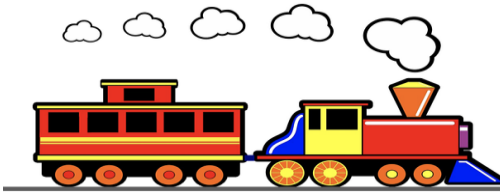




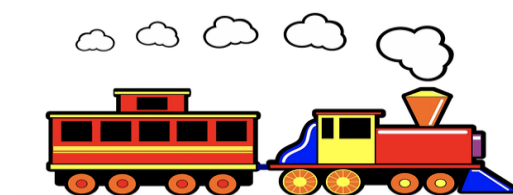
‘M-INDICATOR DATABASE’



INTRODUCTION

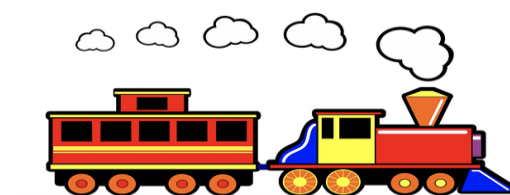
The ‘**M-INDICATOR DATABASE**’ aims to design and implement a MYSQL based dataset for; “**MUMBAI LOCAL TRAIN**” which stores information about local trains, local stations, train schedules.

M-Indicator is a transportation related mobile application that primarily provides information about public transportation in the cities of Mumbai and Pune. It contains details about 232 trains, making 3,000 daily trips through 108 stations on the city's suburban train network. It has 84,000 timetable entries. The application has been downloaded by over 1 crore users. It was created in 2010 by Sachin Teke, an IT engineer who is the founder and CEO of Mobond Software Consultancy that owns the application. The application hosts a chat on which Mumbai's 75 lakh commuters share real time information about rescheduling or cancellation of train services.



OBJECTIVES OF THE PROJECT: -

1. To Relate "Theory with Practice"
2. To implement the SQL queries on MYSQL DATABASE which will help to assess my SQL Knowledge and Skills.
3. To use the MYSQL M-INDICATOR DATABASE for the following: -
 - a. To track the train location and provide information about the train schedule.
 - b. To provide information about the local stations.
 - c. To generate queries in MYSQL which will provide the user with the desired result queries to support the decision making of the commuters.
 - d. To document the system to testing process, objectives and the test cases are tested and the expected results with the observed results are written with the result.



E-R DIAGRAM

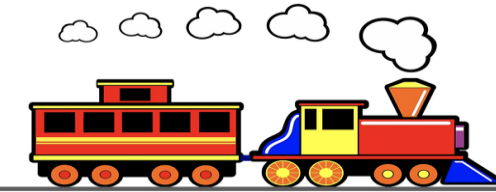
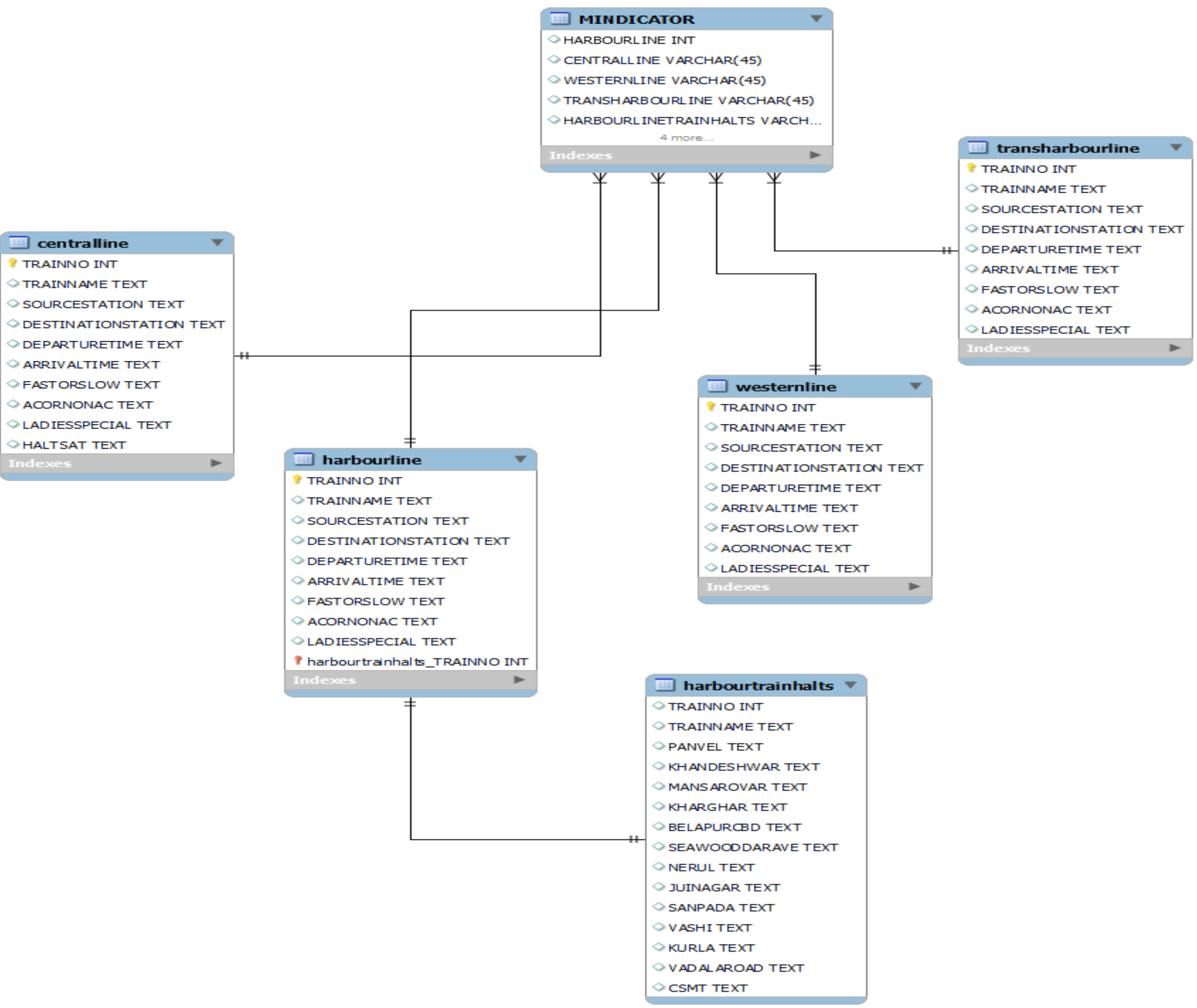
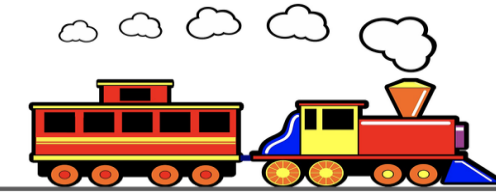




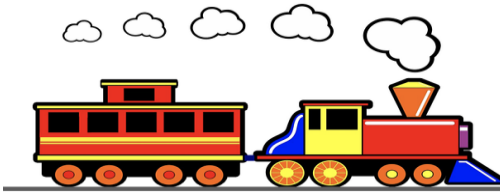
TABLE STRUCTURES IN MINDICATOR



```
mysql> show tables;
+-----+
| Tables_in_mindicator |
+-----+
| centralline           |
| harbourline           |
| harbourtrainhalts     |
| transharbourline      |
| westernline           |
+-----+
```

HARBOURLINE

```
mysql> desc harbourline;
+-----+-----+-----+-----+-----+-----+
| Field                | Type  | Null  | Key  | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| TRAINNO              | int   | NO    | PRI  | NULL    |       |
| TRAINNAME            | text  | YES   |      | NULL    |       |
| SOURCESTATION        | text  | YES   |      | NULL    |       |
| DESTINATIONSTATION   | text  | YES   |      | NULL    |       |
| DEPARTURETIME        | text  | YES   |      | NULL    |       |
| ARRIVALTIME          | text  | YES   |      | NULL    |       |
| FASTORSLOW           | text  | YES   |      | NULL    |       |
| ACORNONAC            | text  | YES   |      | NULL    |       |
| LADIESSPECIAL        | text  | YES   |      | NULL    |       |
+-----+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)
```

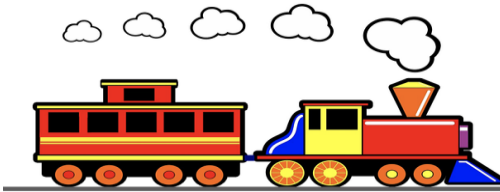


HARBOURTRAINHALTS

```
mysql> DESC HARBOURTRAINHALTS;
+-----+-----+-----+-----+-----+-----+
| Field          | Type  | Null  | Key  | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| TRAINNO        | int   | YES   |      | NULL    |       |
| TRAINNAME      | text  | YES   |      | NULL    |       |
| PANVEL         | text  | YES   |      | NULL    |       |
| KHANDESHWAR    | text  | YES   |      | NULL    |       |
| MANSAROVAR     | text  | YES   |      | NULL    |       |
| KHARGHAR       | text  | YES   |      | NULL    |       |
| BELAPURCBD     | text  | YES   |      | NULL    |       |
| SEAWOODDARAVE  | text  | YES   |      | NULL    |       |
| NERUL          | text  | YES   |      | NULL    |       |
| JUINAGAR       | text  | YES   |      | NULL    |       |
| SANPADA        | text  | YES   |      | NULL    |       |
| VASHI          | text  | YES   |      | NULL    |       |
| KURLA          | text  | YES   |      | NULL    |       |
| VADALAROAD     | text  | YES   |      | NULL    |       |
| CSMT           | text  | YES   |      | NULL    |       |
+-----+-----+-----+-----+-----+-----+
15 rows in set (0.00 sec)
```

TRANSHARBOURLINE

```
mysql> DESC TRANSHARBOURLINE;
+-----+-----+-----+-----+-----+-----+
| Field          | Type  | Null  | Key  | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| TRAINNO        | int   | YES   |      | NULL    |       |
| TRAINNAME      | text  | YES   |      | NULL    |       |
| SOURCESTATION  | text  | YES   |      | NULL    |       |
| DESTINATIONSTATION | text  | YES   |      | NULL    |       |
| DEPARTURETIME  | text  | YES   |      | NULL    |       |
| ARRIVALTIME    | text  | YES   |      | NULL    |       |
| FASTORSLOW     | text  | YES   |      | NULL    |       |
| ACORNONAC      | text  | YES   |      | NULL    |       |
| LADIESSPECIAL  | text  | YES   |      | NULL    |       |
+-----+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)
```





WESTERNLINE

```
mysql> DESC TRANSHARBOURLINE;
```

Field	Type	Null	Key	Default	Extra
TRAINNO	int	YES		NULL	
TRAINNAME	text	YES		NULL	
SOURCESTATION	text	YES		NULL	
DESTINATIONSTATION	text	YES		NULL	
DEPARTURETIME	text	YES		NULL	
ARRIVALTIME	text	YES		NULL	
FASTORSLOW	text	YES		NULL	
ACORNONAC	text	YES		NULL	
LADIESSPECIAL	text	YES		NULL	

```
9 rows in set (0.00 sec)
```

CENTRALLINE

```
mysql> DESC CENTRALLINE;
```

Field	Type	Null	Key	Default	Extra
TRAINNO	int	YES		NULL	
TRAINNAME	text	YES		NULL	
SOURCESTATION	text	YES		NULL	
DESTINATIONSTATION	text	YES		NULL	
DEPARTURETIME	text	YES		NULL	
ARRIVALTIME	text	YES		NULL	
FASTORSLOW	text	YES		NULL	
ACORNONAC	text	YES		NULL	
LADIESSPECIAL	text	YES		NULL	
HALTSAT	text	YES		NULL	

```
10 rows in set (0.00 sec)
```


DATABASE TABLES CONTENTS

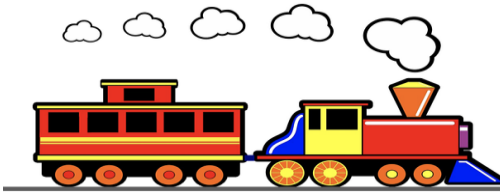
CENTRAL LINE TABLE

SELECT * FROM CENTRALLINE;

```
mysql> SELECT * FROM CENTRALLINE;
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPATURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL	HALTSAT
96402	KASARA_CSMT	KASARA	CSMT	8:51	11:22	SLOW	NONAC		
96404	KASARA_CSMT	KASARA	CSMT	9:59	12:38	SLOW	NONAC	LADIESSPECIAL	
95402	KASARA_CSMT	KASARA	CSMT	10:10	12:25	FAST	NONAC		
95404	KASARA_CSMT	KASARA	CSMT	10:57	13:18	SLOW	AC		
95406	KASARA_CSMT	KASARA	CSMT	11:22	13:40	SLOW	NONAC		
95408	KASARA_CSMT	KASARA	CSMT	12:18	14:49	SLOW	NONAC	LADIESSPECIAL	
95410	KASARA_CSMT	KASARA	CSMT	13:17	15:46	SLOW	AC		
95412	KASARA_CSMT	KASARA	CSMT	14:10	16:08	FAST	NONAC		
95414	KASARA_CSMT	KASARA	CSMT	15:21	17:40	SLOW	NONAC		
95416	KASARA_CSMT	KASARA	CSMT	16:41	18:00	SLOW	NONAC	LADIESSPECIAL	

10 rows in set (0.00 sec)



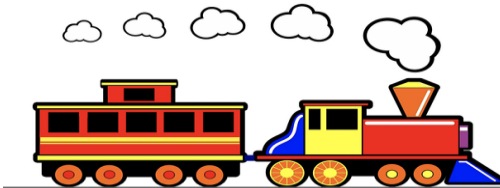
HARBOUR LINE TABLE

SELECT * FROM HARBOURLINE;

```
mysql> SELECT * FROM HARBOURLINE;
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
98004	PANVEL_CSMT	PANVEL	CSMT	08:03	09:22	SLOW	NONAC	
98006	PANVEL_CSMT	PANVEL	CSMT	08:27	09:47	SLOW	NONAC	
98008	PANVEL_CSMT	PANVEL	CSMT	08:49	09:08	SLOW	AC	
98010	PANVEL_CSMT	PANVEL	CSMT	09:05	10:00	FAST	NONAC	LADIESSPECIAL
98012	PANVEL_CSMT	PANVEL	CSMT	09:17	10:36	SLOW	AC	
98014	PANVEL_CSMT	PANVEL	CSMT	09:31	10:50	SLOW	NONAC	
98016	PANVEL_CSMT	PANVEL	CSMT	09:41	10:59	SLOW	NONAC	LADIESSPECIAL
99002	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:33	09:00	FAST	NONAC	
99004	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:53	09:20	SLOW	NONAC	
99006	PANVEL_JUINAGAR	PANVEL	JUINAGAR	09:21	10:48	FAST	NONAC	

10 rows in set (0.00 sec)



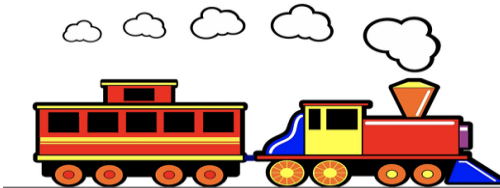
TRANSHARBOURLINE

SELECT * FROM TRANSHARBOURLINE;

```
mysql> SELECT * FROM TRANSHARBOURLINE;
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
99002	PANVEL_THANE	PANVEL	THANE	09:33	10:25	FAST	NONAC	
99004	PANVEL_THANE	PANVEL	THANE	09:53	10:45	FAST	NONAC	
99006	PANVEL_THANE	PANVEL	THANE	10:21	11:13	SLOW	NONAC	
99008	PANVEL_THANE	PANVEL	THANE	10:44	11:38	FAST	AC	
99010	PANVEL_THANE	PANVEL	THANE	11:13	12:05	FAST	NONAC	
99012	PANVEL_THANE	PANVEL	THANE	11:37	12:29	FAST	NONAC	LADIESSPECIAL
99014	PANVEL_THANE	PANVEL	THANE	12:01	12:50	SLOW	AC	
99016	PANVEL_THANE	PANVEL	THANE	12:18	13:10	FAST	AC	
99018	PANVEL_THANE	PANVEL	THANE	12:43	13:36	FAST	NONAC	
99020	PANVEL_THANE	PANVEL	THANE	13:04	13:47	SLOW	AC	LADIESSPECIAL

10 rows in set (0.00 sec)



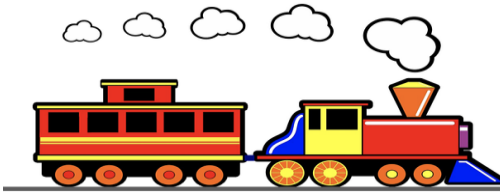
HARBOURTRAINHALTS

SELECT * FROM HARBOURTRAINHALTS;

```
mysql> SELECT * FROM HARBOURTRAINHALTS;
```

TRAINNO	TRAINNAME	PANVEL	KHANDESHWAR	MANSAROVAR	KHARGHAR	BELAPURCBD	SEAWOODDARAVE	NERUL	JUINAGAR	SANPADA	VASHI	KURLA	VADALAROAD	CSMT
98004	PANVEL_CSMT	08:03	08:08	08:11	08:14	08:18	08:22	08:25	08:28	08:31	08:33	08:52	09:04	09:22
98006	PANVEL_CSMT	08:27	08:32	08:35	08:38	08:42	08:46	08:49	08:52	08:55	08:57	09:16	09:28	09:47
98002	PANVEL_JUINAGAR	08:33					08:52	08:56	09:00					
98008	PANVEL_CSMT	08:49	08:54	08:57	09:00	09:04	09:08	09:11	09:14	09:17	09:19	09:38	09:50	10:08
99004	PANVEL_JUINAGAR	08:53	08:58	09:01	09:04	09:08	09:12	09:15	09:20					
98010	PANVEL_CSMT	09:05			09:16			09:27			09:35			10:00
98012	PANVEL_CSMT	09:17	09:22	09:25	09:28	09:32	09:36	09:39	09:42	09:45	09:47	10:06	10:18	10:36
99006	PANVEL_JUINAGAR	09:21					09:40	09:44	09:48					
98014	PANVEL_CSMT	09:31	09:36	09:39	09:02	09:46	09:50	09:53	09:56	09:59	10:01	10:09	10:12	10:33
98016	PANVEL_CSMT	09:41	09:45	09:48	09:51	09:55	09:59	10:02	10:05	10:08	10:10	10:29	10:41	10:59

10 rows in set (0.00 sec)



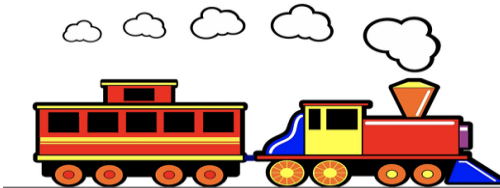
1.DISPLAY DETAILS OF THE TRAINS RUNNING ON HARBOURLINE?

SELECT * FROM HARBOURLINE:

```
mysql> SELECT * FROM HARBOURLINE;
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
98004	PANVEL_CSMT	PANVEL	CSMT	08:03	09:22	SLOW	NONAC	
98006	PANVEL_CSMT	PANVEL	CSMT	08:27	09:47	SLOW	NONAC	
98008	PANVEL_CSMT	PANVEL	CSMT	08:49	09:08	SLOW	AC	
98010	PANVEL_CSMT	PANVEL	CSMT	09:05	10:00	FAST	NONAC	LADIESSPECIAL
98012	PANVEL_CSMT	PANVEL	CSMT	09:17	10:36	SLOW	AC	
98014	PANVEL_CSMT	PANVEL	CSMT	09:31	10:50	SLOW	NONAC	
98016	PANVEL_CSMT	PANVEL	CSMT	09:41	10:59	SLOW	NONAC	LADIESSPECIAL
99002	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:33	09:00	FAST	NONAC	
99004	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:53	09:20	SLOW	NONAC	
99006	PANVEL_JUINAGAR	PANVEL	JUINAGAR	09:21	10:48	FAST	NONAC	

10 rows in set (0.00 sec)



TIMESTAMP FUNCTION

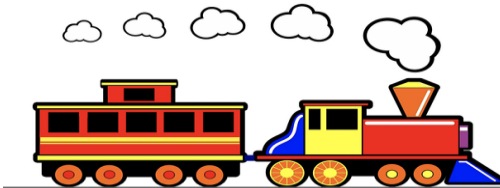
2.DISPLAY THE JOURNEY TIME FOR THE TRAINS RUNNING ON HARBOURLINE?

SELECT TRAINNO, DEPARTURETIME, ARRIVALTIME, TIMESTAMPDIFF (MINUTE, DEPARTURETIME, ARRIVALTIME) AS JOURNEYTIMEINMINUTES FROM HARBOURLINE;

```
mysql> SELECT
-> TRAINNO,
-> DEPARTURETIME,
-> ARRIVALTIME,
-> TIMESTAMPDIFF(MINUTE,DEPARTURETIME,ARRIVALTIME) AS JOURNEYTIMEINMINUTES FROM HARBOURLINE;
```

TRAINNO	DEPARTURETIME	ARRIVALTIME	JOURNEYTIMEINMINUTES
98004	08:03:00	09:22:00	79
98006	08:27:00	09:47:00	80
99002	08:33:00	09:00:00	27
98008	08:49:00	09:08:00	19
99004	08:53:00	09:20:00	27
98010	09:05:00	10:00:00	55
98012	09:17:00	10:36:00	79
99006	09:21:00	10:48:00	87
98014	09:31:00	10:50:00	79
98016	09:41:00	10:59:00	78

10 rows in set (0.00 sec)



SQL IN OPERATOR (A SHORTHAND FOR MULTIPLE OR CONDITIONS)

3.DISPLAY THE DETAILS OF ONLY TRAINNO “98008’ AND “98010”

SELECT * FROM HARBOURLINE WHERE TRAINNO IN ('98008','98012');

```
mysql> SELECT * FROM HARBOURLINE WHERE TRAINNO IN ('98008','98012');
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
98008	PANVEL_CSMT	PANVEL	CSMT	08:49:00	09:08:00	SLOW	AC	
98012	PANVEL_CSMT	PANVEL	CSMT	09:17:00	10:36:00	SLOW	AC	

2 rows in set (0.00 sec)

AND OPERATOR: - TO FETCH THE DATA OF SINGLE ROW

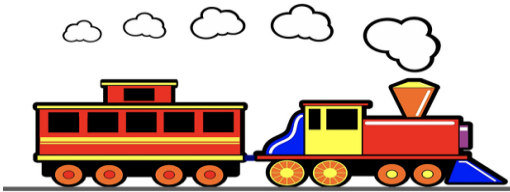
4.DISPLAY THE TRAIN WHOSE SOURCE AND DESTINATION IS PANVEL AND CSMT RESPECTIVELY

SELECT * FROM HARBOURLINE WHERE SOURCESTATION = "PANVEL" AND DESTINATIONSTATION = "CSMT";

```
mysql> SELECT * FROM HARBOURLINE WHERE SOURCESTATION = "PANVEL" AND DESTINATIONSTATION = "CSMT";
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
98004	PANVEL_CSMT	PANVEL	CSMT	08:03:00	09:22:00	SLOW	NONAC	
98006	PANVEL_CSMT	PANVEL	CSMT	08:27:00	09:47:00	SLOW	NONAC	
98008	PANVEL_CSMT	PANVEL	CSMT	08:49:00	09:08:00	SLOW	AC	
98010	PANVEL_CSMT	PANVEL	CSMT	09:05:00	10:00:00	FAST	NONAC	LADIESSPECIAL
98012	PANVEL_CSMT	PANVEL	CSMT	09:17:00	10:36:00	SLOW	AC	
98014	PANVEL_CSMT	PANVEL	CSMT	09:31:00	10:50:00	SLOW	NONAC	
98016	PANVEL_CSMT	PANVEL	CSMT	09:41:00	10:59:00	SLOW	NONAC	LADIESSPECIAL

7 rows in set (0.00 sec)





```
SELECT * FROM HARBOURLINE WHERE TRAINNO = '98010' OR DESTINATIONSTATION = "JUNAGAR";
```

```
mysql> SELECT * FROM HARBOURLINE WHERE TRAINNO = '98010' OR DESTINATIONSTATION = "JAINAGAR";
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
99002	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:33:00	09:00:00	FAST	NONAC	
99004	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:53:00	09:20:00	SLOW	NONAC	
98010	PANVEL_CSMT	PANVEL	CSMT	09:05:00	10:00:00	FAST	NONAC	LADIESSPECIAL
99006	PANVEL_JUINAGAR	PANVEL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC	

4 rows in set (0.00 sec)

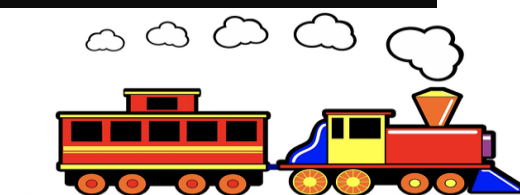
><OPERATOR (LESS THAN GREATER THAN)

```
SELECT * FROM HARBOURLINE WHERE DEPARTURETIME > '09:00:00';
```

```
mysql> SELECT * FROM HARBOURLINE WHERE DEPARTURETIME > '09:00:00';
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
98010	PANVEL_CSMT	PANVEL	CSMT	09:05:00	10:00:00	FAST	NONAC	LADIESSPECIAL
98012	PANVEL_CSMT	PANVEL	CSMT	09:17:00	10:36:00	SLOW	AC	
99006	PANVEL_JUINAGAR	PANVEL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC	
98014	PANVEL_CSMT	PANVEL	CSMT	09:31:00	10:50:00	SLOW	NONAC	
98016	PANVEL_CSMT	PANVEL	CSMT	09:41:00	10:59:00	SLOW	NONAC	LADIESSPECIAL

5 rows in set (0.00 sec)



SELECT * FROM HARBOURLINE WHERE DEPARTURETIME < '9:00';

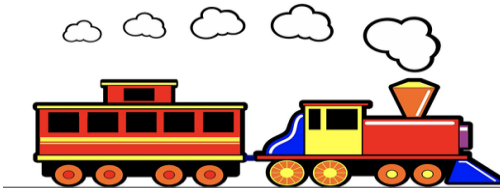
```
mysql> SELECT * FROM HARBOURLINE WHERE DEPARTURETIME < '9:00';
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| TRAINNO | TRAINNAME | SOURCESTATION | DESTINATIONSTATION | DEPARTURETIME | ARRIVALTIME | FASTORSLOW | ACORNONAC | LADIESSPECIAL |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 98004 | PANVEL_CSMT | PANVEL | CSMT | 08:03:00 | 09:22:00 | SLOW | NONAC | |
| 98006 | PANVEL_CSMT | PANVEL | CSMT | 08:27:00 | 09:47:00 | SLOW | NONAC | |
| 99002 | PANVEL_JUINAGAR | PANVEL | JUINAGAR | 08:33:00 | 09:00:00 | FAST | NONAC | |
| 98008 | PANVEL_CSMT | PANVEL | CSMT | 08:49:00 | 09:08:00 | SLOW | AC | |
| 99004 | PANVEL_JUINAGAR | PANVEL | JUINAGAR | 08:53:00 | 09:20:00 | SLOW | NONAC | |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

ORDER BY (ASCENDING AND DESCENDING ORDER) & LIMIT FUNCTION USED TO SPECIFY THE RECORDS TO RETURN.

7.DISPLAY THE FIRST AND THE LAST TRAIN RUNNING FROM PANVEL IN THE HARBOURLINE

SELECT TRAINNO, TRAINNAME, DEPARTURETIME FROM HARBOURLINE ORDER BY DEPARTURETIME DESC LIMIT 1;

```
mysql> select trainno,trainname,departuretime from harbourline order by departuretime desc limit 1;
+-----+-----+-----+
| trainno | trainname | departuretime |
+-----+-----+-----+
| 98016 | PANVEL_CSMT | 09:41:00 |
+-----+-----+-----+
1 row in set (0.00 sec)
```



SELECT TRAINNO, TRAINNAME, DEPARTURETIME FROM HARBOURLINE ORDER BY DEPARTURETIME LIMIT 1;

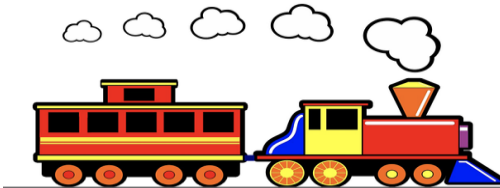
```
mysql> select trainno,trainname,departuretime from harbourline order by departuretime limit 1;
+-----+-----+-----+
| trainno | trainname | departuretime |
+-----+-----+-----+
| 98004 | PANVEL_CSMT | 08:03:00 |
+-----+-----+-----+
1 row in set (0.00 sec)
```

GROUP BY CLAUSE IS USED WITH AGGREGATE FUNCTION TO GROUP THE SIMILAR VALUES AND RETURN THE RESULTS

8.CATEGORISE THE NON-AC AND AC TRAINS DEPARTING FROM PANVEL?

SELECT COUNT(TRAINNO), TRAINNAME, ACORNONAC FROM HARBOURLINE GROUP BY TRAINNAME, ACORNONAC;

```
mysql> SELECT COUNT(TRAINNO),TRAINNAME ,ACORNONAC FROM HARBOURLINE GROUP BY TRAINNAME,ACORNONAC;
+-----+-----+-----+
| COUNT(TRAINNO) | TRAINNAME | ACORNONAC |
+-----+-----+-----+
| 5 | PANVEL_CSMT | NONAC |
| 3 | PANVEL_JUINAGAR | NONAC |
| 2 | PANVEL_CSMT | AC |
+-----+-----+-----+
3 rows in set (0.00 sec)
```





9.DISPLAY THE TRAIN WHICH DOES NOT HALTS AT ALL STATIONS?

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
99002	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:33:00	09:00:00	FAST	NONAC	
98010	PANVEL_CSMT	PANVEL	CSMT	09:05:00	10:00:00	FAST	NONAC	LADIESSPECIAL
99006	PANVEL_JUINAGAR	PANVEL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC	

3 rows in set (0.00 sec)

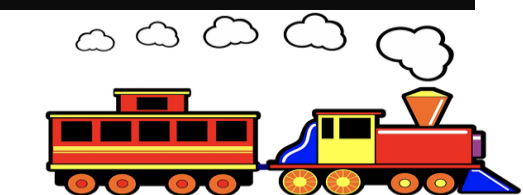
```
SELECT * FROM HARBOURLINE WHERE FASTORSLOW = "FAST";
```

MAX FUNCTION USING SUBQUERY DISPLAYING LARGEST VALUE

10. DISPLAY THE SECOND LAST TRAIN LEAVING FROM PANVEL STATION?

```
SELECT MAX(DEPARTURETIME) FROM HARBOURLNE WHERE DEPARTURETIME NOT IN (SELECT MAX(DEPARTURETIME) FROM HARBOURLINE);
```

```
+-----+
| MAX(DEPARTURETIME) |
+-----+
| 09:31:00           |
+-----+
1 row in set (0.00 sec)
```



HAVING CLAUSE WAS INTRODUCED BECAUSE WHERE CANNOT BE USED WITH AGGREGATE FUNCTION

11. DISPLAY THE COUNT OF PANVEL TO CSMT TRAINS RUNNING ON HARBOURLINE?
SELECT TRAINNAME, COUNT(TRAINNO) FROM HARBOURLINE GROUP BY TRAINNAME HAVING COUNT(TRAINNO) > 4;

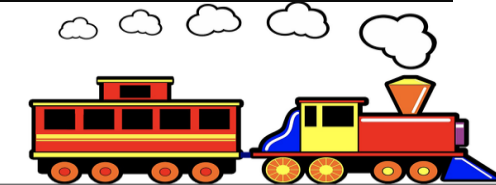
```
mysql> select trainname,count(trainno) from harbourline group by trainname having count(trainno) > 4;
+-----+-----+
| trainname | count(trainno) |
+-----+-----+
| PANVEL_CSMT | 7 |
+-----+-----+
1 row in set (0.00 sec)
```

NOTE: - ORDER OF SYNTAX IN SQL: - WHERE – GROUP BY-HAVING-ORDER BY

BETWEEN OPERATOR

12. DISPLAY THE DETAILS OF THE TRAIN WHICH ARRIVES AT PANVEL BETWEEN 8:00 AM TO 09:15 AM?

```
mysql> select * from harbourline where departuretime between "8:00" and "9:15";
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| TRAINNO | TRAINNAME | SOURCESTATION | DESTINATIONSTATION | DEPARTURETIME | ARRIVALTIME | FASTORSLOW | ACORNONAC | LADIESSPECIAL |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 98004 | PANVEL_CSMT | PANVEL | CSMT | 08:03:00 | 09:22:00 | SLOW | NONAC | |
| 98006 | PANVEL_CSMT | PANVEL | CSMT | 08:27:00 | 09:47:00 | SLOW | NONAC | |
| 99002 | PANVEL_JUINAGAR | PANVEL | JUINAGAR | 08:33:00 | 09:00:00 | FAST | NONAC | |
| 98008 | PANVEL_CSMT | PANVEL | CSMT | 08:49:00 | 09:08:00 | SLOW | AC | |
| 99004 | PANVEL_JUINAGAR | PANVEL | JUINAGAR | 08:53:00 | 09:20:00 | SLOW | NONAC | |
| 98010 | PANVEL_CSMT | PANVEL | CSMT | 09:05:00 | 10:00:00 | FAST | NONAC | LADIESSPECIAL |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```



MAX AND MIN TO DISPLAY THE HIGHEST AND LOWEST VALUE

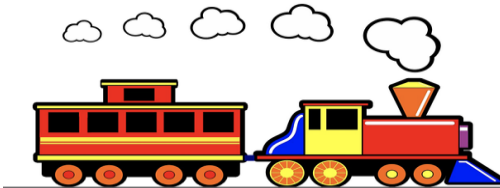
13. DSIPLAY THE FIRST AND THE LAST PANVEL JUINAGAR TRAIN ‘

SELECT TRAINNAME, MAX(DEPARTURETIME) FROM HARBOURLINE WHERE TRAINNAME = “PANVEL_JUINAGAR” GROUP BY TRAINNAME;

```
mysql> SELECT TRAINNAME,MAX(DEPARTURETIME) FROM HARBOURLINE WHERE TRAINNAME = "PANVEL_JUINAGAR" GROUP BY TRAINNAME ;
+-----+-----+
| TRAINNAME      | MAX(DEPARTURETIME) |
+-----+-----+
| PANVEL_JUINAGAR | 09:21:00           |
+-----+-----+
1 row in set (0.00 sec)
```

SELECT TRAINNAME, MIN(DEPARTURETIME) FROM HARBOURLINE WHERE TRAINNAME = “PANVEL_JUINAGAR” GROUP BY TRAINNAME;

```
mysql> SELECT TRAINNAME,MIN(DEPARTURETIME) FROM HARBOURLINE WHERE TRAINNAME = "PANVEL_JUINAGAR" GROUP BY TRAINNAME ;
+-----+-----+
| TRAINNAME      | MIN(DEPARTURETIME) |
+-----+-----+
| PANVEL_JUINAGAR | 08:33:00           |
+-----+-----+
1 row in set (0.00 sec)
```



DELETE ROWS

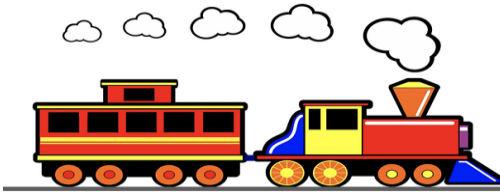
14. REMOVE THE LADIESPECIAL RECORDS IN THE TABLE?
DELETE FROM HARBOURLINE WHERE LADIESPECIAL = "LADIESPECIAL";

```
mysql> DELETE FROM HARBOURLINE
-> WHERE LADIESPECIAL = "LADIESPECIAL";
Query OK, 2 rows affected (0.01 sec)
```

```
mysql> SELECT * FROM HARBOURLINE;
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESPECIAL
98004	PANVEL_CSMT	PANVEL	CSMT	08:03:00	09:22:00	SLOW	NONAC	
98006	PANVEL_CSMT	PANVEL	CSMT	08:27:00	09:47:00	SLOW	NONAC	
99002	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:33:00	09:00:00	FAST	NONAC	
98008	PANVEL_CSMT	PANVEL	CSMT	08:49:00	09:08:00	SLOW	AC	
99004	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:53:00	09:20:00	SLOW	NONAC	
98012	PANVEL_CSMT	PANVEL	CSMT	09:17:00	10:36:00	SLOW	AC	
99006	PANVEL_JUINAGAR	PANVEL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC	
98014	PANVEL_CSMT	PANVEL	CSMT	09:31:00	10:50:00	SLOW	NONAC	

8 rows in set (0.00 sec)



UPDATE RECORDS IS USED TO MODIFY THE EXISTING RECORDS IN THE TABLE.

15. UPDATE THE LADIESPECIAL RESERVATION FOR TRAINNO 98004 AND 98006

UPDATE HARBOURLINE

SET LADIESPECIAL = "YES"

WHERE TRAINNO IN ("98004","98006");

```
mysql> SELECT * FROM HARBOURLINE;
```

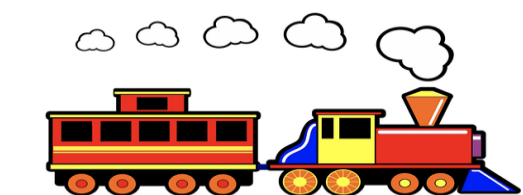
TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
98004	PANVEL_CSMT	PANVEL	CSMT	08:03:00	09:22:00	SLOW	NONAC	YES
98006	PANVEL_CSMT	PANVEL	CSMT	08:27:00	09:47:00	SLOW	NONAC	YES
99002	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:33:00	09:00:00	FAST	NONAC	
98008	PANVEL_CSMT	PANVEL	CSMT	08:49:00	09:08:00	SLOW	AC	
99004	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:53:00	09:20:00	SLOW	NONAC	
98012	PANVEL_CSMT	PANVEL	CSMT	09:17:00	10:36:00	SLOW	AC	
99006	PANVEL_JUINAGAR	PANVEL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC	
98014	PANVEL_CSMT	PANVEL	CSMT	09:31:00	10:50:00	SLOW	NONAC	

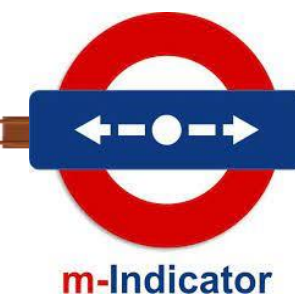
8 rows in set (0.00 sec)

16. UPDATE AND ADD COLUMN MEGA BLOCK IN THE HARBOURLNE TABLE

ALTER TABLE HARBOURLINE

```
ADD MEGABLOCK VARCHAR(20);
```





```
mysql> ALTER TABLE HARBOURLINE
-> ADD MEGABLOCK VARCHAR(20);
Query OK, 0 rows affected (0.01 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM HARBOURLINE;
```

TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL	MEGABLOCK
98004	PANVEL_CSMT	PANVEL	CSMT	08:03:00	09:22:00	SLOW	NONAC	YES	NULL
98006	PANVEL_CSMT	PANVEL	CSMT	08:27:00	09:47:00	SLOW	NONAC	YES	NULL
99002	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:33:00	09:00:00	FAST	NONAC		NULL
98008	PANVEL_CSMT	PANVEL	CSMT	08:49:00	09:08:00	SLOW	AC		NULL
99004	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:53:00	09:20:00	SLOW	NONAC		NULL
98012	PANVEL_CSMT	PANVEL	CSMT	09:17:00	10:36:00	SLOW	AC		NULL
99006	PANVEL_JUINAGAR	PANVEL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC		NULL
98014	PANVEL_CSMT	PANVEL	CSMT	09:31:00	10:50:00	SLOW	NONAC		NULL

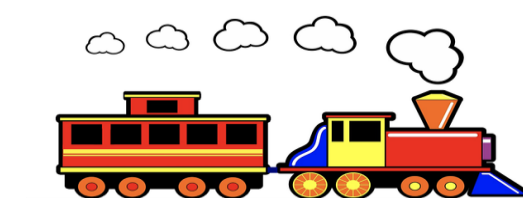
```
8 rows in set (0.00 sec)
```

DROP COLUMN IS USED TO DROP THE COLUMN

17. DROP THE COLUMN MEGABLOCK IN THE HARBOURLINE

ALTER TABLE HARBOURLINE

DROP MEGABLOCK;



```
mysql> ALTER TABLE HARBOURLINE
-> ADD MEGABLOCK VARCHAR(20);
Query OK, 0 rows affected (0.01 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM HARBOURLINE;
```

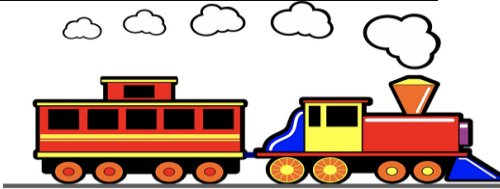
TRAINNO	TRAINNAME	SOURCESTATION	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL	MEGABLOCK
98004	PANVEL_CSMT	PANVEL	CSMT	08:03:00	09:22:00	SLOW	NONAC	YES	NULL
98006	PANVEL_CSMT	PANVEL	CSMT	08:27:00	09:47:00	SLOW	NONAC	YES	NULL
99002	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:33:00	09:00:00	FAST	NONAC		NULL
98008	PANVEL_CSMT	PANVEL	CSMT	08:49:00	09:08:00	SLOW	AC		NULL
99004	PANVEL_JUINAGAR	PANVEL	JUINAGAR	08:53:00	09:20:00	SLOW	NONAC		NULL
98012	PANVEL_CSMT	PANVEL	CSMT	09:17:00	10:36:00	SLOW	AC		NULL
99006	PANVEL_JUINAGAR	PANVEL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC		NULL
98014	PANVEL_CSMT	PANVEL	CSMT	09:31:00	10:50:00	SLOW	NONAC		NULL

8 rows in set (0.00 sec)

```
mysql> SELECT * FROM HARBOURLINE;
```

TRAINNO	TRAINNAME	SOURCESTATION	BLOCK	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
98004	PANVEL_CSMT	PANVEL	NULL	CSMT	08:03:00	09:22:00	SLOW	NONAC	YES
98006	PANVEL_CSMT	PANVEL	NULL	CSMT	08:27:00	09:47:00	SLOW	NONAC	YES
99002	PANVEL_JUINAGAR	PANVEL	NULL	JUINAGAR	08:33:00	09:00:00	FAST	NONAC	
98008	PANVEL_CSMT	PANVEL	NULL	CSMT	08:49:00	09:08:00	SLOW	AC	
99004	PANVEL_JUINAGAR	PANVEL	NULL	JUINAGAR	08:53:00	09:20:00	SLOW	NONAC	
98012	PANVEL_CSMT	PANVEL	NULL	CSMT	09:17:00	10:36:00	SLOW	AC	
99006	PANVEL_JUINAGAR	PANVEL	NULL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC	
98014	PANVEL_CSMT	PANVEL	NULL	CSMT	09:31:00	10:50:00	SLOW	NONAC	

8 rows in set (0.00 sec)



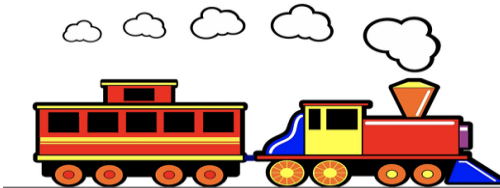
NOT

18. DESCRIBE THE TRAIN WHERE LADIESPECIAL RESERVATION IS NOT AVAILABLE?
SELECT * FROM HARBOURLINE WHERE NOT LADIESPECIAL = 'YES';

```
mysql> SELECT * FROM HARBOURLINE
-> WHERE NOT LADIESPECIAL = 'YES';
```

TRAINNO	TRAINNAME	SOURCESTATION	BLOCK	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESPECIAL
99002	PANVEL_JUINAGAR	PANVEL	NULL	JUINAGAR	08:33:00	09:00:00	FAST	NONAC	
98008	PANVEL_CSMT	PANVEL	NULL	CSMT	08:49:00	09:08:00	SLOW	AC	
99004	PANVEL_JUINAGAR	PANVEL	NULL	JUINAGAR	08:53:00	09:20:00	SLOW	NONAC	
98012	PANVEL_CSMT	PANVEL	NULL	CSMT	09:17:00	10:36:00	SLOW	AC	
99006	PANVEL_JUINAGAR	PANVEL	NULL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC	
98014	PANVEL_CSMT	PANVEL	NULL	CSMT	09:31:00	10:50:00	SLOW	NONAC	

6 rows in set (0.00 sec)



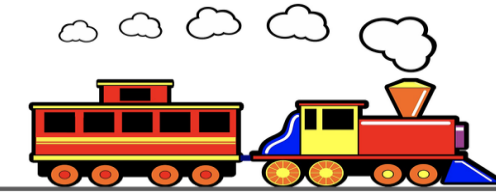
!=

SELECT * FROM HARBOURLINE WHERE LADIESSPECIAL != 'YES';

```
mysql> SELECT * FROM HARBOURLINE WHERE LADIESSPECIAL != 'YES';
```

TRAINNO	TRAINNAME	SOURCESTATION	BLOCK	DESTINATIONSTATION	DEPARTURETIME	ARRIVALTIME	FASTORSLOW	ACORNONAC	LADIESSPECIAL
99002	PANVEL_JUINAGAR	PANVEL	NULL	JUINAGAR	08:33:00	09:00:00	FAST	NONAC	
98008	PANVEL_CSMT	PANVEL	NULL	CSMT	08:49:00	09:08:00	SLOW	AC	
99004	PANVEL_JUINAGAR	PANVEL	NULL	JUINAGAR	08:53:00	09:20:00	SLOW	NONAC	
98012	PANVEL_CSMT	PANVEL	NULL	CSMT	09:17:00	10:36:00	SLOW	AC	
99006	PANVEL_JUINAGAR	PANVEL	NULL	JUINAGAR	09:21:00	10:48:00	FAST	NONAC	
98014	PANVEL_CSMT	PANVEL	NULL	CSMT	09:31:00	10:50:00	SLOW	NONAC	

6 rows in set (0.00 sec)



TRUNCATE TABLE DELETES THE RECORD BUT STRUCTURE REMAINS INTACT

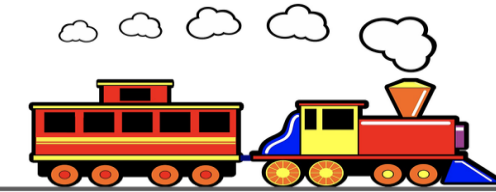
19. DELETE THE RECORDS OF THE HARBOURLINE?

TRUNCATE TABLE HARBOURLINE

```
mysql> truncate table harbourline;
Query OK, 0 rows affected (0.02 sec)

mysql> select * from harbourline;
Empty set (0.00 sec)

mysql> desc harbourline;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| TRAINNO        | int           | YES  |     | NULL    |       |
| TRAINNAME      | text          | YES  |     | NULL    |       |
| SOURCESTATION  | text          | YES  |     | NULL    |       |
| BLOCK          | varchar(20)   | YES  |     | NULL    |       |
| DESTINATIONSTATION | text         | YES  |     | NULL    |       |
| DEPARTURETIME  | time          | YES  |     | NULL    |       |
| ARRIVALTIME    | time          | YES  |     | NULL    |       |
| FASTORSLOW     | text          | YES  |     | NULL    |       |
| ACORNONAC      | text          | YES  |     | NULL    |       |
| LADIESSPECIAL  | text          | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```



DROP DATABASE IS USED TO DROP THE ENTIRE DATABASE;

20. DROP THE DATABASE MINDICATOR

DROP DATABASE MINDICATOR;

```
mysql> USE MINDICATOR;
Database changed
mysql> DROP DATABASE MINDICATOR;
Query OK, 5 rows affected (0.04 sec)

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| assignment |
| information_schema |
| mysql |
| performance_schema |
+-----+
4 rows in set (0.00 sec)
```

