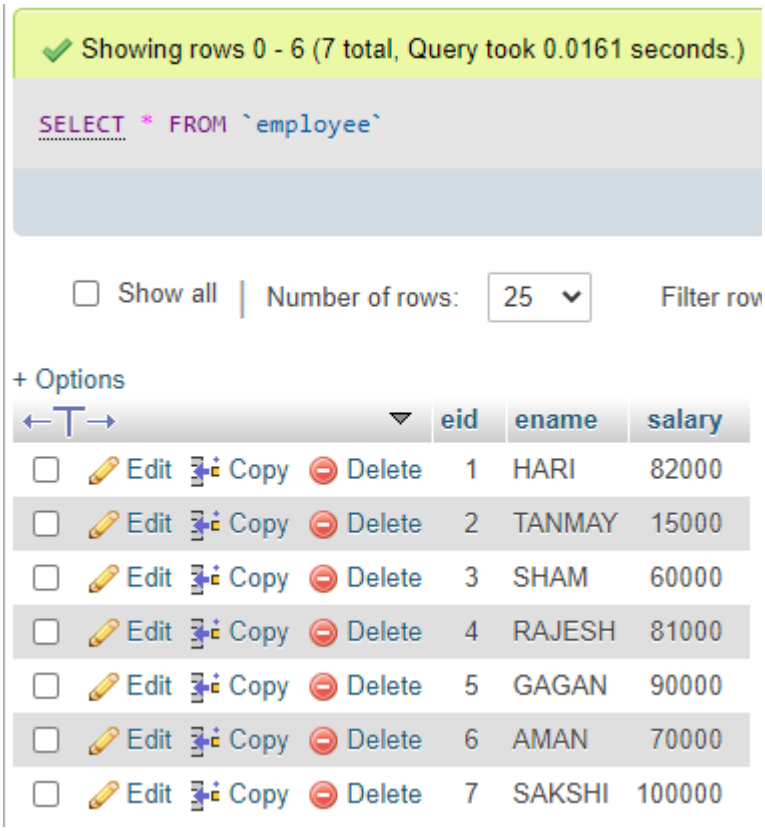
```
-- Table structure for table `certified`
--
CREATE TABLE `certified` (
  `eid1` int(11) NOT NULL,
  `aid1` int(11) NOT NULL
);
-- --------------------------------------------------------
--
-- Table structure for table `employee`
--
CREATE TABLE `employee` (
  `eid` int(11) NOT NULL,
  `ename` varchar(50) NOT NULL,
  `salary` int(11) NOT NULL
);
-- --------------------------------------------------------
--
-- Table structure for table `flights`
--
CREATE TABLE `flights` (
  `flno` int(11) NOT NULL,
  `from1` varchar(50) NOT NULL,
  `to1` varchar(50) NOT NULL,
  `distance` int(11) NOT NULL,
  `departs` time NOT NULL,
  `arrives` time NOT NULL,
  `price` int(11) NOT NULL
);

--
-- Indexes for dumped tables
--
-- Indexes for table `aircraft`
--
ALTER TABLE `aircraft` ADD PRIMARY KEY (`aid`);
-
-- Indexes for table `certified`
--
ALTER TABLE `certified`
  ADD KEY `eid1` (`eid1`),
  ADD KEY `aid1` (`aid1`);
--
-- Indexes for table `employee`
--
ALTER TABLE `employee`
  ADD PRIMARY KEY (`eid`);
```

```
--
-- Indexes for table `flights`
--
ALTER TABLE `flights`
  ADD PRIMARY KEY (`flno`);
--
-- Constraints for dumped tables
--
-- Constraints for table `certified`
--
ALTER TABLE `certified`
  ADD CONSTRAINT `certified_ibfk_1` FOREIGN KEY (`eid1`) REFERENCES
`employee` (`eid`),
  ADD CONSTRAINT `certified_ibfk_2` FOREIGN KEY (`aid1`) REFERENCES
`aircraft` (`aid`);
COMMIT;

INSERT INTO `aircraft` (`aid`, `aname`, `crusingrange`) VALUES ('100
1', 'AIR INDIA', '900'), ('1010', 'SPICEJET', '600'), ('1020', 'AIR
ASIA', '2000'), ('1030', 'INDIGO', '1700'), ('1040', 'BOEING', '2500
'), ('1050', 'BOEING I', '4000'), ('1060', 'AIR INDIA', '1800')
```



	aid	aname	crusingrange
Edit Copy Delete	1001	AIR INDIA	900
Edit Copy Delete	1010	SPICEJET	600
Edit Copy Delete	1020	AIR ASIA	2000
Edit Copy Delete	1030	INDIGO	1700
Edit Copy Delete	1040	BOEING	2500
Edit Copy Delete	1050	BOEING I	4000
Edit Copy Delete	1060	AIR INDIA	1800

```
INSERT INTO EMPLOYEE VALUES(3,'SHAM',60000);
INSERT INTO EMPLOYEE VALUES(2,'TANMAY',15000);
INSERT INTO EMPLOYEE VALUES(4,'RAJESH',81000);
INSERT INTO EMPLOYEE VALUES(1,'HARI',82000);
INSERT INTO EMPLOYEE VALUES(6,'AMAN',70000);
INSERT INTO EMPLOYEE VALUES(5,'GAGAN',90000);
INSERT INTO EMPLOYEE VALUES(7,'SAKSHI',100000);
```



Showing rows 0 - 6 (7 total, Query took 0.0161 seconds.)

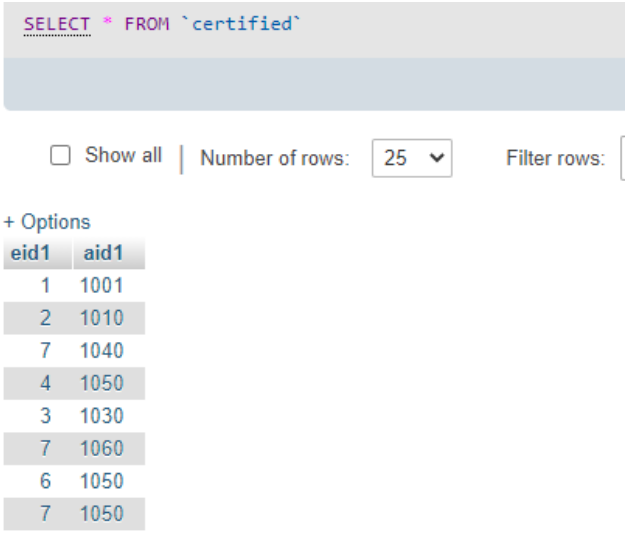
```
SELECT * FROM `employee`
```

Show all | Number of rows: 25 Filter row

+ Options

	eid	ename	salary
Edit Copy Delete	1	HARI	82000
Edit Copy Delete	2	TANMAY	15000
Edit Copy Delete	3	SHAM	60000
Edit Copy Delete	4	RAJESH	81000
Edit Copy Delete	5	GAGAN	90000
Edit Copy Delete	6	AMAN	70000
Edit Copy Delete	7	SAKSHI	100000

```
INSERT INTO `certified` (`eid1`, `aid1`) VALUES ('1', '1001'), ('2',
 '1010'), ('7', '1040'), ('4', '1050'), ('3', '1030'), ('7', '1060')
, ('6', '1050'), ('7', '1050');
```



```
SELECT * FROM `certified`
```

Show all | Number of rows: 25 Filter rows:

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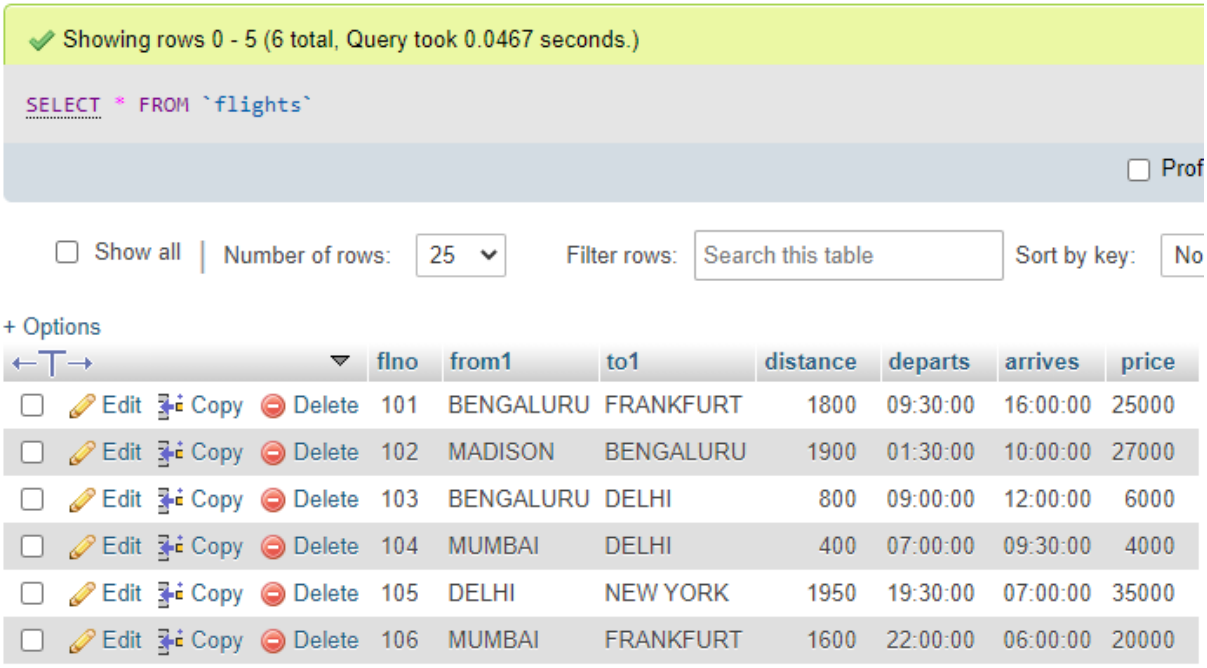
eid1	aid1
1	1001
2	1010
7	1040
4	1050
3	1030
7	1060
6	1050
7	1050

```
INSERT INTO `flights` (`flno`, `from1`, `to1`, `distance`, `departs`, `arr
ives`, `price`) VALUES
('101', 'BENGALURU', 'FRANKFURT', '1800', '09:30:00', '16:00:00', '25000')
, ('102', 'MADISON', 'BENGALURU', '1900', '01:30:00', '10:00:00', '27000')
, ('103', 'BENGALURU', 'MUMBAI', '600', '09:00:00', '12:00:00', '6000'),
('104', 'MUMBAI', 'DELHI', '400', '07:00:00', '09:30:00', '4000'),
('105','DELHI','NEW YORK','1950','19:30:00','07:00:00','35000'),
 ('106', 'MUMBAI', 'FRANKFURT', '1600', '22:00:00', '06:00:00', '20000')
```



Showing rows 0 - 5 (6 total, Query took 0.0467 seconds.)

```
SELECT * FROM `flights`
```

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Show all | Number of rows: 25 Filter rows: Search this table Sort by key: No

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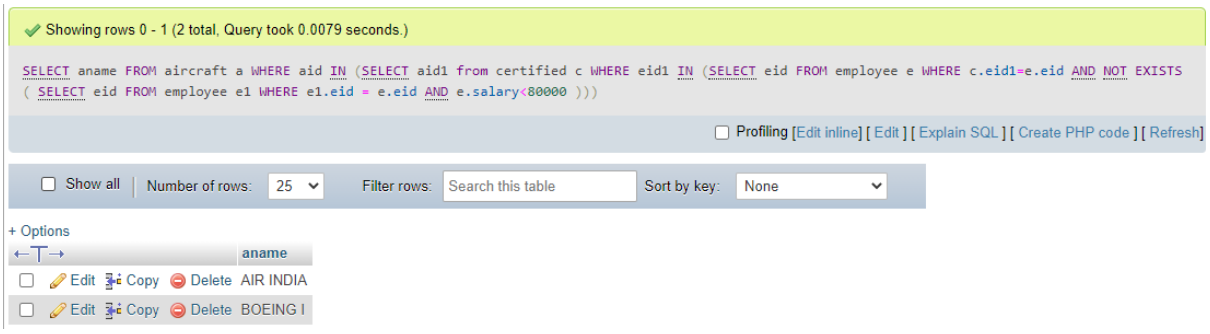
	flno	from1	to1	distance	departs	arrives	price
Edit Copy Delete	101	BENGALURU	FRANKFURT	1800	09:30:00	16:00:00	25000
Edit Copy Delete	102	MADISON	BENGALURU	1900	01:30:00	10:00:00	27000
Edit Copy Delete	103	BENGALURU	DELHI	800	09:00:00	12:00:00	6000
Edit Copy Delete	104	MUMBAI	DELHI	400	07:00:00	09:30:00	4000
Edit Copy Delete	105	DELHI	NEW YORK	1950	19:30:00	07:00:00	35000
Edit Copy Delete	106	MUMBAI	FRANKFURT	1600	22:00:00	06:00:00	20000

i. Find the names of aircraft such that all pilots certified to operate them have salaries more than Rs.80,000.

```
SELECT aname FROM aircraft a WHERE aid IN (SELECT aid1 from
certified c WHERE eid1 IN (SELECT eid FROM employee e WHERE
c.eid1=e.eid AND  NOT EXISTS ( SELECT eid FROM employee e1 WHERE
e1.eid = e.eid AND e.salary<80000 )))
```



Showing rows 0 - 1 (2 total, Query took 0.0079 seconds.)

```
SELECT aname FROM aircraft a WHERE aid IN (SELECT aid1 from certified c WHERE eid1 IN (SELECT eid FROM employee e WHERE c.eid1=e.eid AND NOT EXISTS
( SELECT eid FROM employee e1 WHERE e1.eid = e.eid AND e.salary<80000 )))
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

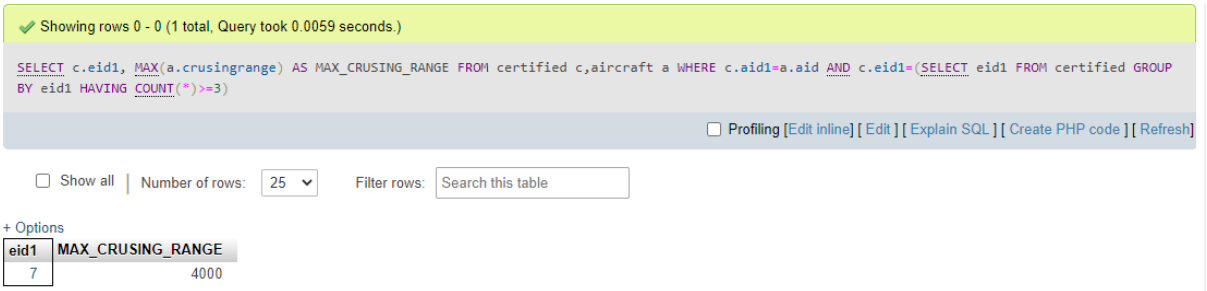
Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

	aname
Edit Copy Delete	AIR INDIA
Edit Copy Delete	BOEING I

ii. For each pilot who is certified for more than three aircrafts, find the eid and the maximum cruising range of the aircraft for which she or he is certified.

```
SELECT c.eid1, MAX(a.crusingrange) AS MAX_CRUSING_RANGE FROM
certified c,aircraft a WHERE c.aid1=a.aid AND c.eid1=(SELECT eid1
FROM certified GROUP BY eid1 HAVING COUNT(*)>=3)
```



Showing rows 0 - 0 (1 total, Query took 0.0059 seconds.)

```
SELECT c.eid1, MAX(a.crusingrange) AS MAX_CRUSING_RANGE FROM certified c,aircraft a WHERE c.aid1=a.aid AND c.eid1=(SELECT eid1 FROM certified GROUP
BY eid1 HAVING COUNT(*)>=3)
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

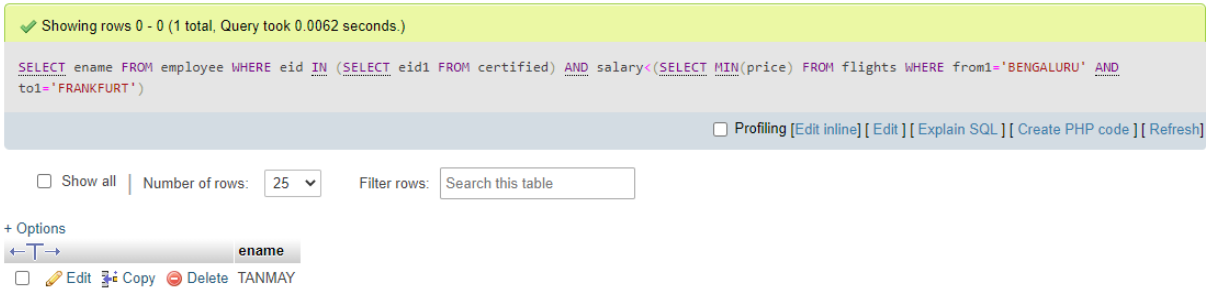
Show all | Number of rows: 25 Filter rows: Search this table

+ Options

eid1	MAX_CRUSING_RANGE
7	4000

iii. Find the names of pilots whose salary is less than the price of the cheapest route from Bengaluru to Frankfurt.

```
SELECT ename FROM employee WHERE eid IN (SELECT eid1 FROM certified)
AND salary<(SELECT MIN(price) FROM flights WHERE from1='BENGALURU'
AND to1='FRANKFURT')
```



Showing rows 0 - 0 (1 total, Query took 0.0062 seconds.)

```
SELECT ename FROM employee WHERE eid IN (SELECT eid1 FROM certified) AND salary<(SELECT MIN(price) FROM flights WHERE from1='BENGALURU' AND
to1='FRANKFURT')
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

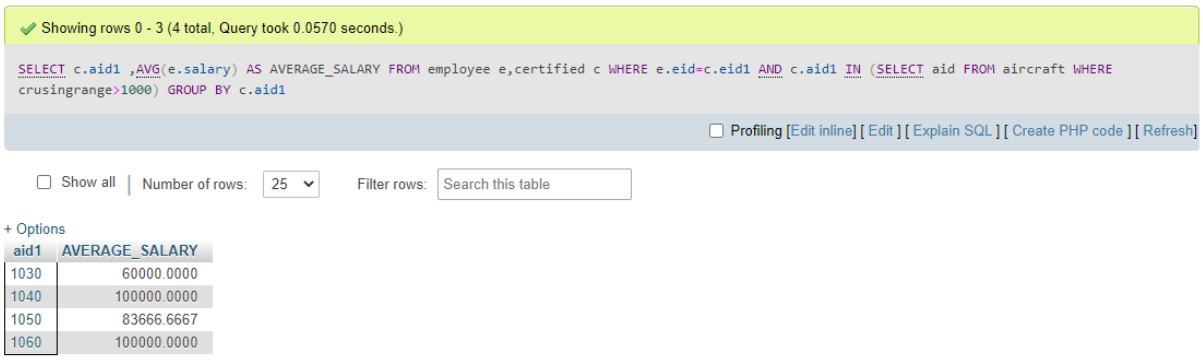
Show all | Number of rows: 25 Filter rows: Search this table

+ Options

← T →	ename
Edit Copy Delete	TANMAY

iv. For all aircraft with cruising range over 1000 Kms, find the name of the aircraft and the average salary of all pilots certified for this aircraft.

```
SELECT c.aid1 ,AVG(e.salary) AS AVERAGE_SALARY FROM employee
e,certified c WHERE e.eid=c.eid1 AND c.aid1 IN (SELECT aid FROM
aircraft WHERE crusingrange>1000) GROUP BY c.aid1
```



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```
SELECT c.aid1 ,AVG(e.salary) AS AVERAGE_SALARY FROM employee e,certified c WHERE e.eid=c.eid1 AND c.aid1 IN (SELECT aid FROM aircraft WHERE
crusingrange>1000) GROUP BY c.aid1
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 Filter rows: Search this table

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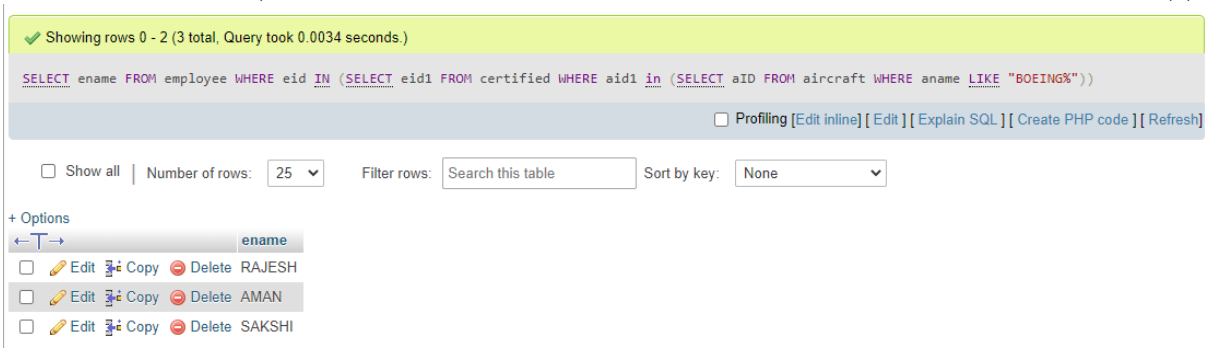
aid1	AVERAGE_SALARY
1030	60000.0000
1040	100000.0000
1050	83666.6667
1060	100000.0000

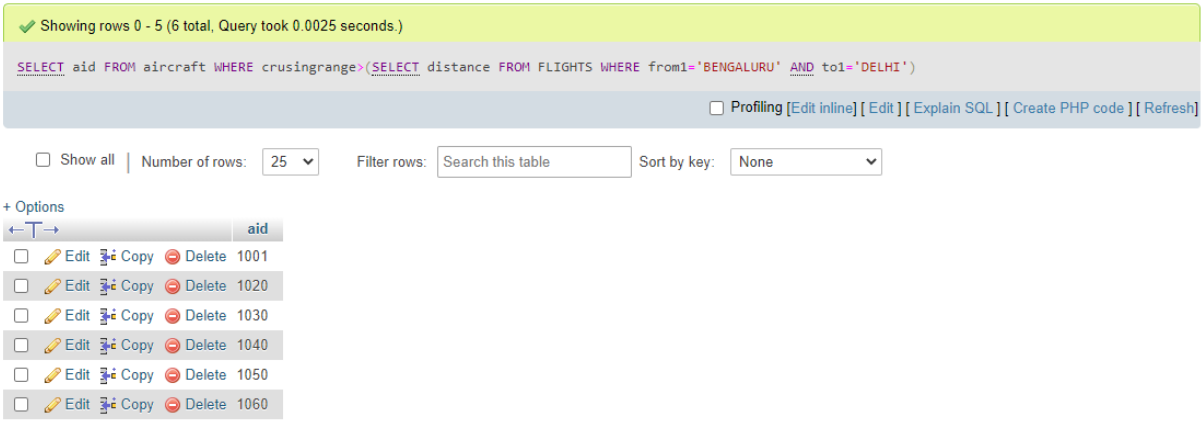
v. Find the names of pilots certified for some Boeing aircraft.

```
SELECT ename FROM employee WHERE eid IN (SELECT eid1 FROM certified
WHERE aid1 in (SELECT aID FROM aircraft WHERE aname LIKE "BOEING%"))
```



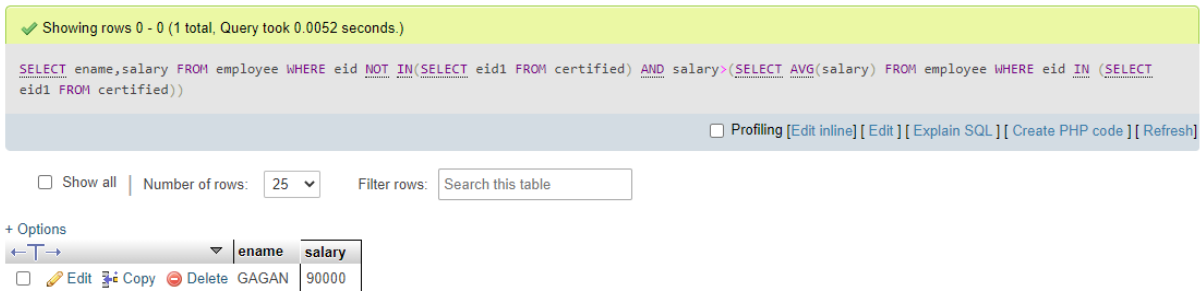
vi. Find the aids of all aircraft that can be used on routes from Bengaluru to New Delhi.

```
SELECT aid FROM aircraft WHERE crusingrange>(SELECT distance FROM
FLIGHTS WHERE from1='BENGALURU' AND to1='DELHI')
```



viii. Print the name and salary of every non-pilot whose salary is more than the average salary for pilots.

```
SELECT ename,salary FROM employee WHERE eid NOT IN(SELECT eid1 FROM
certified) AND salary>(SELECT AVG(salary) FROM employee WHERE eid IN
(SELECT eid1 FROM certified));
```



vii. A customer wants to travel from Madison to New York with no more than two changes of flight. List the choice of departure times from Madison if the customer wants to arrive in New York by 6 p.m.

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