```sql
Create database insurance_db;
use insurance_db;

create table insurance_data(
customerid int primary key auto_increment,
age int not null ,
gender enum('male','female') not null,
bmi decimal(5,2) check(bmi between 0 and 70),
children int default 0 check(children>=0),
is_smoker enum('yes','no')not null,
region enum('northeast','northwest','southeast','southwest'),
charges decimal (10,2)check(charges >=0)not null,
bmi_category varchar (20),
risk_level enum ('High risk', 'low risk') not null
);
```

```sql
-- "Is the insurance customer data correctly loaded and structured for analysis? --
select customerid,age,gender,bmi,is_smoker,region,charges,bmi_category,risk_level
from insurance_data
limit 10;
```

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

customerid	age	gender	bmi	is_smoker	region	charges	bmi_category	risk_level
1	19	female	27.90	yes	southwest	16884.92	overweight	low risk
2	18	male	33.77	no	southeast	1725.55	obese	low risk
3	28	male	33.00	no	southeast	4449.46	obese	low risk
4	33	male	22.71	no	northwest	21984.47	Normal	low risk
5	32	male	28.88	no	northwest	3866.86	overweight	low risk
6	31	female	25.74	no	southeast	3756.62	overweight	low risk
7	46	female	33.44	no	southeast	8240.59	obese	low risk
8	37	female	27.74	no	northwest	7281.51	overweight	low risk
9	37	male	29.83	no	northeast	6406.41	overweight	low risk
10	60	female	25.84	no	northwest	28923.14	overweight	low risk
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

```sql
-- 1.How many customers do we have and what is the overall range of insurance charges? --
-- Business overview  (KPI's) --

select count(*) as total_customers,
round(avg(charges),2) as avg_charge,
min(charges) as min_charges,
max(charges) as max_charges
from insurance_data;
```

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

total_customers	avg_charge	min_charges	max_charges
1337	13279.12	1121.87	63770.43

```sql
-- 2.Do smokers pay higher insurance charges than non-smokers? --
-- impact analysis of Smoker vs Non-smoker --

select is_smoker,
count(*) as total_customers,
round(avg(charges),2) as avg_charges
from insurance_data
group by is_smoker;
```

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

is_smoker	total_customers	avg_charges
yes	274	32050.23
no	1063	8440.66

```sql
-- 3.Is there a big difference in insurance charges between male and female customers? --
-- Gender wise average charge analysis --

select gender,
count(*) as total_customers,
round(avg(charges),2) as avg_charges
from insurance_data
group by gender;
```

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

gender	total_customers	avg_charges
female	662	12569.58
male	675	13975.00

```sql
-- 4. Which region generates the highest insurance revenue? --
-- Region wise business performance analysis --

select region,
count(*) as total_Customers,
round(avg(charges),2) as avg_charge,
round(sum(charges),2) as total_revenue
from insurance_data
group by region
order by total_revenue desc;
```

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

region	total_Customers	avg_charge	total_revenue
southeast	364	14735.41	5363689.80
northeast	324	13406.38	4343668.64
northwest	324	12450.84	4034072.37
southwest	325	12346.94	4012754.82

```sql
-- 5.Does the number of children affect insurance charges? --
-- Children count impact on insurance premium --

select children,
count(*) as total_customers,
round(avg(charges),2) as avg_charge
from insurance_data
group by children
order by avg_charge desc ;
```

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

children	total_customers	avg_charge
3	157	15355.32
2	240	15073.56
4	25	13850.66
1	324	12731.17
0	573	12384.70
5	18	8786.04

```sql
-- 6.Do customers with higher BMI pay more insurance charges? --
-- category wise BMI analysis --


select bmi_category,
count(*) as total_people,
round(avg(charges),2) as avg_charge

from insurance_data
group by bmi_category
order by avg_charge desc;
```

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

bmi_category	total_people	avg_charge
obese	706	15572.04
overweight	386	10987.51
Normal	225	10409.34
Underweight	20	8852.20

```sql
-- 7.How much higher are the insurance charges for high-risk customers compared to low-risk customers? --
-- High risk vs low risk customer analysis --

select risk_level,
count(*) as total_customers,
round(avg(charges),2)as avg_charge
from insurance_data
group by risk_level
order by avg_charge desc;
```

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

risk_level	total_customers	avg_charge
High risk	144	41692.81
low risk	1193	9849.47

```sql
-- 8.How do insurance charges change with age? --
-- impact of Age Group on insurance premium analysis --


select
case when age < 25 then 'Below 25'
     when age between 25 and 40 then '25-40'
     when age between 41 and 60 then '41-60'
     else '60 +'
end as age_group,

count(*) as total_customers,
round(avg(charges),2) as avg_charge
from insurance_data
group by age_group
order by avg_charge desc;
```

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

age_group	total_customers	avg_charge
60 +	91	21063.16
41-60	546	15888.76
25-40	423	11013.39
Below 25	277	9037.95

```sql
-- 9. Who are the top 10 customers with the highest insurance charges? --
--  Top 10 highest paying customers --

SELECT age, gender, is_smoker, bmi, children, charges
FROM insurance_data
ORDER BY charges DESC
LIMIT 10;
```

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

age	gender	is_smoker	bmi	children	charges
54	female	yes	47.41	0	63770.43
45	male	yes	30.36	0	62592.87
52	male	yes	34.49	3	60021.40
31	female	yes	38.10	1	58571.07
33	female	yes	35.53	0	55135.40
60	male	yes	32.80	0	52590.83
28	male	yes	36.40	1	51194.56
64	male	yes	36.96	2	49577.66
59	male	yes	41.14	1	48970.25
44	female	yes	38.06	0	48885.14

```sql
-- 10. Who is the highest-cost smoker in each region? --
-- region wise top costly smoker persons --

select * from
(select region,age,gender,charges,
rank() over(partition by region order by charges desc )as rnk
from insurance_data
where is_smoker = 'yes'
) t

where rnk = 1;
```

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

region	age	gender	charges	rnk
northeast	31	female	58571.07	1
northwest	52	male	60021.40	1
southeast	54	female	63770.43	1
southwest	60	male	52590.83	1