
PROJECT ON
RAILWAY
ACCIDENTS

Every year, we hear about railway accidents that tragically impact lives and communities. These incidents often raise questions about the safety and vulnerability of the railway system. To address these concerns, let's delve into the history of railway accidents in India. By studying the past, we aim to understand the patterns, identify vulnerabilities, and explore ways to enhance the safety of Indian Railways.

Join us in this important analysis to make our railway journeys safer and more reliable.

Two Excel files have been prepared :

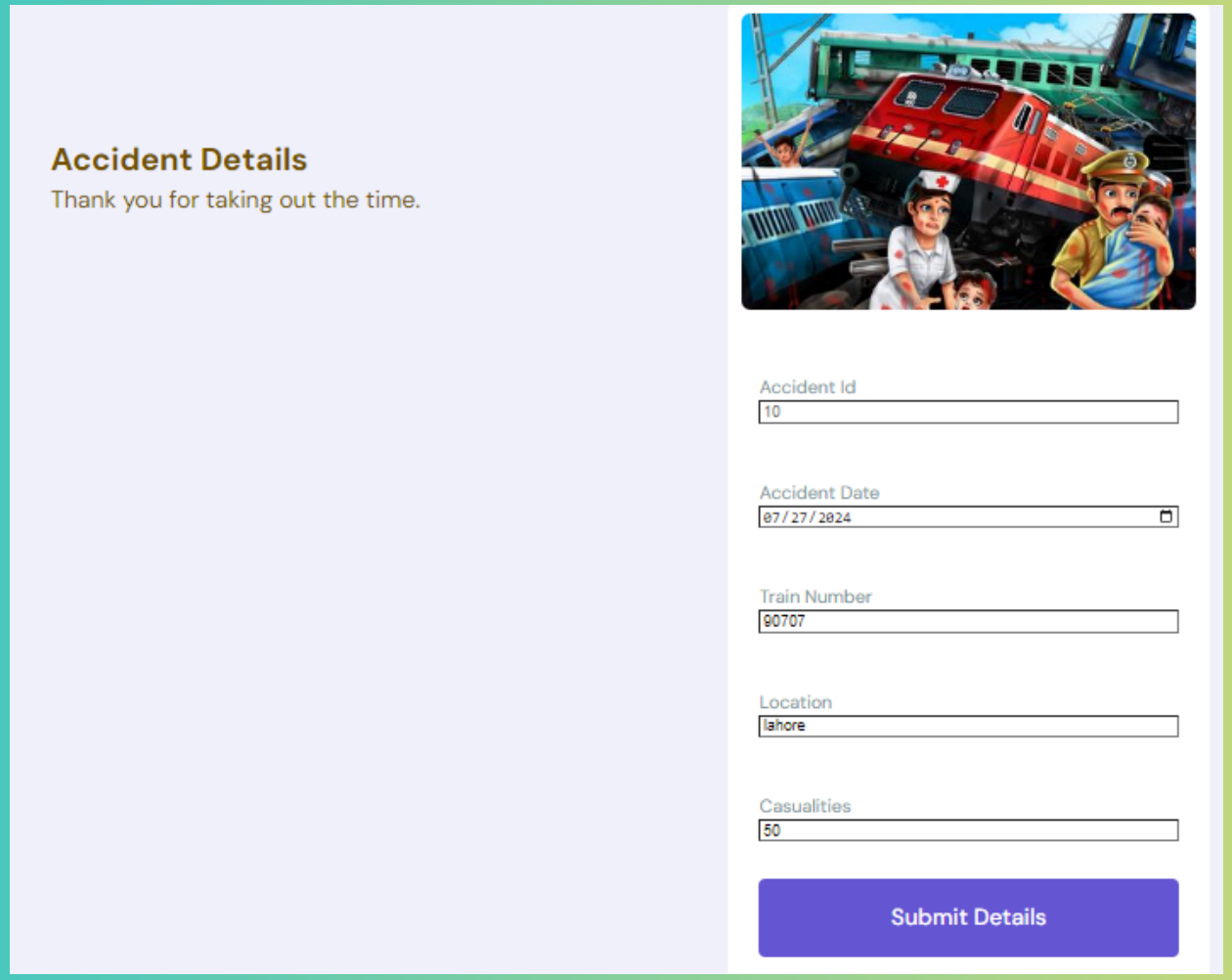
Accident Info : Contains details about all the accidents.

Train Info : Contains details about all the Trains .

TrainNo	TrainName	TrainFrom	TrainTo
13005	Howrah Amritsar Mail	Punjab	West Bengal
12602	Mangalore Chennai Mail	Karnataka	Tamil Nadu
19167	Sabarmati Express	Uttar Pradesh	Gujarat
12392	Shramjeevi Express	Delhi	Bihar
15037	Kanpur Kasganj Express	Uttar Pradesh	Uttar Pradesh
12904	Golden Temple Mail Express	Punjab	Mumbai
9005	Mumbai Central Holiday Special	Mumbai	Delhi
17201	Golkonda Express	Andhra Pradesh	Andhra Pradesh
12392	Shramjeevi Express	Delhi	Bihar
13071	Howrah Jamalpur Super Fast Express	West Bengal	Bihar
14001	Delhi Lahore Samjhauta Express	Delhi	Lahore
12738	Gowthami Express	Secunderabad	Kakinada
12102	Jnaneswari express	West Bengal	Maharashtra
22532	Mathura Chappra Express	Mathura	Chappra
16591	Humpi Express	Hubli	Bangalore
16593	Bengaluru Hazur Sahib Nanded Express	Bangalore	Nanded
12841	Coromandel Express	Shalimar	Chennai
13174	Kanchanjunga Express	Guwahati	Sealdah

	A	B	C	D	E
1	AccidentId	Year	TrainNo	Location	Casualities
2	1	1/12/2000	13005	Ambala	45
3	2	22/06/2001	12602	Kadalundi	52
4	3	27/02/2002	19167	Godhra	58
5	4	13/05/2002	12392	Jaunpur	12
6	5	6/4/2002	15037	Kansganj	30
7	6	9/9/2002	12302	Rafiganj	140
8	7	15/05/2003	12904	Ludhiana	36
9	8	22/06/2003	9005	Mumbai	52
10	9	2/7/2003	17201	Warangal	21
11	10	14/12/2004	13151	Hoshiarpur	37
12	11	28/07/2005	12392	Jaunpur	12
13	12	1/12/2006	13071	Ulta Pul	35
14	13	18/02/2007	14001	Diwana	68
15	14	1/8/2008	12738	Kesamudram	40
16	15	28/05/2010	12102	Khemashuli	140
17	16	7/7/2011	22532	Kanshiram	38
18	17	22/05/2012	16591	Penukonda	25
19	18	18/12/2013	16593	Kotchacheravu	26
20	19	2/6/2023	12841	Balasore	296
21	20	17/06/2024	13174	Rangapani	10

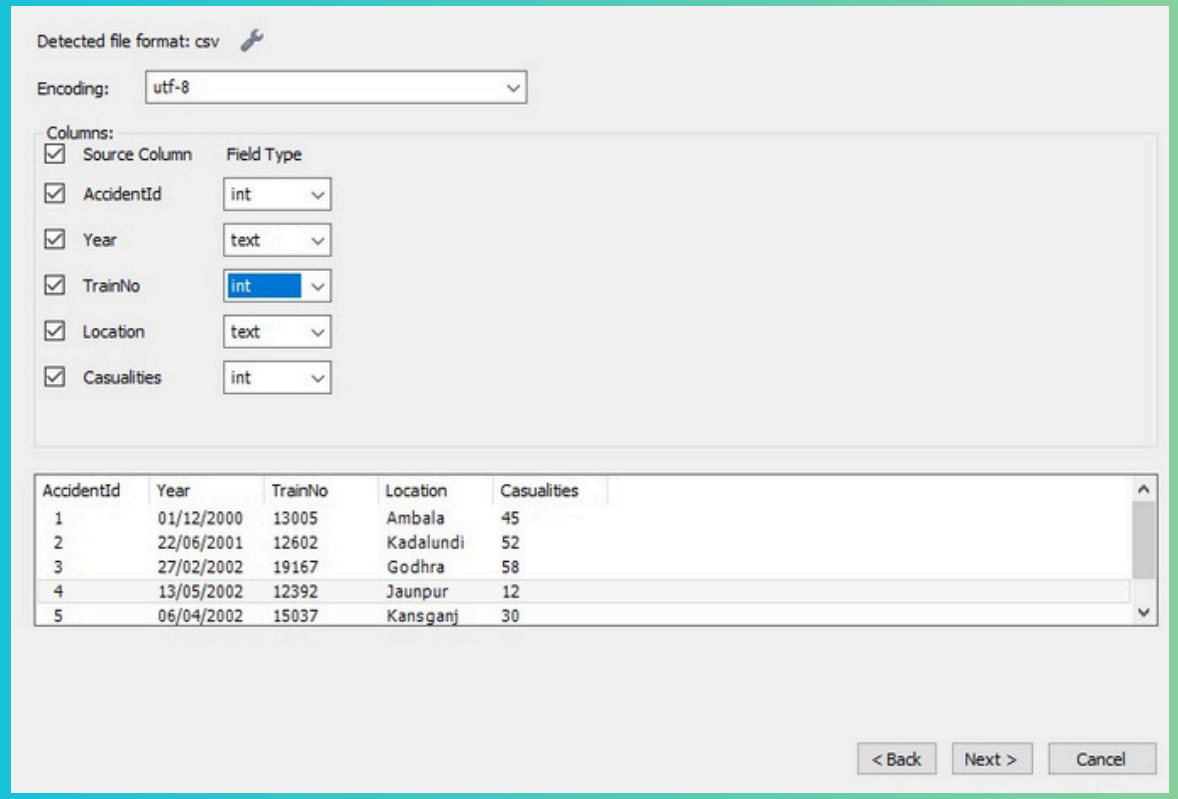
We have created a form (available on website) which collects the details of accidents , and the information is dynamically updated in the Sheets .



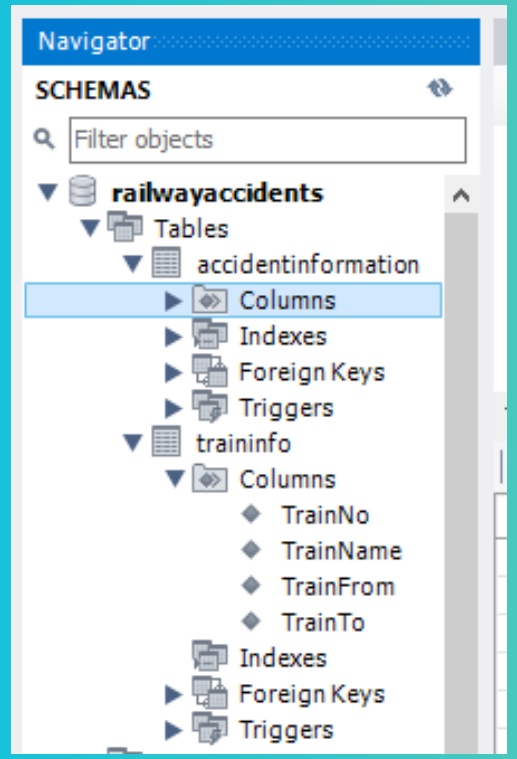
Creating MySQL Database

```
1 •  create database RailwayAccidents;
```

Now we need to import both the tables



How does our schema looks after Importing

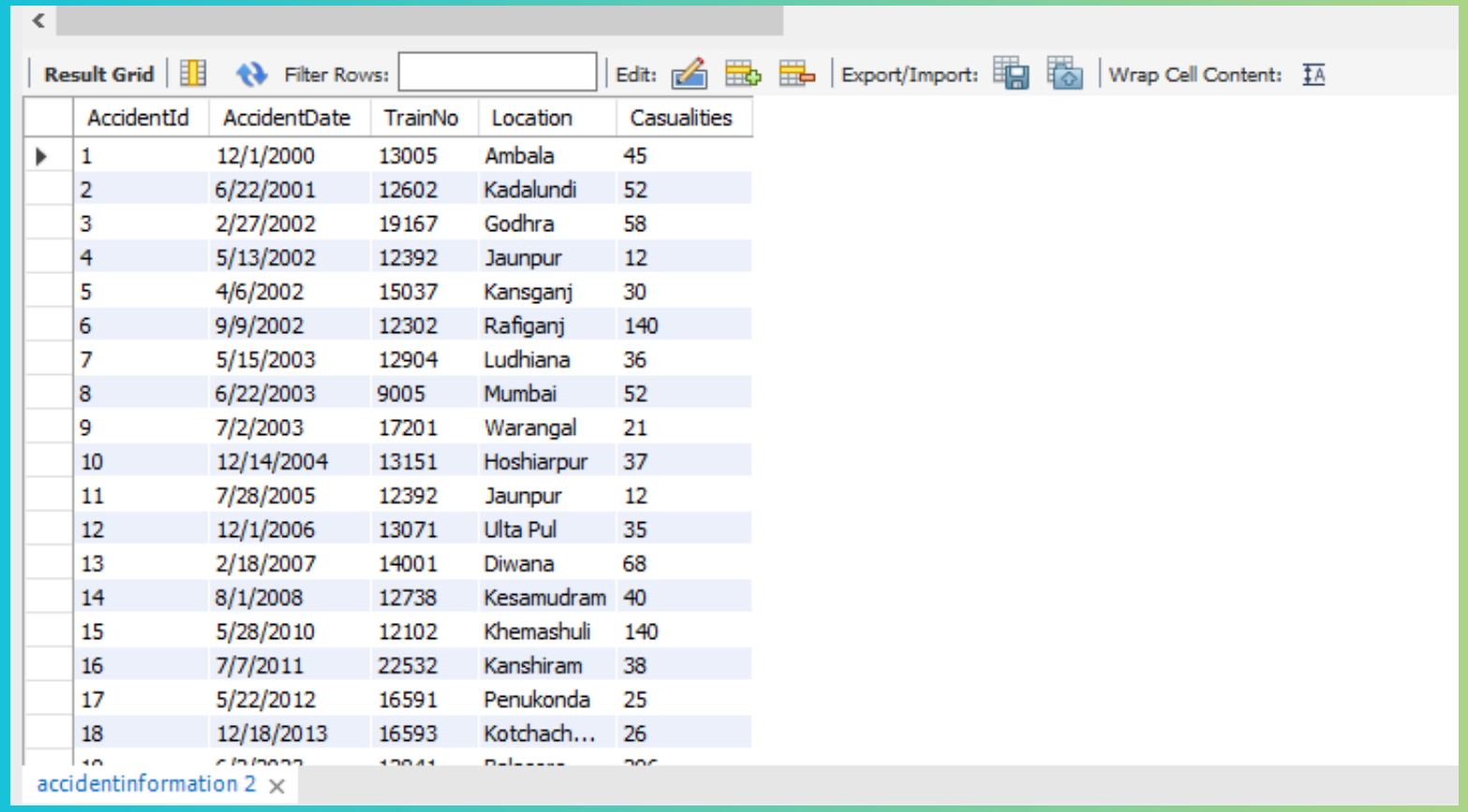


Making Of Primary Key :

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
AccidentId	INT	☑	☑	☐	☐	☐	☐	☐	☐	
AccidentDate	TEXT	☐	☐	☐	☐	☐	☐	☐	☐	NULL
TrainNo	INT	☐	☐	☐	☐	☐	☐	☐	☐	NULL
Location	TEXT	☐	☐	☐	☐	☐	☐	☐	☐	NULL
Casualities	INT	☐	☐	☐	☐	☐	☐	☐	☐	NULL
		☐	☐	☐	☐	☐	☐	☐	☐	

Displaying all the accidents .

```
1 •    SELECT * FROM railwayaccidents.accidentinformation;
```



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

AccidentId	AccidentDate	TrainNo	Location	Casualities
1	12/1/2000	13005	Ambala	45
2	6/22/2001	12602	Kadalundi	52
3	2/27/2002	19167	Godhra	58
4	5/13/2002	12392	Jaunpur	12
5	4/6/2002	15037	Kansganj	30
6	9/9/2002	12302	Rafiganj	140
7	5/15/2003	12904	Ludhiana	36
8	6/22/2003	9005	Mumbai	52
9	7/2/2003	17201	Warangal	21
10	12/14/2004	13151	Hoshiarpur	37
11	7/28/2005	12392	Jaunpur	12
12	12/1/2006	13071	Ulta Pul	35
13	2/18/2007	14001	Diwana	68
14	8/1/2008	12738	Kesamudram	40
15	5/28/2010	12102	Khemashuli	140
16	7/7/2011	22532	Kanshiram	38
17	5/22/2012	16591	Penukonda	25
18	12/18/2013	16593	Kotchach...	26

accidentinformation 2

Displaying the Train Info

```
1 •  SELECT * FROM railwayaccidents.traininfo;
```

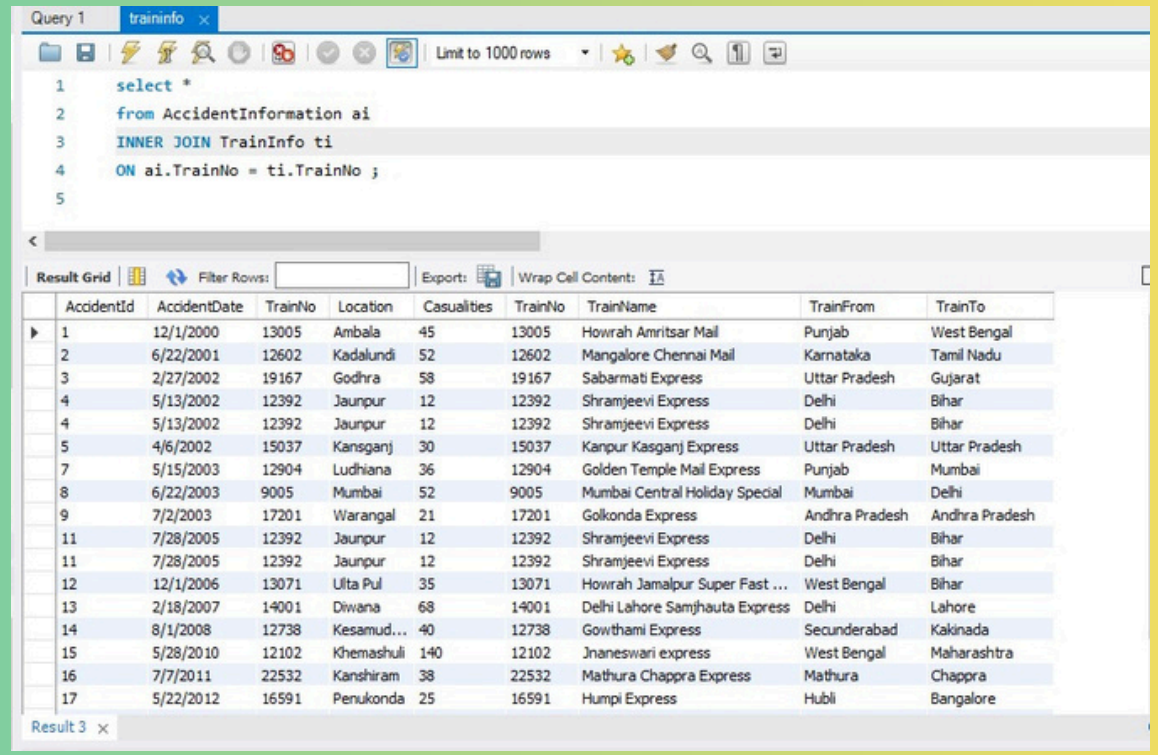
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

TrainNo	TrainName	TrainFrom	TrainTo
13005	Howrah Amritsar Mail	Punjab	West Bengal
12602	Mangalore Chennai Mail	Karnataka	Tamil Nadu
19167	Sabarmati Express	Uttar Pradesh	Gujarat
12392	Shramjeevi Express	Delhi	Bihar
15037	Kanpur Kasganj Express	Uttar Pradesh	Uttar Pradesh
12904	Golden Temple Mail Express	Punjab	Mumbai
9005	Mumbai Central Holiday Special	Mumbai	Delhi
17201	Golkonda Express	Andhra Pradesh	Andhra Pradesh
12392	Shramjeevi Express	Delhi	Bihar
13071	Howrah Jamalpur Super Fast Express	West Bengal	Bihar
14001	Delhi Lahore Samjhauta Express	Delhi	Lahore
12738	Gowthami Express	Secunderabad	Kakinada
12102	Jnaneswari express	West Bengal	Maharashtra
22532	Mathura Chappra Express	Mathura	Chappra
16591	Humpi Express	Hubli	Bangalore
16593	Bengaluru Hazur Sahib Nanded Expr...	Bangalore	Nanded
12841	Coromandel Express	Shalimar	Chennai
13174	Kanchanjunga Express	Guwahati	Sealdah

traininfo 1 ×

Performing JOIN (Inner Join) Operation

```
1    select *
2    from AccidentInformation ai
3    INNER JOIN TrainInfo ti
4    ON ai.TrainNo = ti.TrainNo ;
```



Query 1 | traininfo

Limit to 1000 rows

```
1    select *
2    from AccidentInformation ai
3    INNER JOIN TrainInfo ti
4    ON ai.TrainNo = ti.TrainNo ;
5
```

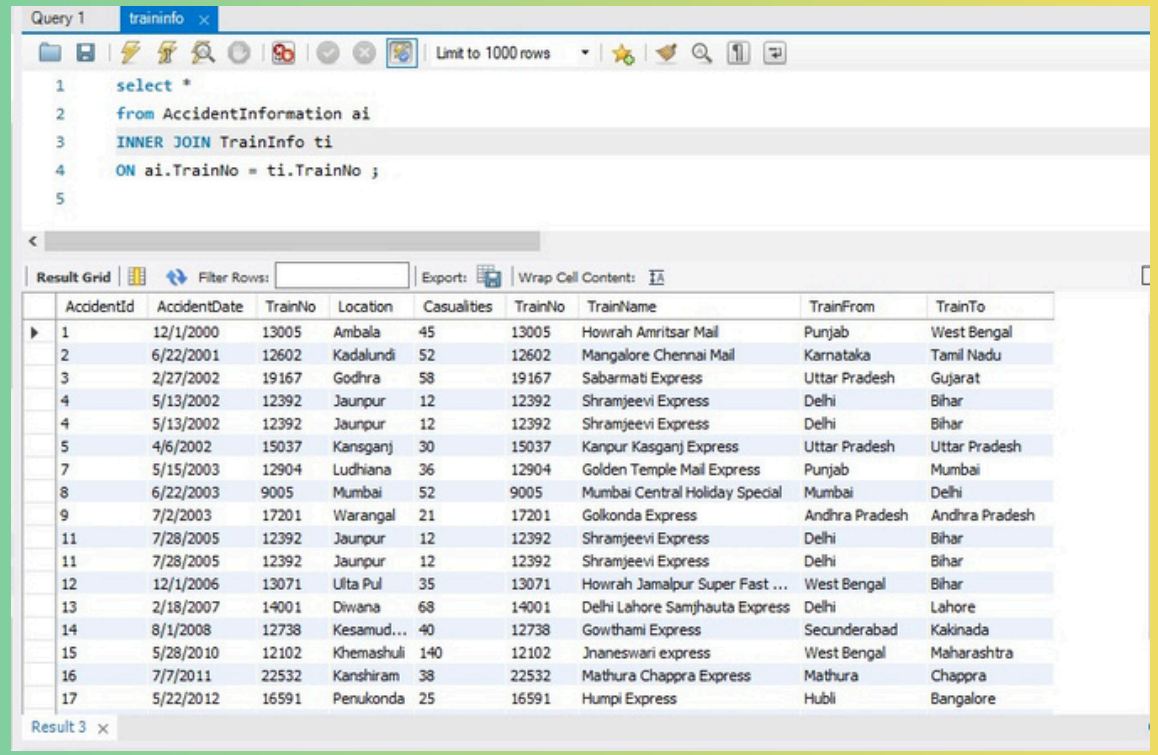
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

AccidentId	AccidentDate	TrainNo	Location	Casualities	TrainNo	TrainName	TrainFrom	TrainTo
1	12/1/2000	13005	Ambala	45	13005	Howrah Amritsar Mail	Punjab	West Bengal
2	6/22/2001	12602	Kadalundi	52	12602	Mangalore Chennai Mail	Karnataka	Tamil Nadu
3	2/27/2002	19167	Godhra	58	19167	Sabarmati Express	Uttar Pradesh	Gujarat
4	5/13/2002	12392	Jaunpur	12	12392	Shramjeevi Express	Delhi	Bihar
4	5/13/2002	12392	Jaunpur	12	12392	Shramjeevi Express	Delhi	Bihar
5	4/6/2002	15037	Kansganj	30	15037	Kanpur Kasganj Express	Uttar Pradesh	Uttar Pradesh
7	5/15/2003	12904	Ludhiana	36	12904	Golden Temple Mail Express	Punjab	Mumbai
8	6/22/2003	9005	Mumbai	52	9005	Mumbai Central Holiday Special	Mumbai	Delhi
9	7/2/2003	17201	Warangal	21	17201	Golkonda Express	Andhra Pradesh	Andhra Pradesh
11	7/28/2005	12392	Jaunpur	12	12392	Shramjeevi Express	Delhi	Bihar
11	7/28/2005	12392	Jaunpur	12	12392	Shramjeevi Express	Delhi	Bihar
12	12/1/2006	13071	Ulta Pul	35	13071	Howrah Jamalpur Super Fast ...	West Bengal	Bihar
13	2/18/2007	14001	Diwana	68	14001	Delhi Lahore Samjhauta Express	Delhi	Lahore
14	8/1/2008	12738	Kesamud...	40	12738	Gowthami Express	Secunderabad	Kakinada
15	5/28/2010	12102	Khemashuli	140	12102	Jnaneswari express	West Bengal	Maharashtra
16	7/7/2011	22532	Kanshiram	38	22532	Mathura Chappra Express	Mathura	Chappra
17	5/22/2012	16591	Penukonda	25	16591	Humpi Express	Hubli	Bangalore

Result 3

Performing JOIN (Inner Join) Operation

```
1    select *
2    from AccidentInformation ai
3    INNER JOIN TrainInfo ti
4    ON ai.TrainNo = ti.TrainNo ;
```



Query 1 | traininfo

Limit to 1000 rows

```
1    select *
2    from AccidentInformation ai
3    INNER JOIN TrainInfo ti
4    ON ai.TrainNo = ti.TrainNo ;
5
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

AccidentId	AccidentDate	TrainNo	Location	Casualities	TrainNo	TrainName	TrainFrom	TrainTo
1	12/1/2000	13005	Ambala	45	13005	Howrah Amritsar Mail	Punjab	West Bengal
2	6/22/2001	12602	Kadalundi	52	12602	Mangalore Chennai Mail	Karnataka	Tamil Nadu
3	2/27/2002	19167	Godhra	58	19167	Sabarmati Express	Uttar Pradesh	Gujarat
4	5/13/2002	12392	Jaunpur	12	12392	Shramjeevi Express	Delhi	Bihar
4	5/13/2002	12392	Jaunpur	12	12392	Shramjeevi Express	Delhi	Bihar
5	4/6/2002	15037	Kansganj	30	15037	Kanpur Kasganj Express	Uttar Pradesh	Uttar Pradesh
7	5/15/2003	12904	Ludhiana	36	12904	Golden Temple Mail Express	Punjab	Mumbai
8	6/22/2003	9005	Mumbai	52	9005	Mumbai Central Holiday Special	Mumbai	Delhi
9	7/2/2003	17201	Warangal	21	17201	Golkonda Express	Andhra Pradesh	Andhra Pradesh
11	7/28/2005	12392	Jaunpur	12	12392	Shramjeevi Express	Delhi	Bihar
11	7/28/2005	12392	Jaunpur	12	12392	Shramjeevi Express	Delhi	Bihar
12	12/1/2006	13071	Ulta Pul	35	13071	Howrah Jamalpur Super Fast ...	West Bengal	Bihar
13	2/18/2007	14001	Diwana	68	14001	Delhi Lahore Samjhauta Express	Delhi	Lahore
14	8/1/2008	12738	Kesamud...	40	12738	Gowthami Express	Secunderabad	Kakinada
15	5/28/2010	12102	Khemashuli	140	12102	Jnaneswari express	West Bengal	Maharashtra
16	7/7/2011	22532	Kanshiram	38	22532	Mathura Chappra Express	Mathura	Chappra
17	5/22/2012	16591	Penukonda	25	16591	Humpi Express	Hubli	Bangalore

Result 3

List the departing station and no of times train departing met with accident.

```
1    select ti.TrainFrom, count(*) as NoOfTimes
2    from AccidentInformation ai
3    INNER JOIN TrainInfo ti
4    ON ai.TrainNo = ti.TrainNo
5    group by TrainFrom;
6
```

Finding the Average Number of Casualties per Accident

```
SELECT * FROM AccidentInformation
WHERE Casualities > 100;
```

Identifying Trains that met with accident while going from Delhi to Bihar

```sql
SELECT
    TrainNo,
    TrainName,
    TrainFrom,
    TrainTo
FROM TrainInfo
WHERE TrainFrom = 'Delhi' AND TrainTo = 'Bihar';
```

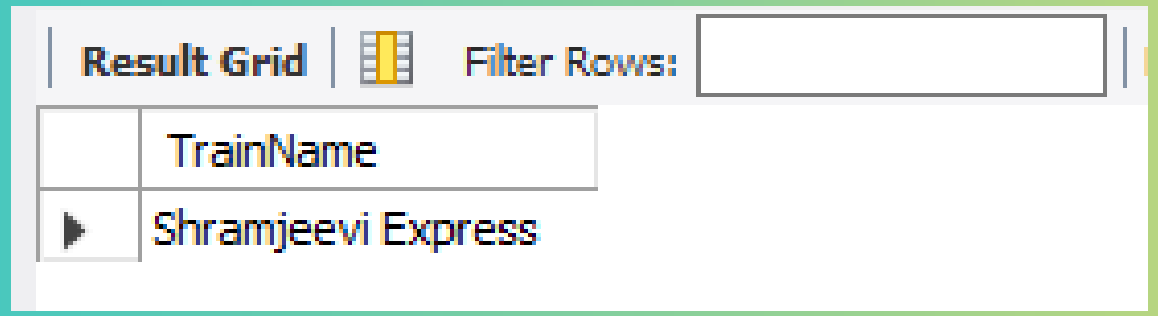
Identify the major accidents (where casualties are greater than 100)

```sql
SELECT * FROM AccidentInformation
WHERE Casualities > 100;
```

Identifying the Train met with Maximum Accidents

```sql
WITH cte AS (SELECT ti.TrainName, COUNT(*) AS occ
FROM AccidentInformation ai
INNER JOIN TrainInfo ti
ON ai.TrainNo = ti.TrainNo
GROUP BY ti.TrainName),
ranked_cte AS (SELECT TrainName, occ, ROW_NUMBER() OVER (ORDER BY occ DESC) AS rn FROM  cte)
SELECT TrainName
FROM ranked_cte
WHERE rn = 1;

```



CONCLUSION

We can perform many operations on this data to derive meaningful insights by applying queries. This will enable us to gain a better understanding of railway accidents and identify patterns or trends. Here are some examples of operations that can be applied:

1) Finding the average number of casualties per accident.
2) Listing the trains that had accidents within a specific date range.
3) Identifying the months with the highest frequency of railway accidents.
4) Finding the train routes with the highest number of accidents.
5) Listing the locations that have experienced multiple accidents.

By leveraging these queries, we can analyze historical data on railway accidents to improve safety measures and prevent future incidents.