Generating SQL for SQLite using Ollama, ChromaDB

This notebook runs through the process of using the vanna Python package to generate SQL using AI (RAG + LLMs) including connecting to a database and training. If you're not ready to train on your own database, you can still try it using a sample SQLite database.

Which LLM do you want to use?

- OpenAl via Vanna.Al (Recommended)
 Use Vanna.Al for free to generate your queries
- OpenAl

Use OpenAI with your own API key

- Azure OpenAl
 - If you have OpenAI models deployed on Azure
- [Selected] Ollama
 - Use Ollama locally for free. Requires additional setup.
- Mistral via Mistral API
 - If you have a Mistral API key
- Other LLM

If you have a different LLM model

Where do you want to store the 'training' data?

- Vanna Hosted Vector DB (Recommended)
 Use Vanna.Als hosted vector database (pgvector) for free. This is usable across machines with no additional setup.
- [Selected] ChromaDB
 - Use ChromaDBs open-source vector database for free locally. No additional setup is necessary -- all database files will be created and stored locally.
- Marqo
 - Use Marqo locally for free. Requires additional setup. Or use their hosted option.
- Other VectorDB

Use any other vector database. Requires additional setup.

Setup

!pwd!pip install vanna!pip install 'vanna[chromadb]'!pip install ollama!pip show vanna # 0.6.3 , 0.5.5, 0.2.1!pip show ollama # 0.2.0

```
In [1]: import warnings
import re
```

```
warnings.filterwarnings('ignore', category=DeprecationWarning, message='^Num
# warnings.filterwarnings('ignore', category=DeprecationWarning, message=re.
import os
import re
from time import time
from datetime import datetime

from vanna.ollama import Ollama
from vanna.chromadb.chromadb_vector import ChromaDB_VectorStore
```

```
In [2]: model_name = 'deepseek-coder-v2'
CONFIG = {
        'model': model_name, # 'mistral' # "starcoder2"
}

file_db = "~/Downloads/chinook.sqlite"

clean_and_train = True # False

sql_id = 1
NUM_RETRY = 3

allow_llm_to_see_data = True
# allow_llm_to_see_data (bool): Whether to allow the LLM to see the data (form)
```

```
In [3]: class MyVanna(ChromaDB_VectorStore, Ollama):
            def init (self, config=None):
                ChromaDB VectorStore. init (self, config=config)
                Ollama. init (self, config=config)
        def remove collections(collection name=None, ACCEPTED TYPES = ["sql", "ddl"
            if not collection name:
                collections = ACCEPTED TYPES
            elif isinstance(collection name, str):
                collections = [collection name]
            elif isinstance(collection name, list):
                collections = collection name
                print(f"\t{collection name} is unknown: Skipped")
                return
            for c in collections:
                if not c in ACCEPTED TYPES:
                    print(f"\t{c} is unknown: Skipped")
                    continue
                # print(f"vn.remove collection('{c}')")
                vn.remove collection(c)
        def strip_brackets(ddl):
            This function removes square brackets from table and column names in a \Gamma
```

```
Args:
                ddl (str): The DDL script containing square brackets.
            Returns:
                str: The DDL script with square brackets removed.
            # Use regular expressions to match and replace square brackets
            pattern = r"\setminus[([^{]}]+)]" # Match any character except ] within square b
            return re.sub(pattern, r"\1", ddl)
        def my vn ask(question, sql id, allow llm to see data=False, num retry=NUM F
            # allow retry by appending error msg to question
            print(f"\n{separator}\n# QUESTION - {sql id}: {question}\n{separator}\r
            sql, df, fig, err msg = vn.ask(question=question, allow llm to see data=
            if not err msg or ("[ERROR-SQL]" not in err msg) and ("[ERROR-DB]" not i
                return sql, df, fig, err msg
            for i retry in range(num retry-1):
                msg = f"*** RETRY {i retry+1} ***"
                print(msg)
                question = f"""
                For the question {question},
                the generated SQL statement {sql} results in the following exception
                Please fix the error and re-generate the SQL
                sql, df, fig, err msg = vn.ask(question=question, allow llm to see d
                if not err msg or ("[ERROR-SQL]" not in err msg) and ("[ERROR-DB]" r
                    break
            return sql, df, fig, err msq
In [4]: vn = MyVanna(config=CONFIG)
In [5]: hostname = os.uname().nodename
        print("Hostname:", hostname)
       Hostname: ducklover1
In [6]: file db = os.path.abspath(os.path.expanduser(file db))
        vn.connect to sqlite(file db)
In [7]: vn.run sql is set
Out[7]: True
In [8]: if clean and train:
            remove collections()
```

Training

SQLite sample database

You only need to train once. Do not train again unless you want to add more training data.

```
df ddl = vn.run sql("SELECT type, sql FROM sqlite master WHERE sql is not nu
 In [9]:
In [10]:
           df ddl
Out[10]:
                type
                                                                     sql
                             CREATE TABLE "albums"\r\n(\r\n [AlbumId] IN...
                table
                table
            1
                                 CREATE TABLE sqlite_sequence(name,seq)
                table
                                 CREATE TABLE "artists"\r\n(\r\n [ArtistId] ...
            2
            3
                table
                            CREATE TABLE "customers"\r\n(\r\n [Customer...
               table
                           CREATE TABLE "employees"\r\n(\r\n [Employee...
            4
                table
                              CREATE TABLE "genres"\r\n(\r\n [GenreId] IN...
            5
                table
                               CREATE TABLE "invoices"\r\n(\r\n [InvoiceId...
            6
                table
                              CREATE TABLE "invoice_items"\r\n(\r\n [Invo...
            7
            8
                table
                            CREATE TABLE "media_types"\r\n(\r\n [MediaT...
                table
                                CREATE TABLE "playlists"\r\n(\r\n [Playlist...
                table
                               CREATE TABLE "playlist_track"\r\n(\r\n [Pla...
           10
                table
                               CREATE TABLE "tracks"\r\n(\r\n [TrackId] IN...
           11
           12 index
                         CREATE INDEX [IFK_AlbumArtistId] ON "albums" (...
           13 index
                       CREATE INDEX [IFK_CustomerSupportRepId] ON "cu...
               index
                       CREATE INDEX [IFK EmployeeReportsTo] ON "emplo...
           14
               index
                         CREATE INDEX [IFK_InvoiceCustomerId] ON "invoi...
           15
           16 index
                           CREATE INDEX [IFK_InvoiceLineInvoiceId] ON "in...
           17 index
                          CREATE INDEX [IFK InvoiceLineTrackId] ON "invo...
           18 index
                           CREATE INDEX [IFK_PlaylistTrackTrackId] ON "pl...
                          CREATE INDEX [IFK_TrackAlbumId] ON "tracks" ([...
           19 index
           20 index
                           CREATE INDEX [IFK TrackGenreId] ON "tracks" ([...
               index
                         CREATE INDEX [IFK_TrackMediaTypeId] ON "tracks...
           21
           22 table
                                    CREATE TABLE sqlite_stat1(tbl,idx,stat)
In [11]: if clean and train:
                for ddl in df ddl['sql'].to list():
                     ddl = strip brackets(ddl)
                     vn.train(ddl=ddl)
                # Sometimes you may want to add documentation about your business termin
                vn.train(documentation="In the chinook database invoice means order")
                doc_str = """
```

```
In the 'customers' table, address column names do not have 'Billing' pre
e.g. country column name is 'country', not 'BillingCountry'
"""
vn.train(documentation=doc_str)
```

```
Adding ddl: CREATE TABLE "albums"
    AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
    Title NVARCHAR(160) NOT NULL,
    ArtistId INTEGER NOT NULL,
    FOREIGN KEY (ArtistId) REFERENCES "artists" (ArtistId)
                ON DELETE NO ACTION ON UPDATE NO ACTION
Adding ddl: CREATE TABLE sqlite sequence(name, seq)
Adding ddl: CREATE TABLE "artists"
    ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
    Name NVARCHAR(120)
Adding ddl: CREATE TABLE "customers"
    CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
    FirstName NVARCHAR(40) NOT NULL,
    LastName NVARCHAR(20) NOT NULL,
    Company NVARCHAR(80),
    Address NVARCHAR(70),
    City NVARCHAR(40),
    State NVARCHAR(40),
    Country NVARCHAR(40),
    PostalCode NVARCHAR(10),
    Phone NVARCHAR(24),
    Fax NVARCHAR(24),
    Email NVARCHAR(60) NOT NULL,
    SupportRepId INTEGER,
    FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId)
                ON DELETE NO ACTION ON UPDATE NO ACTION
Adding ddl: CREATE TABLE "employees"
    EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
    LastName NVARCHAR(20) NOT NULL,
    FirstName NVARCHAR(20) NOT NULL,
    Title NVARCHAR(30),
    ReportsTo INTEGER,
    BirthDate DATETIME,
    HireDate DATETIME,
    Address NVARCHAR(70),
    City NVARCHAR(40),
    State NVARCHAR(40),
    Country NVARCHAR(40),
    PostalCode NVARCHAR(10),
    Phone NVARCHAR(24).
    Fax NVARCHAR(24).
    Email NVARCHAR(60),
    FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId)
                ON DELETE NO ACTION ON UPDATE NO ACTION
Adding ddl: CREATE TABLE "genres"
    GenreId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
    Name NVARCHAR(120)
```

```
Adding ddl: CREATE TABLE "invoices"
    InvoiceId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
    CustomerId INTEGER NOT NULL,
    InvoiceDate DATETIME NOT NULL,
    BillingAddress NVARCHAR(70),
    BillingCity NVARCHAR(40),
    BillingState NVARCHAR(40),
    BillingCountry NVARCHAR(40),
    BillingPostalCode NVARCHAR(10),
    Total NUMERIC(10,2) NOT NULL,
    FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId)
                ON DELETE NO ACTION ON UPDATE NO ACTION
)
Adding ddl: CREATE TABLE "invoice items"
    InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
    InvoiceId INTEGER NOT NULL,
    TrackId INTEGER NOT NULL,
    UnitPrice NUMERIC(10,2) NOT NULL,
    Quantity INTEGER NOT NULL,
    FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId)
                ON DELETE NO ACTION ON UPDATE NO ACTION,
    FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId)
                ON DELETE NO ACTION ON UPDATE NO ACTION
Adding ddl: CREATE TABLE "media types"
    MediaTypeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
    Name NVARCHAR(120)
Adding ddl: CREATE TABLE "playlists"
    PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
    Name NVARCHAR(120)
Adding ddl: CREATE TABLE "playlist track"
    PlaylistId INTEGER NOT NULL,
    TrackId INTEGER NOT NULL.
    CONSTRAINT PK_PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),
    FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId)
                ON DELETE NO ACTION ON UPDATE NO ACTION,
    FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId)
                ON DELETE NO ACTION ON UPDATE NO ACTION
Adding ddl: CREATE TABLE "tracks"
    TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL.
    Name NVARCHAR(200) NOT NULL,
    AlbumId INTEGER,
    MediaTypeId INTEGER NOT NULL,
    GenreId INTEGER,
    Composer NVARCHAR(220),
    Milliseconds INTEGER NOT NULL,
```

```
Bytes INTEGER,
            UnitPrice NUMERIC(10,2) NOT NULL,
            FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId)
                        ON DELETE NO ACTION ON UPDATE NO ACTION,
            FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId)
                        ON DELETE NO ACTION ON UPDATE NO ACTION,
            FOREIGN KEY (MediaTypeId) REFERENCES "media types" (MediaTypeId)
                        ON DELETE NO ACTION ON UPDATE NO ACTION
        Adding ddl: CREATE INDEX IFK AlbumArtistId ON "albums" (ArtistId)
        Adding ddl: CREATE INDEX IFK CustomerSupportRepId ON "customers" (SupportRep
        Adding ddl: CREATE INDEX IFK EmployeeReportsTo ON "employees" (ReportsTo)
        Adding ddl: CREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)
        Adding ddl: CREATE INDEX IFK InvoiceLineInvoiceId ON "invoice items" (Invoic
        eId)
        Adding ddl: CREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId)
        Adding ddl: CREATE INDEX IFK PlaylistTrackTrackId ON "playlist track" (Track
        Adding ddl: CREATE INDEX IFK TrackAlbumId ON "tracks" (AlbumId)
        Adding ddl: CREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)
        Adding ddl: CREATE INDEX IFK TrackMediaTypeId ON "tracks" (MediaTypeId)
        Adding ddl: CREATE TABLE sqlite stat1(tbl,idx,stat)
        Adding documentation....
        Adding documentation....
In [12]: # show training data
         training data = vn.get training data()
         training data
```

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	id	question	content	training_data_type
0	039f9d54-59f7-5f29- 8c04-14dbc3e95671- ddl	None	CREATE TABLE "artists"\r\n(\r\n ArtistId IN	ddl
1	0db84e3d-ef41-563c- 803e-21c1b985dc19- ddl	None	CREATE TABLE "invoices"\r\n(\r\n InvoiceId	ddl
2	10cba811-ddba-5042- 9e90-d764dfcd1629- ddl	None	CREATE INDEX IFK_InvoiceCustomerId ON "invoice	ddl
3	2c711317-b93d-5f60- a728-cb1c6fcbc040- ddl	None	CREATE INDEX IFK_CustomerSupportRepId ON "cust	ddl
4	37319c81-65f7-50ee- 956b-795de244bee5- ddl	None	CREATE TABLE sqlite_stat1(tbl,idx,stat)	ddl
5	40bd77cd-e1de- 5872-8693- 624117ff413c-ddl	None	CREATE INDEX IFK_InvoiceLineInvoiceId ON "invo	ddl
6	41130543-7164-562a- 90a7-0fd0a409c154- ddl	None	CREATE TABLE "albums"\r\n(\r\n AlbumId INTE	ddl
7	458debc8-8082-5450- a17a-66028bd55ace- ddl	None	CREATE TABLE "playlists"\r\n(\r\n PlaylistI	ddl
8	4815f3fd-925b-53ce- 9dfa-0e4285d5abd3- ddl	None	CREATE TABLE "invoice_items"\r\n(\r\n Invoi	ddl
9	48d484e9-984c-58ff- b391-75521c69d486- ddl	None	CREATE INDEX IFK_PlaylistTrackTrackId ON "play	ddl
10	551e1120-a6ee-554f- 8b8a-ccf4f22d3636- ddl	None	CREATE INDEX IFK_AlbumArtistId ON "albums" (Ar	ddl
11	5ff4911e-45c1-5a59- 9566-243a9b6a3320- ddl	None	CREATE TABLE "employees"\r\n(\r\n Employeel	ddl
12	65df0648-bf05-5f75- 9365-c21f54b2302d- ddl	None	CREATE TABLE "media_types"\r\n(\r\n MediaTy	ddl
13	6b585176-e66d- 5b23-8d86- ca8a80e3af3d-ddl	None	CREATE INDEX IFK_EmployeeReportsTo ON "employe	ddl
14	868758b8-e018- 55e7-8cc3- 75c0e6d211c8-ddl	None	CREATE INDEX IFK_TrackAlbumId ON "tracks" (Alb	ddl
15	9ea4613d-c1be-5a77- ada9-c54ee3f0cab7- ddl	None	CREATE INDEX IFK_TrackMediaTypeId ON "tracks"	ddl

	id	question	content	training_data_type
16	a9c9a852-608d-5ef2- aede-26ba098d83d1- ddl	None	CREATE INDEX IFK_TrackGenreId ON "tracks" (Gen	ddl
17	b42cc9e1-9219-5a42- 9a06-de906f76239e- ddl	None	CREATE TABLE "tracks"\r\n(\r\n TrackId INTE	ddl
18	c387b9d2-5ff4-5a07- 8364-f5dab45bb2a9- ddl	None	CREATE TABLE "genres"\r\n(\r\n GenreId INTE	ddl
19	d654f328-dc36-549e- 84c3-06ee0db7e0f7- ddl	None	CREATE TABLE "playlist_track"\r\n(\r\n Play	ddl
20	d93f0d68-023d-5afb- 8121-ba346699d318- ddl	None	CREATE TABLE "customers"\r\n(\r\n CustomerI	ddl
21	e5879308-329e-543f- a693-0c14e2f9972e- ddl	None	CREATE INDEX IFK_InvoiceLineTrackId ON "invoic	ddl
22	ea84418b-1a28-59b4- a1f4-2fb674208adc- ddl	None	CREATE TABLE sqlite_sequence(name,seq)	ddl
0	2b4dda0a-a6ac-5e34- 8f76-e41c0734d55e- doc	None	In the chinook database invoice means order	documentation
1	ece10d36-9223-5045- 9ac8-4b5bc090acb5- doc	None	\n In the 'customers' table, address column	documentation

Asking the Al

Whenever you ask a new question, it will find the 10 most relevant pieces of training data and use it as part of the LLM prompt to generate the SQL.

```
In [13]: ts_start = time()

SELECT name FROM sqlite_master WHERE type = 'table';
SELECT c.CustomerId, SUM(il.Quantity) AS TotalAlbums
FROM Customers c
    JOIN invoices i ON c.CustomerId = i.CustomerId
    JOIN invoice_items il ON i.InvoiceId = il.InvoiceId
    GROUP BY c.CustomerId
    ORDER BY TotalAlbums DESC
LIMIT 5

In [14]: questions = [
    "Can you list all tables in the SQLite database catalog?",
    "which table stores customer's orders",
    "How many customers are there",
    "what are the top 5 countries that customers come from?",
```

```
"List all albums and their corresponding artist names ",
    """Find all tracks with a name containing "What" (case-insensitive) """
    "Get the total number of invoices for each customer",
    "Find the total number of invoices per country",
    "List all invoices with a total exceeding $10",
    "Find all invoices since 2010 and the total amount invoiced:",
    "List all employees and their reporting manager's name (if any):",
    " Get the average invoice total for each customer:",
    "Find the top 5 most expensive tracks (based on unit price):",
    "List all genres and the number of tracks in each genre:",
    "Get all genres that do not have any tracks associated with them:",
    "List all customers who have not placed any orders:",
        Can you find the top 10 most popular artists based on the number of
        Hint: There are 3 tables - artists, albums and tracks,
        where albums and artists are linked by ArtistId, albums and tracks a
    "List all customers from Canada and their email addresses:",
    "Find the customer with the most invoices ",
    "Find the customer who bought the most albums in total quantity (across
        Find the top 5 customers who bought the most albums in total quantit
        Hint: album quantity is found in invoice items,
    0.00
         Find the top 5 customers who spent the most money overall,
         Hint: order total can be found on invoices table, calculation using
    "Get all playlists containing at least 10 tracks and the total duration
    "Identify artists who have albums with tracks appearing in multiple gen
]
```

Loop over questions

```
In [15]: for n, question in enumerate(questions):
    # if n != 4: continue

# if n > 5: continue

my_vn_ask(question=question, sql_id=n+2, allow_llm_to_see_data=allow_llm
```

Number of requested results 10 is greater than number of elements in index 2, updating n results = 2

====

QUESTION - 2: Can you list all tables in the SQLite database catalog?

[(SQL Prompt)]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE sqlite stat1(tbl,idx,stat)\n\nCREATE TABLE s qlite sequence(name,seq)\n\nCREATE TABLE "playlists"\r\n(\r\n INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name $NVARCHAR(120)\r\n)\n$ \nCREATE TABLE "genres"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUTOINCREMEN Name NVARCHAR(120) $\r\n)\n\n$ CREATE TABLE "tracks" $\r\n(\r\n$ T NOT NULL,\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(20 AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NUL 0) NOT NULL,\r\n $L.\r\n$ GenreId INTEGER.\r\n Composer NVARCHAR(220),\r\n s INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) N FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\t OT NULL,\r\n ON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERE NCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "media types"\r\n MediaTypeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n $NVARCHAR(120)\r\n)\nCREATE TABLE "artists"\r\n(\r\n$ ArtistId INTEGER PR IMARY KEY AUTOINCREMENT NOT NULL,\r\n Name $NVARCHAR(120)\r\n)\n\nCREATE T$ InvoiceLineId INTEGER PRIMARY KEY AUTOINCRE ABLE "invoice items"\r\n(\r\n MENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER N OT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) NOT NULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC TION\r\n)\n\nCREATE TABLE "playlist track"\r\n(\r\n PlaylistId INTEGER N OT NULL,\r\n TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrac k PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERE NCES "playlists" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DEL ETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "albums"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(16 0) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistI d) REFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\n\n In the \'customers\' table, address column names do not have \'Billing\' prefix, \n e.g. country colu mn name is \'country\', not \'BillingCountry\'\n \n\nIn the chinook datab ase invoice means order\n\n===Response Guidelines \n1. If the provided conte xt is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requ ires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strings in that column. Prepe nd the query with a comment saying intermediate sql \n3. If the provided con text is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). $\normalfont{\mbox{$\backslash$}}$ If the question has been asked and answ ered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': 'Can you list all tables in the SQLite database

catalog?'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

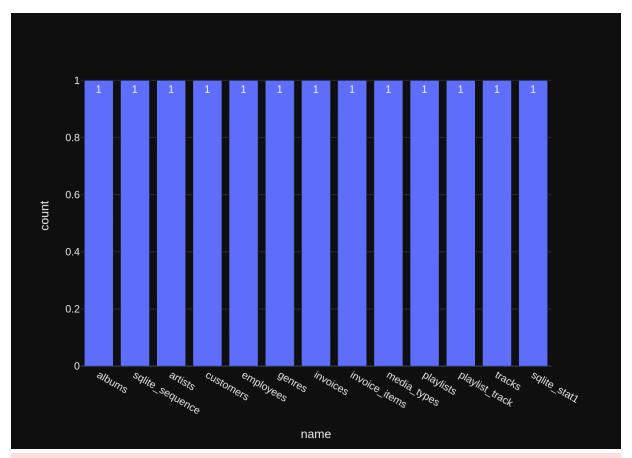
[(Prompt Content)]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE sglite stat1(tbl,idx,stat)\n\nCREATE TABLE s glite sequence(name,seq)\n\nCREATE TABLE \"playlists\"\r\n(\r\n d INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n$) GenreId INTEGER PRIMARY KEY AUTOINCR \n\nCREATE TABLE \"genres\"\r\n(\r\n EMENT NOT NULL,\r\n Name $NVARCHAR(120)\r\n)\n\nCREATE TABLE \"tracks\"\r$ $\n(\r\n$ TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n VARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEGER GenreId INTEGER.\r\n Composer NVARCHAR(220),\r\n UnitPrice NUMERIC(1 iseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) 0,2) NOT NULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreI d) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO FOREIGN KEY (MediaTypeId) REFERENCES \"media types\" (MediaTy peId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE MediaTypeId INTEGER PRIMARY KEY AUTOINCREMENT NO \"media types\"\r\n(\r\n T NULL,\r\n Name NVARCHAR(120)\r\n)\n\nCREATE TABLE \"artists\"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(12 0)\r\n)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL.\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invo ices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n OREIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO AC TION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"playlist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n RAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n Y (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO AC TION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES \"tracks\" $(TrackId) \r\n\t\0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TAB$ LE \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NUL $L,\r\n$ FOREIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\t0 $L,\r\n$ N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\n In the 'customers' table, address column names do not have 'Billing' p e.g. country column name is 'country', not 'BillingCountry'\n refix, \n \n\nIn the chinook database invoice means order\n\n===Response Guidelines \n 1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is a lmost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strin gs in that column. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can't be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it w as given before. \n"}, {"role": "user", "content": "Can you list all tables

```
in the SQLite database catalog?"}]
 [( Ollama Response )]
 {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:11:18.599
 221712Z', 'message': {'role': 'assistant', 'content': " ```sql\nSELECT name FROM sqlite_master WHERE type='table';\n```"}, 'done_reason': 'stop', 'don
 e': True, 'total_duration': 23006614218, 'load_duration': 904356026, 'prompt
 _eval_count': 980, 'prompt_eval_duration': 20769258000, 'eval_count': 17, 'e
 val duration': 1271331000}
 [( LLM Response )]
  ```sql
 SELECT name FROM sqlite master WHERE type='table';
 [(Output from LLM)]
   ```sql
 SELECT name FROM sqlite master WHERE type='table';
 [( Extracted SQL )]
  SELECT name FROM sqlite master WHERE type='table'
SELECT name FROM sqlite master WHERE type='table'
```

	name
0	albums
1	sqlite_sequence
2	artists
3	customers
4	employees
5	genres
6	invoices
7	invoice_items
8	media_types
9	playlists
10	playlist_track
11	tracks
12	sqlite_stat1

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [( Prompt Content )]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: 'Ca
 n you list all tables in the SQLite database catalog?'\n\nThe DataFrame was
 produced using this query: SELECT name FROM sqlite master WHERE type='tabl
 e'\n\nThe following is information about the resulting pandas DataFrame 'd
 f': \nRunning df.dtypes gives:\n name
                                         object\ndtype: object"}, {"role":
 "user", "content": "Can you generate the Python plotly code to chart the res
 ults of the dataframe? Assume the data is in a pandas dataframe called 'df'.
 If there is only one value in the dataframe, use an Indicator. Respond with
only Python code. Do not answer with any explanations -- just the code."}]
 [( Ollama Response )]
 {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:11:30.800
 030527Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
 otly.graph objects as go\nimport pandas as pd\n\n# Assuming df is your DataF
 rame \in len(df) == 1: n
                             fig = go.Figure(go.Indicator(\n
 ber",\n
                                   title={"text": "Number of Tables"},\n
                value=1,\n
domain={\'x\': [0, 1], \'y\': [0, 1]}\
                                             ))\nelse:\n
                                                            fig = px.bar(df, x)
=\'name\', y=None, text_auto=\'.s\')\n\nfig.show()\n```'}, 'done_reason': 's
top', 'done': True, 'total duration': 12152729939, 'load duration': 1075214
 1, 'prompt_eval_count': 154, 'prompt_eval_duration': 3059060000, 'eval coun
t': 131, 'eval duration': 9039327000}
import plotly.graph_objects as go
import pandas as pd
# Assuming df is your DataFrame
if len(df) == 1:
 fig = go.Figure(go.Indicator(
   mode="number",
   value=1.
   title={"text": "Number of Tables"},
   domain={'x': [0, 1], 'y': [0, 1]}
 ))
else:
 fig = px.bar(df, x='name', y=None, text auto='.s')
```



Number of requested results 10 is greater than number of elements in index 1, updating $n_results = 1$

Number of requested results 10 is greater than number of elements in index 2, updating $n_results = 2$

====

QUESTION - 3: which table stores customer's orders

====

[(SQL Prompt)]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL.\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE InvoiceLineId INTEGER PRIMARY KEY AUTOINCR TABLE "invoice items"\r\n(\r\n InvoiceId INTEGER NOT NULL,\r\n EMENT NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) NOT NULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC TION\r\n)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n $NVARCHAR(70), \r\n$ untry NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(2 Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n portRepId INTEGER.\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "employees"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT N OT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(2 0) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n rthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE TABLE sqlite sequence(name, seq)\n\nCREATE TABLE "playlists"\r PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n e NVARCHAR(120)\r\n)\n\nCREATE TABLE sglite stat1(tbl,idx,stat)\n\nCREATE TA AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL BLE "albums"\r\n(\r\n $L,\r\n$ Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NUL FOREIGN KEY (ArtistId) REFERENCES "artists" (ArtistId) \r\n\t\tON $L,\r\n$ DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "playlist track"\r PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\t0N DELE TE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "t racks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCRE ATE TABLE "media types"\r\n(\r\n MediaTypeId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n Name $NVARCHAR(120)\r\n)\n\n===Additional Context \n$ \nIn the chinook database invoice means order\n\n\n In the \'customers\' table, address column names do not have \'Billing\' prefix, \n

ry column name is \'country\', not \'BillingCountry\'\n \n\n===Response G uidelines \n1. If the provided context is sufficient, please generate a vali d SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the d istinct strings in that column. Prepend the query with a comment saying inte rmediate_sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n'\}, \{'role': 'user', 'content': 'Can you l ist all tables in the SQLite database catalog?'\}, \{'role': 'assistant', 'content': "SELECT name FROM sqlite_master WHERE type='table'"\}, \{'role': 'user', 'content': "which table stores customer's orders"\}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[(Prompt Content)]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P CustomerId INTEGER NOT NULL,\r\n RIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER FOREIGN KEY (CustomerId) REFERENCES \"customers\" IC(10,2) NOT NULL,\r\n (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOIN CREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n ddress NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Fax NVARCHAR(24),\r\n $RCHAR(24), \r\n$ Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employe es\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCR EATE TABLE \"employees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCR LastName NVARCHAR(20) NOT NULL,\r\n EMENT NOT NULL,\r\n FirstName NVA RCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NV (70), r n $ARCHAR(40), \r\n$ PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) Fax NVARCHAR(24),\r\n REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\nCREATE TABLE sqlite sequence(name, seq)\n\nCREATE TABLE \"p laylists\"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL Name NVARCHAR(120)\r\n)\n\nCREATE TABLE sglite stat1(tbl,idx,stat) \n\nCREATE TABLE \"albums\"\r\n(\r\n Albumid INTEGER PRIMARY KEY AUTOINCR

EMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGE R NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"playl ist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, Track NOT NULL,\r\n FOREIGN KEY (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"media types\"\r\n(\r\n MediaTypeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120)\r\n)\n\n===A dditional Context \n\nIn the chinook database invoice means order\n\n n the 'customers' table, address column names do not have 'Billing' prefix, e.g. country column name is 'country', not 'BillingCountry'\n ==Response Guidelines \n1. If the provided context is sufficient, please gen erate a valid SQL query without any explanations for the question. \n2. If t he provided context is almost sufficient but requires knowledge of a specifi c string in a particular column, please generate an intermediate SQL query t o find the distinct strings in that column. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can't be generated. \n4. Please use the most relevant table (s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assist ant", "content": "SELECT name FROM sqlite master WHERE type='table'"}, {"rol e": "user", "content": "which table stores customer's orders"}]

[(Ollama Response)] {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:12:13.303 33531Z', 'message': {'role': 'assistant', 'content': " intermediate sql\n\nS ELECT DISTINCT TableName\nFROM (\n SELECT 'invoices' AS TableName UNION A SELECT 'invoice items' AS TableName UNION ALL\n SELECT 'customer SELECT 'employees' AS TableName UNION ALL\n s' AS TableName UNION ALL\n SELECT 'playlists' AS TableName UNION ALL\n SELECT 'albums' AS TableName SELECT 'playlist track' AS TableName UNION ALL\n UNION ALL\n edia types' AS TableName\n)"}, 'done reason': 'stop', 'done': True, 'total d uration': 42058682679, 'load duration': 6947936, 'prompt eval count': 1240, 'prompt eval duration': 32719616000, 'eval count': 111, 'eval duration': 908 3253000} [(LLM Response)] intermediate sql

```
intermediate_sql

SELECT DISTINCT TableName
FROM (
    SELECT 'invoices' AS TableName UNION ALL
    SELECT 'invoice_items' AS TableName UNION ALL
    SELECT 'customers' AS TableName UNION ALL
    SELECT 'employees' AS TableName UNION ALL
    SELECT 'playlists' AS TableName UNION ALL
    SELECT 'albums' AS TableName UNION ALL
    SELECT 'playlist_track' AS TableName UNION ALL
    SELECT 'media_types' AS TableName
)

[( Running Intermediate SQL )]
  intermediate_sql
```

```
SELECT DISTINCT TableName
FROM (
    SELECT 'invoices' AS TableName UNION ALL
    SELECT 'invoice items' AS TableName UNION ALL
    SELECT 'customers' AS TableName UNION ALL
    SELECT 'employees' AS TableName UNION ALL
    SELECT 'playlists' AS TableName UNION ALL
    SELECT 'albums' AS TableName UNION ALL
    SELECT 'playlist track' AS TableName UNION ALL
    SELECT 'media types' AS TableName
)
[( Final SQL Prompt )]
[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene
rate a SQL query to answer the question. Your response should ONLY be based
on the given context and follow the response guidelines and format instructi
ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n
                                                      InvoiceId INTEGER PRI
MARY KEY AUTOINCREMENT NOT NULL,\r\n
                                       CustomerId INTEGER NOT NULL.\r\n
InvoiceDate DATETIME NOT NULL,\r\n
                                      BillingAddress NVARCHAR(70),\r\n
                               BillingState NVARCHAR(40),\r\n
illingCity NVARCHAR(40),\r\n
                                                                 BillingCou
ntry NVARCHAR(40),\r\n
                         BillingPostalCode NVARCHAR(10),\r\n
                                                                Total NUMER
IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers"
(CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE
TABLE "invoice items"\r\n(\r\n
                                 InvoiceLineId INTEGER PRIMARY KEY AUTOINCR
EMENT NOT NULL,\r\n
                       InvoiceId INTEGER NOT NULL,\r\n
                                                          TrackId INTEGER
                UnitPrice NUMERIC(10,2) NOT NULL,\r\n
NOT NULL,\r\n
                                                          Quantity INTEGER
NOT NULL,\r\n
                 FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId)
\r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n
                                                      FOREIGN KEY (TrackI
d) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC
TION\r\n)\n\nCREATE TABLE "customers"\r\n(\r\n
                                                 CustomerId INTEGER PRIMARY
KEY AUTOINCREMENT NOT NULL,\r\n
                                  FirstName NVARCHAR(40) NOT NULL,\r\n
LastName NVARCHAR(20) NOT NULL,\r\n
                                       Company NVARCHAR(80),\r\n
                                              State NVARCHAR(40),\r\n
NVARCHAR(70), \r\n
                   City NVARCHAR(40),\r\n
untry NVARCHAR(40),\r\n
                          PostalCode NVARCHAR(10),\r\n
                                                          Phone NVARCHAR(2
4),\r\n
           Fax NVARCHAR(24),\r\n
                                   Email NVARCHAR(60) NOT NULL,\r\n
                         FOREIGN KEY (SupportRepId) REFERENCES "employees"
portRepId INTEGER,\r\n
(EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE
TABLE "employees"\r\n(\r\n
                             EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT N
OT NULL,\r\n
               LastName NVARCHAR(20) NOT NULL,\r\n
                                                       FirstName NVARCHAR(2
0) NOT NULL,\r\n
                    Title NVARCHAR(30),\r\n
                                               ReportsTo INTEGER,\r\n
rthDate DATETIME,\r\n
                        HireDate DATETIME,\r\n
                                                  Address NVARCHAR(70),\r\n
                         State NVARCHAR(40),\r\n
                                                    Country NVARCHAR(40),\r
City NVARCHAR(40),\r\n
      PostalCode NVARCHAR(10),\r\n
                                     Phone NVARCHAR(24),\r\n
                                                                Fax NVARCHA
             Email NVARCHAR(60),\r\n
                                        FOREIGN KEY (ReportsTo) REFERENCES
"employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r
\n)\n\nCREATE TABLE sqlite sequence(name, seq)\n\nCREATE TABLE "playlists"\r
           PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n
e NVARCHAR(120)\r\n)\n\nCREATE TABLE sqlite stat1(tbl,idx,stat)\n\nCREATE TA
                        Albumid INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL
BLE "albums"\r\n(\r\n
          Title NVARCHAR(160) NOT NULL,\r\n
L,\r\n
                                               ArtistId INTEGER NOT NUL
          FOREIGN KEY (ArtistId) REFERENCES "artists" (ArtistId) \r\n\t\tON
DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "playlist track"\r
           PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r
\n(\r\n
      CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n
FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\t0N DELE
```

TE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "t racks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\CRE ATE TABLE "media types"\r\n(\r\n MediaTypeId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n Name $NVARCHAR(120)\r\n)\n\n===Additional Context \n$ \nIn the chinook database invoice means order\n\n\n In the \'customers\' table, address column names do not have \'Billing\' prefix, \n ry column name is \'country\', not \'BillingCountry\'\n \n\nThe following is a pandas DataFrame with the results of the intermediate SQL query interm ediate sql\n\nSELECT DISTINCT TableName\nFROM (\n SELECT \'invoices\' AS TableName UNION ALL\n SELECT \'invoice items\' AS TableName UNION ALL\n SELECT \'customers\' AS TableName UNION ALL\n SELECT \'employees\' AS Tab leName UNION ALL\n SELECT \'playlists\' AS TableName UNION ALL\n SELECT \'playlist track\' AS TableN T \'albums\' AS TableName UNION ALL\n ame UNION ALL\n SELECT \'media types\' AS TableName\n): \n| | TableNam |\n|---:|:------\n| 0 | invoices |\n| 1 | invoice i |\n| 4 | playlists |\n| 3 | employees |\n| 2 | customers tems 5 | albums |\n| 6 | playlist track |\n| 7 | media types \n\n===Response Guidelines \n1. If the provided context is sufficient, pleas e generate a valid SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a spe cific string in a particular column, please generate an intermediate SQL que ry to find the distinct strings in that column. Prepend the query with a com ment saying intermediate sql \n3. If the provided context is insufficient, p lease explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please re peat the answer exactly as it was given before. \n'}, {'role': 'user', 'cont ent': 'Can you list all tables in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT name FROM sqlite master WHERE type='tabl e'"}, {'role': 'user', 'content': "which table stores customer's orders"}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[(Prompt Content)]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOIN InvoiceId INTEGER NOT NULL,\r\n CREMENT NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n ddress NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r

Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n $RCHAR(24), \r\n$ SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employe es\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCR EATE TABLE \"employees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVA RCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER.\r BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR State NVARCHAR(40),\r\n City NVARCHAR(40),\r\n Country NV $(70), \r\n$ $ARCHAR(40), \r\n$ PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n Fax NVARCHAR(24),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\nCREATE TABLE sqlite sequence(name, seq)\n\nCREATE TABLE \"p laylists\"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL Name NVARCHAR(120)\r\n)\n\nCREATE TABLE sglite stat1(tbl,idx,stat) $L,\r\n$ \n\nCREATE TABLE \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGE FOREIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) R NOT NULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"playl ist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, Track NOT NULL,\r\n FOREIGN KEY (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO $ACTION\r\n)\n\nCREATE TABLE \''media types\''\r\n(\r\n$ MediaTypeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120)\r\n)\n\n===A dditional Context \n\nIn the chinook database invoice means order\n\n\n n the 'customers' table, address column names do not have 'Billing' prefix, e.g. country column name is 'country', not 'BillingCountry'\n he following is a pandas DataFrame with the results of the intermediate SQL query intermediate sql\n\nSELECT DISTINCT TableName\nFROM (\n SELECT 'invoice items' AS TableName UNIO voices' AS TableName UNION ALL\n N ALL\n SELECT 'customers' AS TableName UNION ALL\n SELECT 'employees' SELECT 'playlists' AS TableName UNION ALL\n AS TableName UNION ALL\n ELECT 'albums' AS TableName UNION ALL\n SELECT 'playlist track' AS TableN ame UNION ALL\n SELECT 'media types' AS TableName\n): \n| | TableName |\n|---:|:-----|\n| 0 | invoices |\n| 1 | invoice items | \n| 2 | customers |\n| 3 | employees |\n| 4 | playlists \n| 5 | albums |\n| 6 | playlist track |\n| 7 | media types \n\n===Response Guidelines \n1. If the provided context is sufficient, pleas e generate a valid SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a spe cific string in a particular column, please generate an intermediate SQL que ry to find the distinct strings in that column. Prepend the query with a com ment saying intermediate sql \n3. If the provided context is insufficient, p lease explain why it can't be generated. \n4. Please use the most relevant t able(s). \n5. If the question has been asked and answered before, please rep eat the answer exactly as it was given before. \n"}, {"role": "user", "conte nt": "Can you list all tables in the SQLite database catalog?"}, {"role": "a ssistant", "content": "SELECT name FROM sqlite master WHERE type='table'"}, {"role": "user", "content": "which table stores customer's orders"}]

```
[( Ollama Response )]
```

{'model': 'deepseek-coder-v2:latest', 'created_at': '2024-10-12T17:12:32.051 952737Z', 'message': {'role': 'assistant', 'content': ' The `invoices` table stores customer orders. Here is the SQL query to select distinct order infor

```
mation from the `invoices` table:\n\n```sql\nSELECT DISTINCT InvoiceId, Cust
omerId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCount
ry, BillingPostalCode, Total\nFROM invoices;\n```'}, 'done reason': 'stop',
'done': True, 'total duration': 18745049671, 'load_duration': 11626892, 'pro
mpt eval count': 1453, 'prompt eval duration': 12767315000, 'eval count': 6
9, 'eval duration': 5744200000}
[( LLM Response )]
The `invoices` table stores customer orders. Here is the SQL query to selec
t distinct order information from the `invoices` table:
```sql
SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingC
ity, BillingState, BillingCountry, BillingPostalCode, Total
FROM invoices;
[(Output from LLM)]
 The `invoices` table stores customer orders. Here is the SQL guery to sele
ct distinct order information from the `invoices` table:
```sql
SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingC
ity, BillingState, BillingCountry, BillingPostalCode, Total
FROM invoices:
[( Extracted SQL )]
 SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, Billing
City, BillingState, BillingCountry, BillingPostalCode, Total
```

SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total

FROM invoices

FROM invoices

	InvoiceId	CustomerId	InvoiceDate	BillingAddress	BillingCity	BillingState	BillingCou
0	1	2	2009-01-01 00:00:00	Theodor- Heuss-Straße 34	Stuttgart	None	Geri
1	2	4	2009-01-02 00:00:00	Ullevålsveien 14	Oslo	None	No
2	3	8	2009-01-03 00:00:00	Grétrystraat 63	Brussels	None	Bel
3	4	14	2009-01-06 00:00:00	8210 111 ST NW	Edmonton	AB	Ca
4	5	23	2009-01-11 00:00:00	69 Salem Street	Boston	MA	
•••	•••	•••	•••	•••	•••	•••	
407	408	25	2013-12-05 00:00:00	319 N. Frances Street	Madison	WI	
408	409	29	2013-12-06 00:00:00	796 Dundas Street West	Toronto	ON	Ca
409	410	35	2013-12-09 00:00:00	Rua dos Campeões Europeus de Viena, 4350	Porto	None	Рог
410	411	44	2013-12-14 00:00:00	Porthaninkatu 9	Helsinki	None	Fir
411	412	58	2013-12-22 00:00:00	12,Community Centre	Delhi	None	
412 г	ows × 9 col	umns					

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None
[( Prompt Content )]
[{"role": "system", "content": "The following is a pandas DataFrame that con
tains the results of the query that answers the question the user asked: 'wh
ich table stores customer's orders'\n\nThe DataFrame was produced using this
query: SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, B
illingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM inv
oices\n\nThe following is information about the resulting pandas DataFrame
'df': \nRunning df.dtypes gives:\n InvoiceId
                                                          int64\nCustomerId
int64\nInvoiceDate
                             object\nBillingAddress
                                                           object\nBillingCi
             object\nBillingState
                                           object\nBillingCountry
ect\nBillingPostalCode
                           object\nTotal
                                                        float64\ndtype: obje
ct"}, {"role": "user", "content": "Can you generate the Python plotly code t
o chart the results of the dataframe? Assume the data is in a pandas datafra
me called 'df'. If there is only one value in the dataframe, use an Indicato
r. Respond with only Python code. Do not answer with any explanations -- jus
t the code."}]
[( Ollama Response )]
{'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:12:52.926
328793Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
otly.graph objects as go\nimport pandas as pd\n\nif df.shape[0] == 1:\n
                                      mode="number",\n
ig = go.Figure(go.Indicator(\n
                                                              value=df[\'Tot
al\'].values[0],\n
                          title={"text": "Total"},\n
                                                            domain={\'x\':
[0, 1], \'y\': [0, 1] \n
                           ))\nelse:\n
                                           fig = go.Figure(data=[go.Table(he
ader=dict(values=[\'InvoiceId\', \'CustomerId\', \'InvoiceDate\', \'BillingA
ddress\', \'BillingCity\', \'BillingState\', \'BillingCountry\', \'BillingPo
stalCode\', \'Total\']),\n
                                                             cells=dict(valu
es=[df[\'InvoiceId\'], df[\'CustomerId\'], df[\'InvoiceDate\'], df[\'Billing
Address\'], df[\'BillingCity\'], df[\'BillingState\'], df[\'BillingCountry
\'], df[\'BillingPostalCode\'], df[\'Total\']]))])\n\nfig.show()\n```'}, 'do
ne reason': 'stop', 'done': True, 'total duration': 20837778058, 'load durat
ion': 9422963, 'prompt eval count': 225, 'prompt eval duration': 4684416000,
'eval count': 227, 'eval duration': 16098827000}
```

Invoice	eld Customerlo	dnvoiceDate	illingAddres	BillingCity	BillingState	illingCount	ingPostalCo	Total	
1	2	2009-01-01 00:00:00	dor-Heuss-S	Stuttgart	null	Germany	70174	1.98	
2	4		Ullevålsveie .4	Oslo	null	Norway	0171	3.96	
3	8		Grétrystraai 63	Brussels	null	Belgium	1000	5.94	
4	14	2009-01-06 00:00:00	8210 111 ST NW	Edmonton	АВ	Canada	T6G 2C7	8.91	
5	23	2009-01-11 00:00:00	69 Salem Street	Boston	MA	USA	2113	13.86	
6	37	2009-01-19	Berger Straße	Frankfurt	null	Germany	60316	0.99	

Number of requested results 10 is greater than number of elements in index 2, updating n_results = 2 Number of requested results 10 is greater than number of elements in index 2, updating n_results = 2 -----

====

QUESTION - 4: How many customers are there

====

[(SQL Prompt)]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL.\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK CustomerSupportRepId ON "customers" (SupportRepId)\n\nCREATE TABLE FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(20) $L,\r\n$ T NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n y $NVARCHAR(40), \r\n$ Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 Email NVARCHAR(60) NOT NULL.\r\n SupportRepId INTEGER.\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DE LETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerI d ON "invoices" (CustomerId)\n\nCREATE TABLE "invoice items"\r\n(\r\n oiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId INTE GER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(1 Quantity INTEGER NOT NULL,\r\n 0,2) NOT NULL,\r\n FOREIGN KEY (Invoi ceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDAT E NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK Invoice LineInvoiceId ON "invoice items" (InvoiceId)\n\nCREATE TABLE "albums"\r\n(\r AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARC ArtistId INTEGER NOT NULL,\r\n HAR(160) NOT NULL,\r\n FOREIGN KEY (A rtistId) REFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDA TE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId)\n\nCREATE TABLE "employees"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n ReportsTo irstName NVARCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n BirthDate DATETIME,\r\n INTEGER,\r\n HireDate DATETIME,\r\n City NVARCHAR(40),\r\n $NVARCHAR(70), \r\n$ State NVARCHAR(40),\r\n untry NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(2 4),\r\n Fax NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "playlists"\r\n(\r\n INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name $NVARCHAR(120)\r\n)\n$ \n\n===Additional Context \n\n\n In the \'customers\' table, address colu mn names do not have \'Billing\' prefix, \n e.g. country column name is \'country\', not \'BillingCountry\'\n \n\nIn the chinook database invoice means order\n\n===Response Guidelines \n1. If the provided context is suffic ient, please generate a valid SQL query without any explanations for the que stion. \n2. If the provided context is almost sufficient but requires knowle dge of a specific string in a particular column, please generate an intermed iate SQL query to find the distinct strings in that column. Prepend the query with a comment saying intermediate_sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assist ant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Tota \nFROM invoices'}, {'role': 'user', 'content': 'Can you list all tables in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT name FROM sqlite_master WHERE type='table'"}, {'role': 'user', 'content': 'How many customers are there'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[(Prompt Content)]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL.\r\n BillingAddress NVARCHAR(70),\r\n BillingState NVARCHAR(40),\r\n illingCity NVARCHAR(40),\r\n BillingCou BillingPostalCode NVARCHAR(10),\r\n ntry NVARCHAR(40),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK CustomerSupportRepId ON \"customers\" (SupportRepId)\n\nCREATE TAB CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NO LE \"customers\"\r\n(\r\n FirstName NVARCHAR(40) NOT NULL,\r\n T NULL,\r\n LastName NVARCHAR(2 0) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHA $R(24), \r\n$ Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustome rId ON \"invoices\" (CustomerId)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId I NTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC Quantity INTEGER NOT NULL,\r\n NOT NULL,\r\n FOREIGN KEY (Inv oiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON U FOREIGN KEY (TrackId) REFERENCES \"tracks\" (TrackI PDATE NO ACTION,\r\n d) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (InvoiceId)\n\nCREATE TABLE \"albu ms\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n EIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\t0N DELETE NO A CTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"i nvoice items\" (TrackId)\n\nCREATE TABLE \"employees\"\r\n(\r\n d INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARCHAR(20) FirstName NVARCHAR(20) NOT NULL,\r\n Title NVARCHAR(3 NOT NULL,\r\n $0), \r\n$ ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n HireDate DAT ETIME,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n $VARCHAR(40), \ r\ n$ Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r

Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n Email NVARCHAR(6 0),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"employees\" (EmployeeId) \r \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"playlis PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n)\n\n===Additional Context <math>\n\n\n$ In the 'custome rs' table, address column names do not have 'Billing' prefix, \n ntry column name is 'country', not 'BillingCountry'\n \n\nIn the chinook database invoice means order\n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without any explana tions for the question. \n2. If the provided context is almost sufficient bu t requires knowledge of a specific string in a particular column, please gen erate an intermediate SQL query to find the distinct strings in that column. Prepend the query with a comment saying intermediate sql \n3. If the provide d context is insufficient, please explain why it can't be generated. \n4. Pl ease use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assistant", "content": "SELECT DISTINCT InvoiceId, CustomerId, Inv oiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, Billing PostalCode, Total\nFROM invoices"}, {"role": "user", "content": "Can you lis t all tables in the SQLite database catalog?"}, {"role": "assistant", "conte nt": "SELECT name FROM sqlite master WHERE type='table'"}, {"role": "user", "content": "How many customers are there"}]

```
[( Ollama Response )]
{'model': 'deepseek-coder-v2:latest', 'created_at': '2024-10-12T17:13:25.406
663113Z', 'message': {'role': 'assistant', 'content': ' SELECT COUNT(*) AS N
umberOfCustomers FROM customers;'}, 'done_reason': 'stop', 'done': True, 'to
tal_duration': 32170168392, 'load_duration': 7157474, 'prompt_eval_count': 1
184, 'prompt_eval_duration': 31020502000, 'eval_count': 11, 'eval_duration':
830845000}
[( LLM Response )]
SELECT COUNT(*) AS NumberOfCustomers FROM customers;
```

[(Output from LLM)]
 SELECT COUNT(*) AS NumberOfCustomers FROM customers;
[(Extracted SQL)]
 SELECT COUNT(*) AS NumberOfCustomers FROM customers

SELECT COUNT(*) AS NumberOfCustomers **FROM** customers

NumberOfCustomers

0 59

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [( Prompt Content )]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: 'Ho
w many customers are there'\n\nThe DataFrame was produced using this query:
 SELECT COUNT(*) AS NumberOfCustomers FROM customers\n\nThe following is info
 rmation about the resulting pandas DataFrame 'df': \nRunning df.dtypes give
 s:\n NumberOfCustomers
                           int64\ndtype: object"}, {"role": "user", "conten
t": "Can you generate the Python plotly code to chart the results of the dat
 aframe? Assume the data is in a pandas dataframe called 'df'. If there is on
 ly one value in the dataframe, use an Indicator. Respond with only Python co
de. Do not answer with any explanations -- just the code."}]
 [( Ollama Response )]
 {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:13:37.347
 177044Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
 otly.graph objects as go\nimport pandas as pd\n\n# Assuming df is your DataF
                             fig = go.Figure(go.Indicator(\n
 rame \in len(df) == 1: n
 ber",\n
                value=df[\'NumberOfCustomers\'].iloc[0],\n
                                                                    title={"tex
 t": "Number of Customers"}\n
                                 ))\nelse:\n
                                                 fig = go.Figure(go.Bar(\n
                                      y=[df[\'NumberOfCustomers\'].iloc[0]]\n
x=[\'NumberOfCustomers\'],\n
 ))\n\nfig.show()\n```'}, 'done reason': 'stop', 'done': True, 'total duratio
n': 11910928156, 'load_duration': 49211058, 'prompt_eval_count': 151, 'promp
 t eval duration': 2923017000, 'eval count': 129, 'eval duration': 884949900
import plotly.graph objects as go
import pandas as pd
# Assuming df is your DataFrame
if len(df) == 1:
 fig = go.Figure(go.Indicator(
   mode="number",
   value=df['NumberOfCustomers'].iloc[0],
   title={"text": "Number of Customers"}
 ))
else:
 fig = go.Figure(go.Bar(
   x=['NumberOfCustomers'],
   y=[df['NumberOfCustomers'].iloc[0]]
 ))
```



Number of requested results 10 is greater than number of elements in index 3, updating $n_results = 3$

Number of requested results 10 is greater than number of elements in index 2, updating $n_results = 2$

====

QUESTION - 5: what are the top 5 countries that customers come from?

[(SQL Prompt)]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL.\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT N OT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(2 Address $NVARCHAR(70),\r\n$ 0) NOT NULL,\r\n Company NVARCHAR(80),\r\n State NVARCHAR(40),\r\n City NVARCHAR(40),\r\n Country NVARCHAR(40),\r PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHA Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DE LETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "invoice items"\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n voiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPric e NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTIO FOREIGN KEY (TrackId) REFERENCES "tracks" (Tra N ON UPDATE NO ACTION,\r\n ckid) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "media types"\r\n(\r\n MediaTypeId INTEGER PRIMARY KEY AUTOINCREMENT NOT Name NVARCHAR(120)\r\n)\n\nCREATE INDEX IFK CustomerSupportRepI d ON "customers" (SupportRepId)\n\nCREATE TABLE "employees"\r\n(\r\n oyeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARCHAR FirstName NVARCHAR(20) NOT NULL,\r\n (20) NOT NULL,\r\n Title NVARCH $AR(30), \r\n$ ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n PostalCode NVARCHAR(1 e NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(24), r n0), r nEmail NVARCHA $R(60), \r\n$ FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "album AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Τi $s"\r\n(\r\n$ tle NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREI GN KEY (ArtistId) REFERENCES "artists" (ArtistId) \r\n\t\t0N DELETE NO ACTIO N ON UPDATE NO ACTION\r\n)\n\CREATE TABLE "playlist track"\r\n(\r\n listId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n T PK_PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (P laylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\tON DELETE NO ACTION O FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackI N UPDATE NO ACTION,\r\n d) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE sqli te sequence(name, seq)\n\nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGE Composer NVARCHAR(220),\r\n R, r nMilliseconds INTEGER NOT NULL,\r\n

Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (Albumid) REFERENCES "albums" (Albumid) \r\n\t\tON DELETE NO ACTION ON UPDAT E NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeI d) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION\r\n)\n\n===Additional Context \n\n\n In the \'customers\' table, address column names do not have \'Billing\' prefix, \n ry column name is \'country\', not \'BillingCountry\'\n \n\nIn the chinoo k database invoice means order\n\n===Response Guidelines \n1. If the provide d context is sufficient, please generate a valid SQL query without any expla nations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please q enerate an intermediate SQL query to find the distinct strings in that colum n. Prepend the query with a comment saying intermediate sql \n3. If the prov ided context is insufficient, please explain why it can\'t be generated. \n 4. Please use the most relevant table(s). \n5. If the question has been aske d and answered before, please repeat the answer exactly as it was given befo re. \n'}, {'role': 'user', 'content': 'How many customers are there'}, {'rol e': 'assistant', 'content': 'SELECT COUNT(*) AS NumberOfCustomers FROM custo mers'}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, Inv oiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, Billing PostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': 'Can you lis t all tables in the SQLite database catalog?'}, {'role': 'assistant', 'conte nt': "SELECT name FROM sqlite_master WHERE type='table'"}, {'role': 'user', 'content': 'what are the top 5 countries that customers come from?'}]

[Ollama parameters]
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options={},
keep alive=None

[(Prompt Content)]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER FOREIGN KEY (CustomerId) REFERENCES \"customers\" IC(10,2) NOT NULL,\r\n (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR Company NVARCHAR(80),\r\n (20) NOT NULL, $\r\n$ Address NVARCHAR(70),\r City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR $(40), \r\n$ PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEG $NVARCHAR(24), \r\n$ FOREIGN KEY (SupportRepId) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoi InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT N ce items\"\r\n(\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r ULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NUL \n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t \tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFE RENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION $\r\n)\n\n\CREATE TABLE \"media types\"\r\n(\r\n$ MediaTypeId INTEGER PRIMAR Y KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n)\n\n$ CREATE INDEX IFK CustomerSupportRepId ON \"customers\" (SupportRepId)\n\nCREATE TABLE \"e mployees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL L.\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NO Title NVARCHAR(30),\r\n ReportsTo INTEGER.\r\n T NULL,\r\n e DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n ty NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 4),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"e mployees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n) \n\nCREATE TABLE \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGE FOREIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) R NOT NULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"playl ist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, Track FOREIGN KEY (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE sqlite sequence(name,seq)\n\nCREATE TABLE \"trac TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n $ks\"\r\n(\r\n$ Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INT EGER NOT NULL.\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n UnitPrice NUMER Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (Albu IC(10,2) NOT NULL,\r\n mId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (Ge nreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE FOREIGN KEY (MediaTypeId) REFERENCES \"media types\" (Medi NO ACTION,\r\n aTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additi In the 'customers' table, address column names do not onal Context \n\n\n have 'Billing' prefix, \n e.g. country column name is 'country', not 'Bil \n\nIn the chinook database invoice means order\n\n===Resp lingCountry'\n onse Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the pro vided context is almost sufficient but requires knowledge of a specific stri ng in a particular column, please generate an intermediate SQL guery to find the distinct strings in that column. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explai n why it can't be generated. \n4. Please use the most relevant table(s). \n 5. If the question has been asked and answered before, please repeat the ans wer exactly as it was given before. \n"}, {"role": "user", "content": "How m any customers are there"}, {"role": "assistant", "content": "SELECT COUNT(*) AS NumberOfCustomers FROM customers"}, {"role": "user", "content": "which ta ble stores customer's orders"}, {"role": "assistant", "content": "SELECT DIS TINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, Billi ngState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalo q?"}, {"role": "assistant", "content": "SELECT name FROM sqlite master WHERE type='table'"}, {"role": "user", "content": "what are the top 5 countries th at customers come from?"}]

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[( Ollama Response )]
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y, COUNT(*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5'}, 'done_reason': 'stop', 'done': True, 'tota l_duration': 43946157816, 'load_duration': 8026458, 'prompt_eval_count': 148 3, 'prompt_eval_duration': 41102545000, 'eval_count': 28, 'eval_duration': 2323117000}

[(LLM Response)]
 SELECT BillingCountry, COUNT(*) AS CustomerCount
FROM customers
GROUP BY BillingCountry
ORDER BY CustomerCount DESC
LIMIT 5

SELECT BillingCountry, **COUNT(*) AS** CustomerCount

FROM customers

GROUP BY BillingCountry

ORDER BY CustomerCount DESC

LIMIT 5

Number of requested results 10 is greater than number of elements in index 3, updating $n_results = 3$ Number of requested results 10 is greater than number of elements in index 2, updating $n_results = 2$ *** RETRY 1 ***

[(SQL Prompt)] [{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based

on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT N OT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(2 Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n 0) NOT NULL,\r\n State NVARCHAR(40),\r\n City NVARCHAR(40),\r\n Country NVARCHAR(40),\r PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHA Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER.\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DE LETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "employees"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARC FirstName NVARCHAR(20) NOT NULL,\r\n HAR(20) NOT NULL,\r\n Title NVA $RCHAR(30), \r\n$ ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n ate DATETIME.\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n $(10), \r\n$ FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) $HAR(60), \r\n$ \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE sqlite sequence(name,seq)\n\nCREATE TABLE "invoice items"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL.\r\n InvoiceId INTEGER NOT NU TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NU $LL,\r\n$ LL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERE NCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DEL ETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "artists"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(12 0)\r\n)\n\nCREATE TABLE "genres"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUT OINCREMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n)\n\n$ CREATE TABLE sqlite s tat1(tbl,idx,stat)\n\nCREATE TABLE "albums"\r\n(\r\n AlbumId INTEGER PRIM ARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENCES "artist ArtistId INTEGER NOT NULL,\r\n s" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "playlists"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT N OT NULL,\r\n Name NVARCHAR(120)\r\n)\n\n===Additional Context $\n\n$ In the \'customers\' table, address column names do not have \'Billing\' pre e.g. country column name is \'country\', not \'BillingCountry\'\n \n\nIn the chinook database invoice means order\n\n===Response Guidelines \n 1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is a lmost sufficient but requires knowledge of a specific string in a particular

column, please generate an intermediate SQL query to find the distinct strin gs in that column. Prepend the query with a comment saying intermediate sgl

\n3. If the provided context is insufficient, please explain why it can\'t b e generated. \n4. Please use the most relevant table(s). \n5. If the questio n has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': 'How many customers are there'}, {'role': 'assistant', 'content': 'SELECT COUNT(*) AS NumberOfCustom ers FROM customers'}, {'role': 'user', 'content': "which table stores custom er's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingC ountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'conten t': 'Can you list all tables in the SQLite database catalog?'}, {'role': 'as sistant', 'content': "SELECT name FROM sqlite_master WHERE type='table'"}, {'role': 'user', 'content': "\n For the question what are the top 5 c ountries that customers come from?, \n the generated SQL statement S ELECT BillingCountry, COUNT(*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY Customer Count DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT (*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY Cust omerCount DESC\nLIMIT 5': no such column: BillingCountry .\n ix the error and re-generate the SQL\n "}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[(Prompt Content)]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR NOT NULL,\r\n (20) NOT NULL, $\r\$ Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR PostalCode NVARCHAR(10),\r\n $(40), r\n$ Phone NVARCHAR(24), $\r\$ Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEG $NVARCHAR(24), \r\n$ FOREIGN KEY (SupportRepId) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"emplo EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r yees\"\r\n(\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NOT NU LL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n BirthDate DA TETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n City N $VARCHAR(40), \r\n$ State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"e mployees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n) \n\nCREATE TABLE sqlite sequence(name, seq)\n\nCREATE TABLE \"invoice items InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n \"\r\n(\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPr ice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n GN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\t0N DELETE NO

ACTION ON UPDATE NO ACTION.\r\n FOREIGN KEY (TrackId) REFERENCES \"tracks \" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"artists\"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT Name NVARCHAR(120)\r\n)\n\nCREATE TABLE \"genres\"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(12 0)\r\n)\n\nCREATE TABLE sqlite stat1(tbl,idx,stat)\n\nCREATE TABLE \"albums AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n tle NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREI GN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\t0N DELETE NO ACT ION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"playlists\"\r\n(\r\n istId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) In the 'customers' table, address \r\n)\n\n===Additional Context \n\n\n column names do not have 'Billing' prefix, \n e.g. country column name is 'country', not 'BillingCountry'\n \n\nIn the chinook database invoice mea ns order\n\n===Response Guidelines \n1. If the provided context is sufficien t, please generate a valid SQL guery without any explanations for the guesti on. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strings in that column. Prepend the query wit h a comment saying intermediate sql \n3. If the provided context is insuffic ient, please explain why it can't be generated. \n4. Please use the most rel evant table(s). \n5. If the question has been asked and answered before, ple ase repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "How many customers are there"}, {"role": "assistant", "content": "SELECT COUNT(*) AS NumberOfCustomers FROM customers"}, {"role": "user", "co ntent": "which table stores customer's orders"}, {"role": "assistant", "cont ent": "SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, B illingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM inv oices"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assistant", "content": "SELECT name FROM sqli te master WHERE type='table'"}, {"role": "user", "content": "\n he question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi Please fix the error and re-generate the SQL\n ngCountry .\n "}]

```
[( Ollama Response )]
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[(LLM Response)]

The error indicates that the `BillingCountry` column does not exist in the `customers` table. Instead, the country information is stored in the `country` column of the `customers` table. To correct this, you should use the `country` column instead of `BillingCountry`. Here is the corrected SQL query:

```
SELECT country AS Top5Countries, COUNT(*) AS CustomerCount
 FROM customers
GROUP BY country
ORDER BY CustomerCount DESC
LIMIT 5;
 [( Output from LLM )]
  The error indicates that the `BillingCountry` column does not exist in the
 `customers` table. Instead, the country information is stored in the `countr
y` column of the `customers` table. To correct this, you should use the `cou
 ntry` column instead of `BillingCountry`. Here is the corrected SQL query:
 ```sal
SELECT country AS Top5Countries, COUNT(*) AS CustomerCount
 FROM customers
GROUP BY country
ORDER BY CustomerCount DESC
LIMIT 5;
 [(Extracted SQL)]
 SELECT country AS Top5Countries, COUNT(*) AS CustomerCount
 FROM customers
GROUP BY country
ORDER BY CustomerCount DESC
SELECT country AS Top5Countries, COUNT(*) AS CustomerCount
FROM customers
GROUP BY country
```

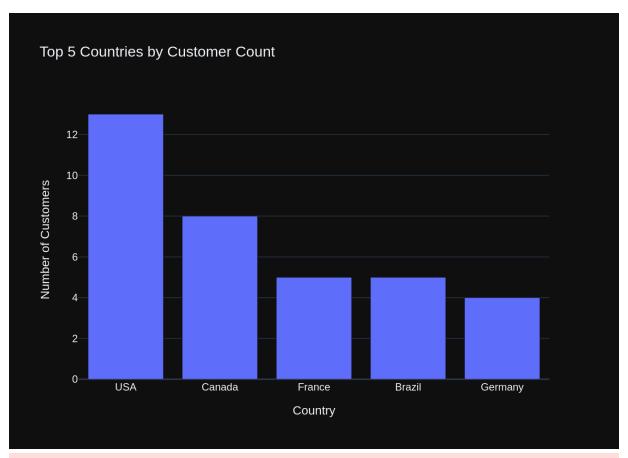
TonsCountries CustomerCount

ORDER BY CustomerCount DESC

LIMIT 5

	ropscountries	CustomerCount
0	USA	13
1	Canada	8
2	France	5
3	Brazil	5
4	Germany	4

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[Ollama parameters]
model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [(Prompt Content)]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: '\n
 For the question what are the top 5 countries that customers come from?, \n
the generated SQL statement SELECT BillingCountry, COUNT(*) AS CustomerCoun
 t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM
 IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S
 ELECT BillingCountry, COUNT(*) AS CustomerCount\nFROM customers\nGROUP BY Bi
 llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql
 ' SELECT BillingCountry, COUNT(*) AS CustomerCount\nFROM customers\nGROUP BY
BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi
 ngCountry .\n
 Please fix the error and re-generate the SQL\n
 '\n\nThe DataFrame was produced using this query: SELECT country AS Top5Coun
tries, COUNT(*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY
 CustomerCount DESC\nLIMIT 5\n\nThe following is information about the result
 ing pandas DataFrame 'df': \nRunning df.dtypes gives:\n Top5Countries
 int64\ndtype: object"}, {"role": "user", "content":
ect\nCustomerCount
 "Can you generate the Python plotly code to chart the results of the datafra
me? Assume the data is in a pandas dataframe called 'df'. If there is only o
 ne value in the dataframe, use an Indicator. Respond with only Python code.
Do not answer with any explanations -- just the code."}]
 [(Ollama Response)]
 {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:15:16.447
 284945Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
 otly.graph objects as go\n\nif len(df) == 1:\n
 fig = go.Figure(data=[go.I
 ndicator(value=df[\'CustomerCount\'].iloc[0], title={\'text\': "Top Country
 by Customer Count"})])\nelse:\n
 fig = go.Figure(data=[go.Bar(x=df[\'Top5C
ountries\'], y=df[\'CustomerCount\'])])\n\nfig.update layout(title=\'Top 5 C
ountries by Customer Count\', xaxis title=\'Country\', yaxis title=\'Number
 of Customers\')\nfig.show()\n```'}, 'done_reason': 'stop', 'done': True, 'to
 tal duration': 16727186365, 'load duration': 9147445, 'prompt eval count': 3
 23, 'prompt eval duration': 6762723000, 'eval count': 137, 'eval duration':
 9829169000}
import plotly.graph objects as go
if len(df) == 1:
 fig = go.Figure(data=[go.Indicator(value=df['CustomerCount'].iloc[0], title={'text': "Top Cou
ntry by Customer Count"})])
 fig = go.Figure(data=[go.Bar(x=df['Top5Countries'], y=df['CustomerCount'])])
fig.update_layout(title='Top 5 Countries by Customer Count', xaxis_title='Country', yaxis_titl
e='Number of Customers')
```



Number of requested results 10 is greater than number of elements in index 4, updating  $n_results = 4$ Number of requested results 10 is greater than number of elements in index 2, updating  $n_results = 2$  \_\_\_\_\_\_

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# QUESTION - 6: List all albums and their corresponding artist names

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[( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK AlbumArtistId ON "albums" (ArtistId)\n\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT CREATE TABLE "albums"\r\n(\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT FOREIGN KEY (ArtistId) REFERENCES "artists" (ArtistId) \r\n\t\t NULL,\r\n ON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\REATE TABLE "tracks"\r\n(\r TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT N AR(200) NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n nds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t NOT NULL,\r\n \tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFE RENCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r FOREIGN KEY (MediaTypeId) REFERENCES "media types" (MediaTypeId) \r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackAl bumId ON "tracks" (AlbumId)\n\nCREATE TABLE "artists"\r\n(\r\n NTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name  $NVARCHAR(120)\r\n)\n$ \nCREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)\n\nCREATE INDEX IFK Pl aylistTrackTrackId ON "playlist track" (TrackId)\n\nCREATE TABLE "playlist  $s"\r\n(\r\n$ PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n)\n\n$ CREATE TABLE "genres" $\r\n(\r\n$ PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name  $NVARCHAR(120)\r\n)\n\nCREATE$ INDEX IFK TrackMediaTypeId ON "tracks" (MediaTypeId)\n\n\n===Additional Cont ext \n\n\n In the \'customers\' table, address column names do not have \'Billing\' prefix, \n e.g. country column name is \'country\', not \'Bil lingCountry\'\n \n\nIn the chinook database invoice means order\n\n===Res ponse Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the pro vided context is almost sufficient but requires knowledge of a specific stri ng in a particular column, please generate an intermediate SQL query to find the distinct strings in that column. Prepend the query with a comment saying intermediate\_sql \n3. If the provided context is insufficient, please explai n why it can\'t be generated. \n4. Please use the most relevant table(s). \n 5. If the question has been asked and answered before, please repeat the ans wer exactly as it was given before. \n'}, {'role': 'user', 'content': 'Can y ou list all tables in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT name FROM sqlite master WHERE type='table'"}, {'role': 'u ser', 'content': "which table stores customer's orders"}, {'role': 'assistan t', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingA ddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total \nFROM invoices'}, {'role': 'user', 'content': 'How many customers are ther e'}, {'role': 'assistant', 'content': 'SELECT COUNT(\*) AS NumberOfCustomers FROM customers'}, {'role': 'user', 'content': "\n For the question wh at are the top 5 countries that customers come from?, \n the generate d SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM cust omers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results

in the following exception [ERROR-DB] Failed to execute SQL: SELECT Billing Country, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry \nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry \n Please fix the error and re-generate the SQL\n "}, {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5'}, {'role': 'user', 'content': 'List all albums and their corresponding artist names '}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK AlbumArtistId ON \"albums\" (ArtistId)\n \nCREATE TABLE \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREM Title NVARCHAR(160) NOT NULL,\r\n ENT NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"tracks TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n  $\"\r\n(\r\n$ me NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEG ER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (Albu mId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (Ge nreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION, \r\n FOREIGN KEY (MediaTypeId) REFERENCES \"media types\" (Medi aTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDE X IFK TrackAlbumId ON \"tracks\" (AlbumId)\n\nCREATE TABLE \"artists\"\r\n ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n ARCHAR(120)\r\n)\n\nCREATE INDEX IFK TrackGenreId ON \"tracks\" (GenreId)\n \nCREATE INDEX IFK PlaylistTrackTrackId ON \"playlist track\" (TrackId)\n\nC REATE TABLE \"playlists\"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOINC REMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n)\n\n$ CREATE TABLE \"genres\"\r GenreId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n  $\n(\r\n$ VARCHAR(120)\r\n)\n\nCREATE INDEX IFK TrackMediaTypeId ON \"tracks\" (MediaT ypeId)\n\n===Additional Context \n\n\n In the 'customers' table, addres s column names do not have 'Billing' prefix, \n e.g. country column name is 'country', not 'BillingCountry'\n \n\nIn the chinook database invoice means order\n\n===Response Guidelines \n1. If the provided context is suffic ient, please generate a valid SQL query without any explanations for the que stion. \n2. If the provided context is almost sufficient but requires knowle dge of a specific string in a particular column, please generate an intermed iate SQL query to find the distinct strings in that column. Prepend the quer y with a comment saying intermediate sql \n3. If the provided context is ins ufficient, please explain why it can't be generated. \n4. Please use the mos t relevant table(s). \n5. If the question has been asked and answered befor e, please repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalo q?"}, {"role": "assistant", "content": "SELECT name FROM sqlite master WHERE

type='table'"}, {"role": "user", "content": "which table stores customer's o rders"}, {"role": "assistant", "content": "SELECT DISTINCT InvoiceId, Custom erId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountr y, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "H ow many customers are there"}, {"role": "assistant", "content": "SELECT COUN T(\*) AS NumberOfCustomers FROM customers"}, {"role": "user", "content": "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi Please fix the error and re-generate the SQL\n ngCountry .\n "}, {"role": "assistant", "content": "SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5"}, {"role": "user", "content": "List all albums and their c orresponding artist names "}] [( Ollama Response )] {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:15:46.791 011501Z', 'message': {'role': 'assistant', 'content': ' ```sql\nSELECT a.Tit le AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId;\n```'}, 'done\_reason': 'stop', 'done': True, 'tota l duration': 30250974122, 'load duration': 8724166, 'prompt eval count': 103 8, 'prompt eval duration': 26547982000, 'eval count': 39, 'eval duration': 3 071917000} [( LLM Response )] ```sql SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName FROM albums a JOIN artists ar ON a.ArtistId = ar.ArtistId; [( Output from LLM )] ```sql SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName FROM albums a JOIN artists ar ON a.ArtistId = ar.ArtistId; [( Extracted SQL )] SELECT a. Title AS AlbumTitle, ar. Name AS ArtistName FROM albums a JOIN artists ar ON a.ArtistId = ar.ArtistId **SELECT** a.Title **AS** AlbumTitle, ar.Name **AS** ArtistName **FROM** albums a **JOIN** artists ar **ON** a.ArtistId = ar.ArtistId

	AlbumTitle	ArtistName
0	For Those About To Rock We Salute You	AC/DC
1	Balls to the Wall	Accept
2	Restless and Wild	Accept
3	Let There Be Rock	AC/DC
4	Big Ones	Aerosmith
•••		
342	Respighi:Pines of Rome	Eugene Ormandy
343	Schubert: The Late String Quartets & String Qu	Emerson String Quartet
344	Monteverdi: L'Orfeo	C. Monteverdi, Nigel Rogers - Chiaroscuro; Lon
345	Mozart: Chamber Music	Nash Ensemble
346	Koyaanisqatsi (Soundtrack from the Motion Pict	Philip Glass Ensemble

#### 347 rows × 2 columns

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

### [( Prompt Content )]

[{"role": "system", "content": "The following is a pandas DataFrame that con tains the results of the query that answers the question the user asked: 'Li st all albums and their corresponding artist names '\n\nThe DataFrame was p roduced using this query: SELECT a.Title AS AlbumTitle, ar.Name AS ArtistNam e\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId\n\nThe following is information about the resulting pandas DataFrame 'df': \nRunning df.dt ypes gives:\n AlbumTitle object\nArtistName object\ndtype: object"}, {"role": "user", "content": "Can you generate the Python plotly code to char the results of the dataframe? Assume the data is in a pandas dataframe cal led 'df'. If there is only one value in the dataframe, use an Indicator. Res pond with only Python code. Do not answer with any explanations -- just the code."}]

#### [( Ollama Response )]

{'model': 'deepseek-coder-v2:latest', 'created\_at': '2024-10-12T17:15:57.130 460053Z', 'message': {'role': 'assistant', 'content': '```python\nimport pl otly.express as px\n\nif df.shape[0] == 1:\n fig = px.indicator(value=1, title="Album and Artist")\nelse:\n fig = px.bar(df, x=\'AlbumTitle\', y= \'ArtistName\', text=\'ArtistName\')\n fig.update\_layout(title=\'Albums a nd Their Corresponding Artists\')\n\nfig.show()\n```\}, 'done\_reason': 'sto p', 'done': True, 'total\_duration': 10311263822, 'load\_duration': 48325045, 'prompt\_eval\_count': 180, 'prompt\_eval\_duration': 3573376000, 'eval\_count': 96, 'eval duration': 6599211000}

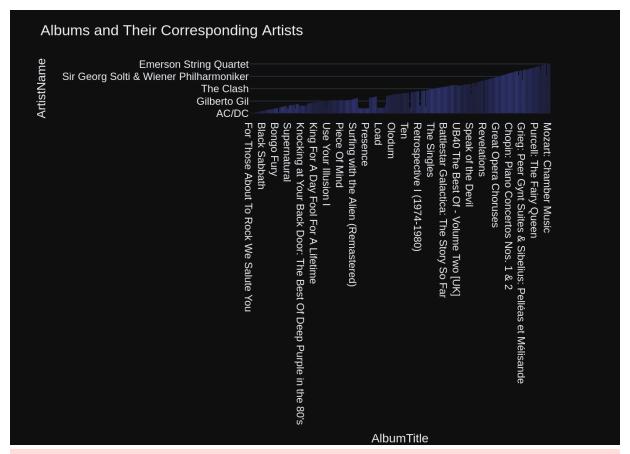
# import plotly.express as px

# if df.shape[0] == 1:

fig = px.indicator(value=1, title="Album and Artist")

### else:

fig = px.bar(df, x='AlbumTitle', y='ArtistName', text='ArtistName') fig.update layout(title='Albums and Their Corresponding Artists')



Number of requested results 10 is greater than number of elements in index 5, updating  $n_results = 5$ Number of requested results 10 is greater than number of elements in index

2, updating n results = 2

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# QUESTION - 7: Find all tracks with a name containing "What" (case-insensi tive)

\_\_\_\_\_\_

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### [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)\n\nCR EATE INDEX IFK PlaylistTrackTrackId ON "playlist track" (TrackId)\n\nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n TypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHAR(2 Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n 20),\r\n tPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES "alb ums" (Albumid) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n GN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION O N UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENCES "media type s" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCRE ATE INDEX IFK TrackAlbumId ON "tracks" (AlbumId)\n\nCREATE INDEX IFK TrackMe diaTypeId ON "tracks" (MediaTypeId)\n\nCREATE TABLE "playlist track"\r\n(\r PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n GN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE IND EX IFK InvoiceLineTrackId ON "invoice items" (TrackId)\n\nCREATE INDEX IFK A lbumArtistId ON "albums" (ArtistId)\n\nCREATE TABLE "playlists"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR  $(120)\r\n)\n\CREATE TABLE "genres"\r\n(\r\n$ GenreId INTEGER PRIMARY KEY Name  $NVARCHAR(120)\r\n)\n\n===Additional Co$ AUTOINCREMENT NOT NULL,\r\n ntext \n\nIn the chinook database invoice means order\n\n\n In the \'cust omers\' table, address column names do not have \'Billing\' prefix, \n g. country column name is \'country\', not \'BillingCountry\'\n sponse Guidelines \n1. If the provided context is sufficient, please generat e a valid SQL query without any explanations for the question. \n2. If the p rovided context is almost sufficient but requires knowledge of a specific st ring in a particular column, please generate an intermediate SQL query to fi nd the distinct strings in that column. Prepend the query with a comment say ing intermediate sql \n3. If the provided context is insufficient, please ex plain why it can\'t be generated. \n4. Please use the most relevant table (s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': 'List all albums and their corresponding artist names '}, {'role': 'assista nt', 'content': 'SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM a lbums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'co ntent': 'Can you list all tables in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT name FROM sqlite\_master WHERE type='tabl e'"}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, Inv oiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, Billing PostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': 'How many cu

stomers are there'}, {'role': 'assistant', 'content': 'SELECT COUNT(\*) AS Nu mberOfCustomers FROM customers'}, {'role': 'user', 'content': "\n the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi ngCountry .\n Please fix the error and re-generate the SQL\n "}, {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5'}, {'role': 'user', 'content': 'Find all tracks with a name containing "What" (case-insensitive) '}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

## [( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK TrackGenreId ON \"tracks\" (GenreId)\n\n CREATE INDEX IFK PlaylistTrackTrackId ON \"playlist track\" (TrackId)\n\nCRE ATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT N Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n OT NULL,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARC Milliseconds INTEGER NOT NULL,\r\n  $HAR(220).\r\n$ Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\t0N DELETE NO A FOREIGN KEY (MediaTypeId) REFERENCES \"med CTION ON UPDATE NO ACTION,\r\n ia types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE INDEX IFK TrackAlbumId ON \"tracks\" (AlbumId)\n\nCREATE INDEX IFK TrackMediaTypeId ON \"tracks\" (MediaTypeId)\n\nCREATE TABLE \"playlist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NO CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackI T NULL,\r\n FOREIGN KEY (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r d), r n\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACT ION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"invoice items\" (TrackI d)\n\nCREATE INDEX IFK AlbumArtistId ON \"albums\" (ArtistId)\n\nCREATE TABL E \"playlists\"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT Name NVARCHAR(120)\r\n)\n\nCREATE TABLE \"genres\"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(12  $0)\r\n)\n\n===Additional Context \n\nIn the chinook database invoice means$ In the 'customers' table, address column names do not have 'B illing' prefix, \n e.g. country column name is 'country', not 'BillingCou \n\n===Response Guidelines \n1. If the provided context is suffic ient, please generate a valid SQL query without any explanations for the que stion. \n2. If the provided context is almost sufficient but requires knowle dge of a specific string in a particular column, please generate an intermed iate SQL query to find the distinct strings in that column. Prepend the quer

y with a comment saying intermediate sql \n3. If the provided context is ins ufficient, please explain why it can't be generated. \n4. Please use the mos t relevant table(s). \n5. If the question has been asked and answered befor e, please repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "List all albums and their corresponding artist names "}, {"role": "assistant", "content": "SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assistant", "content": "SELECT name FROM sqlite master WHERE type='table'"}, {"role": "user", "content": "which table stores custom er's orders"}, {"role": "assistant", "content": "SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingC ountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "conten t": "How many customers are there"}, {"role": "assistant", "content": "SELEC T COUNT(\*) AS NumberOfCustomers FROM customers"}, {"role": "user", "conten t": "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, CO UNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY C ustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Fai led to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n E xecution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nF ROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry .\n Please fix the error and re-ge "}, {"role": "assistant", "content": "SELECT country nerate the SOL\n AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY countr y\nORDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "content": "Find all tracks with a name containing \"What\" (case-insensitive) "}]

```
[(Ollama Response)]
{'model': 'deepseek-coder-v2:latest', 'created_at': '2024-10-12T17:16:28.606
228718Z', 'message': {'role': 'assistant', 'content': " SELECT * FROM tracks
\nWHERE LOWER(Name) LIKE '%what%'"}, 'done_reason': 'stop', 'done': True, 't
otal_duration': 30709209349, 'load_duration': 6857164, 'prompt_eval_count':
1111, 'prompt_eval_duration': 28747640000, 'eval_count': 16, 'eval_duratio
n': 1210169000}
```

```
[(LLM Response)]
 SELECT * FROM tracks
WHERE LOWER(Name) LIKE '%what%'
SELECT * FROM tracks
```

WHERE LOWER(Name) LIKE '%what%'

	TrackId	Name	AlbumId	MediaTypeId	Genreld	Composer	Milliseconds
0	26	What It Takes	5	1	1	Steven Tyler, Joe Perry, Desmond Child	310622
1	88	What You Are	10	1	1	Audioslave/Chris Cornell	249391
2	130	Do what cha wanna	13	1	2	George Duke	274155
3	342	What is and Should Never Be	30	1	1	Jimmy Page/Robert Plant	260675
4	607	So What	48	1	2	Miles Davis	564009
5	960	What A Day	76	1	1	Mike Bordin, Billy Gould, Mike Patton	158275
6	1000	What If I Do?	80	1	1	Dave Grohl, Taylor Hawkins, Nate Mendel, Chris	302994
7	1039	What Now My Love	83	1	12	carl sigman/gilbert becaud/pierre leroyer	149995
8	1145	Whatsername	89	1	4	Green Day	252316
9	1440	Whatever It Is, I Just Can't Stop	116	1	1	Jay Kay/Kay, Jay	247222
10	1469	Look What You've Done	119	1	4	N. Cester	230974
11	1470	Get What You Need	119	1	4	C. Cester/C. Muncey/N. Cester	247719
12	1628	What Is And What Should Never Be	133	1	1	Jimmy Page, Robert Plant	287973
13	1778	You're What's Happening (In The World Today)	146	1	14	Allen Story/George Gordy/Robert Gordy	142027
14	1823	So What	149	1	3	Culmer/Exalt	189152
15	2772	I Don't Know What To Do With Myself	223	1	7	None	221387
16	2884	What Kate Did	231	3	19	None	2610250
17	2893	Whatever the Case May Be	230	3	19	None	2616410
18	2992	I Still Haven't Found What	237	1	1	Bono/Clayton, Adam/Mullen	353567

TrackId		Name	AlbumId	MediaTypeId	Genreld	Composer	Milliseconds
		I'm Looking for				Jr., Larry/The Edge	
19	3007	I Still Haven't Found What I'm Looking For	238	1	1	U2	280764
20	3258	Whatever Gets You Thru the Night	255	2	9	None	215084
21	3475	What Is It About Men	322	2	9	Delroy "Chris" Cooper, Donovan Jackson, Earl C	209573

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

### [( Prompt Content )]

[{"role": "system", "content": "The following is a pandas DataFrame that con tains the results of the query that answers the question the user asked: 'Fi nd all tracks with a name containing \"What\" (case-insensitive) '\n\nThe Da taFrame was produced using this guery: SELECT \* FROM tracks\nWHERE LOWER(Na me) LIKE '%what%'\n\nThe following is information about the resulting pandas DataFrame 'df': \nRunning df.dtypes gives:\n TrackId int64\nName object\nAlbumId int64\nMediaTypeId int64\nGenreId int64\nComposer object\nMilliseconds int64\nBytes float64\ndtype: object"}, {"role": "user", "content": nt64\nUnitPrice "Can you generate the Python plotly code to chart the results of the datafra me? Assume the data is in a pandas dataframe called 'df'. If there is only o ne value in the dataframe, use an Indicator. Respond with only Python code. Do not answer with any explanations -- just the code."}]

# [( Ollama Response )]

{'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:16:42.747 618816Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl otly.graph objects as go\nimport pandas as pd\n\n# Check if the DataFrame ha s more than one row\nif len(df) ==  $1:\n$ fig = go.Figure(go.Indicator(\n mode="number",\n title={"tex value=df[\'TrackId\'].iloc[0],\n t": "Track ID"},\n number={\'prefix\': \'\'}\n ))\nelse:\n = go.Figure(data=[go.Scatter(x=df[\'Name\'], y=df[\'Milliseconds\'], mode= \'markers\')])\n\nfig.show()\n```'}, 'done\_reason': 'stop', 'done': True, 't otal duration': 14116438049, 'load duration': 8311930, 'prompt eval count': 215, 'prompt eval duration': 4455831000, 'eval count': 137, 'eval duration': 9527306000}

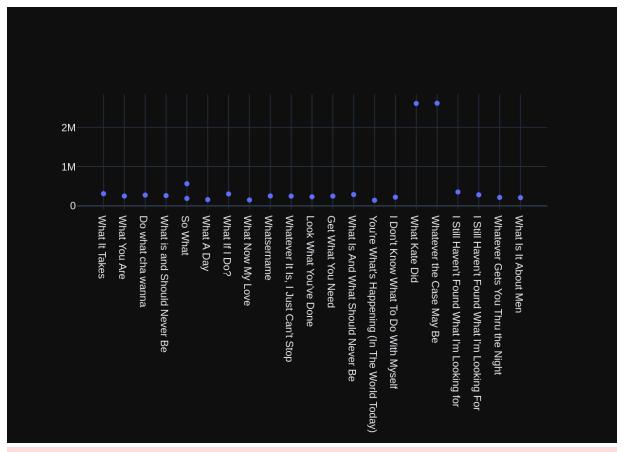
else:

```
import plotly.graph_objects as go
import pandas as pd

Check if the DataFrame has more than one row
if len(df) == 1:
```

```
if len(df) == 1:
 fig = go.Figure(go.Indicator(
 mode="number",
 value=df['TrackId'].iloc[0],
 title={"text": "Track ID"},
 number={'prefix': "}
))
```

fig = go.Figure(data=[go.Scatter(x=df['Name'], y=df['Milliseconds'], mode='markers')])



Number of requested results 10 is greater than number of elements in index 6, updating  $n_results = 6$ Number of requested results 10 is greater than number of elements in index 2, updating  $n_results = 2$  \_\_\_\_\_\_

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# QUESTION - 8: Get the total number of invoices for each customer

\_\_\_\_\_

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[( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL.\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou BillingPostalCode NVARCHAR(10),\r\n Total NUMER ntry NVARCHAR(40),\r\n IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCREATE INDEX IFK I nvoiceLineInvoiceId ON "invoice items" (InvoiceId)\n\nCREATE TABLE "invoice InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL  $items"\r\n(\r\n$ InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "trac ks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId)\n\nCREATE TABLE "c ustomers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL FirstName NVARCHAR(40) NOT NULL,\r\n L,\r\n LastName NVARCHAR(20) NO T NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n v NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n Phone NVARCHAR(24),\r\n PostalCode NVARCHAR(10),\r\n Fax NVARCHAR(2 Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DE LETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK CustomerSupportR epId ON "customers" (SupportRepId)\n\nCREATE TABLE "employees"\r\n(\r\n mployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARCH AR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NOT NULL,\r\n Title NVAR ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n  $CHAR(30), \r\n$ te DATETIME,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n tate NVARCHAR(40),\r\n PostalCode NVARCHAR(1 0), r nPhone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n Email NVARCHA FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK Emplo yeeReportsTo ON "employees" (ReportsTo)\n\nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(20 AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NUL 0) NOT NULL,\r\n L.\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n Millisecond Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) N s INTEGER NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\t OT NULL.\r\n ON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERE NCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chinook database invoice means order\n\n\n In the \'customers\' tabl e, address column names do not have \'Billing\' prefix, \n e.g. country c olumn name is \'country\', not \'BillingCountry\'\n \n\n===Response Guide lines \n1. If the provided context is sufficient, please generate a valid SQ L query without any explanations for the question. \n2. If the provided cont ext is almost sufficient but requires knowledge of a specific string in a pa rticular column, please generate an intermediate SQL query to find the disti nct strings in that column. Prepend the query with a comment saying intermed iate sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactl y as it was given before.  $\n'$ }, {'role': 'user', 'content': "which table sto res customer's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT I nvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingStat e, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'use r', 'content': 'How many customers are there'}, {'role': 'assistant', 'conte nt': 'SELECT COUNT(\*) AS NumberOfCustomers FROM customers'}, {'role': 'use r', 'content': "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingC ountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\n ORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERR OR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCo unt\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nL IMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS Custom erCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DES C\nLIMIT 5': no such column: BillingCountry .\n Please fix the error and re-generate the SOL\n "}, {'role': 'assistant', 'content': 'SELEC T country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5'}, {'role': 'user', 'conten t': 'List all albums and their corresponding artist names '}, {'role': 'ass istant', 'content': 'SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFR OM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'content': 'Find all tracks with a name containing "What" (case-insensitive) '}, {'role': 'assistant', 'content': " SELECT \* FROM tracks\nWHERE LOWER(Nam e) LIKE '%what%'"}, {'role': 'user', 'content': 'Can you list all tables in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT nam e FROM sqlite master WHERE type='table'"}, {'role': 'user', 'content': 'Get the total number of invoices for each customer'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

### [( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillinaCou BillingPostalCode NVARCHAR(10),\r\n ntry NVARCHAR(40),\r\n Total NUMER FOREIGN KEY (CustomerId) REFERENCES \"customers\" IC(10,2) NOT NULL,\r\n (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK\_InvoiceCustomerId ON \"invoices\" (CustomerId)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (InvoiceId)\n\nCREATE TABLE \"inv InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT oice items\"\r\n(\r\n

InvoiceId INTEGER NOT NULL,\r\n NULL,\r\n TrackId INTEGER NOT NUL UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NU  $L,\r\n$ FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n LL.\r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) RE FERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO N\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"invoice items\" (TrackId) \n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AU TOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n Company NVARCHAR(80),\r\n me NVARCHAR(20) NOT NULL,\r\n Address NVARC  $HAR(70), \r\n$ City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n  $NVARCHAR(40), \r\n$ Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n SupportRepId I NTEGER.\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employees\" (Employee Id) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK CustomerSupportRepId ON \"customers\" (SupportRepId)\n\nCREATE TABLE \"empl EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r oyees\"\r\n(\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NOT NU LL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n BirthDate DA Address NVARCHAR(70),\r\n HireDate DATETIME.\r\n TETIME,\r\n  $VARCHAR(40), \r\n$ State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"e mployees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n) \n\nCREATE INDEX IFK EmployeeReportsTo ON \"employees\" (ReportsTo)\n\nCREAT Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n NULL,\r\n diaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHA  $R(220).\r\n$ Milliseconds INTEGER NOT NULL,\r\n Bvtes INTEGER.\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO A FOREIGN KEY (MediaTypeId) REFERENCES \"med CTION ON UPDATE NO ACTION,\r\n ia types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\n===Additional Context \n\nIn the chinook database invoice means ord In the 'customers' table, address column names do not have 'Bill er\n\n\n ing' prefix, \n e.g. country column name is 'country', not 'BillingCountr \n\n===Response Guidelines \n1. If the provided context is sufficien t, please generate a valid SQL query without any explanations for the questi on. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strings in that column. Prepend the query wit h a comment saying intermediate sql \n3. If the provided context is insuffic ient, please explain why it can't be generated. \n4. Please use the most rel evant table(s). \n5. If the question has been asked and answered before, ple ase repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assistant", "c ontent": "SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddres s, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "How many customers are there"}, {"r ole": "assistant", "content": "SELECT COUNT(\*) AS NumberOfCustomers FROM cus tomers"}, {"role": "user", "content": "\n For the question what are t he top 5 countries that customers come from?, \n the generated SQL st atement SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nG ROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountr y, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER

BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCou ntry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nOR DER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry .\n Please fix the error and re-generate the SQL\n "}, {"role": "assistan t", "content": "SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\n FROM customers\nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "content": "List all albums and their corresponding artist names "}, {"role": "assistant", "content": "SELECT a.Title AS AlbumTitle, a r.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.Arti stId"}, {"role": "user", "content": "Find all tracks with a name containing \"What\" (case-insensitive) "}, {"role": "assistant", "content": " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assist ant", "content": "SELECT name FROM sqlite master WHERE type='table'"}, {"rol e": "user", "content": "Get the total number of invoices for each custome r"}]

[( Ollama Response )]
{'model': 'deepseek-coder-v2:latest', 'created\_at': '2024-10-12T17:17:29.204
622368Z', 'message': {'role': 'assistant', 'content': ' SELECT CustomerId, C
OUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId'}, 'done\_reaso
n': 'stop', 'done': True, 'total\_duration': 46362548460, 'load\_duration': 85
62980, 'prompt\_eval\_count': 1587, 'prompt\_eval\_duration': 43955261000, 'eval
\_count': 19, 'eval\_duration': 1507872000}

[( LLM Response )]
 SELECT CustomerId, COUNT(\*) AS TotalInvoices
FROM invoices
GROUP BY CustomerId

**SELECT** CustomerId, **COUNT(\*) AS** TotalInvoices

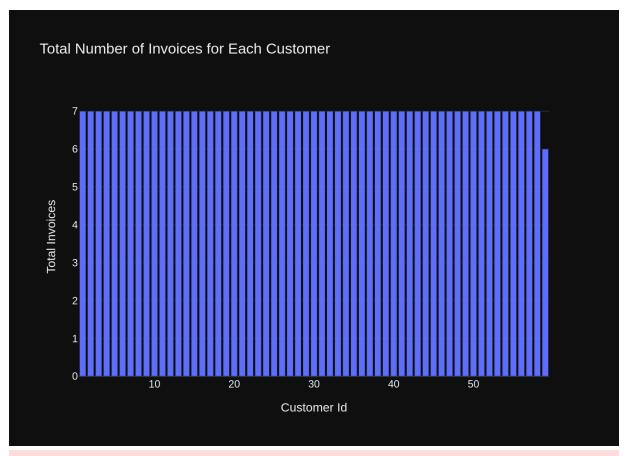
**FROM** invoices

**GROUP BY** CustomerId

	CustomerId	TotalInvoices
0	1	7
1	2	7
2	3	7
3	4	7
4	5	7
5	6	7
6	7	7
7	8	7
8	9	7
9	10	7
10	11	7
11	12	7
12	13	7
13	14	7
14	15	7
15	16	7
16	17	7
17	18	7
18	19	7
19	20	7
20	21	7
21	22	7
22	23	7
23	24	7
24	25	7
25	26	7
26	27	7
27	28	7
28	29	7
29	30	7
30	31	7
31	32	7
32	33	7
33	34	7

	CustomerId	TotalInvoices
34	35	7
35	36	7
36	37	7
37	38	7
38	39	7
39	40	7
40	41	7
41	42	7
42	43	7
43	44	7
44	45	7
45	46	7
46	47	7
47	48	7
48	49	7
49	50	7
50	51	7
51	52	7
52	53	7
53	54	7
54	55	7
55	56	7
56	57	7
57	58	7
58	59	6

```
[Ollama parameters]
 model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [(Prompt Content)]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: 'Ge
 t the total number of invoices for each customer'\n\nThe DataFrame was produ
 ced using this guery: SELECT CustomerId, COUNT(*) AS TotalInvoices\nFROM in
 voices\nGROUP BY CustomerId\n\nThe following is information about the result
 ing pandas DataFrame 'df': \nRunning df.dtypes gives:\n CustomerId
 int64\ndtype: object"}, {"role": "user", "content": "Ca
 64\nTotalInvoices
 n you generate the Python plotly code to chart the results of the dataframe?
 Assume the data is in a pandas dataframe called 'df'. If there is only one v
 alue in the dataframe, use an Indicator. Respond with only Python code. Do n
 ot answer with any explanations -- just the code."}]
 [(Ollama Response)]
 {'model': 'deepseek-coder-v2:latest', 'created_at': '2024-10-12T17:17:41.619
 949423Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
 otly.graph objects as qo\neq point pandas as <math>pd\neq point point
 go.Figure(go.Indicator(mode="number", value=df[\'TotalInvoices\'].iloc[0]))
 fig = go.Figure(data=[go.Bar(x=df[\'CustomerId\'], y=df[\'Total
 Invoices\'])])\n\nfig.update layout(title=\'Total Number of Invoices for Eac
 h Customer\', xaxis title=\'Customer Id\', yaxis title=\'Total Invoices\')\n
 fig.show()\n```'}, 'done_reason': 'stop', 'done': True, 'total_duration': 12
 379857507, 'load duration': 9011278, 'prompt eval count': 172, 'prompt eval
 duration': 3279821000, 'eval count': 134, 'eval duration': 9005835000}
import plotly.graph objects as go
import pandas as pd
if len(df) == 1:
 fig = go.Figure(go.Indicator(mode="number", value=df['TotalInvoices'].iloc[0]))
 fig = go.Figure(data=[go.Bar(x=df['CustomerId'], y=df['TotalInvoices'])])
fig.update layout(title='Total Number of Invoices for Each Customer', xaxis title='Customer I
d', yaxis_title='Total Invoices')
```



Number of requested results 10 is greater than number of elements in index 7, updating n\_results = 7 
Number of requested results 10 is greater than number of elements in index 2, updating n\_results = 2

\_\_\_\_\_\_

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# QUESTION - 9: Find the total number of invoices per country

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### [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCREATE TABLE "invo ice items"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT N InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r ULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NUL FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\t L, r nON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERE NCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n) \n\nCREATE INDEX IFK InvoiceLineInvoiceId ON "invoice items" (InvoiceId)\n\n CREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId)\n\nCREATE T ABLE "employees"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NO LastName NVARCHAR(20) NOT NULL, $\r\n$ T NULL,\r\n FirstName NVARCHAR(2 0) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n rthDate DATETIME.\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n City NVARCHAR(40),\r\n Country NVARCHAR(40),\r PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHA Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY A UTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n ame NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVAR City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n  $CHAR(70), \r\n$ y  $NVARCHAR(40), \r\n$ PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r \n Email NVARCHAR(60) NOT NULL,\r\n Fax NVARCHAR(24), \r\n epId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (Empl oyeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK EmployeeReportsTo ON "employees" (ReportsTo)\n\nCREATE TABLE "albums"\r AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN K EY (ArtistId) REFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL, $\r\n$ AlbumId INTEGER.\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGE Composer NVARCHAR(220),\r\n R, r nMilliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDAT E NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeI d) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION\r\n\n\n===Additional Context \n\nIn the chinook database in In the \'customers\' table, address column names voice means order\n\n\n do not have \'Billing\' prefix, \n e.g. country column name is \'country \', not \'BillingCountry\'\n \n\n===Response Guidelines \n1. If the provi ded context is sufficient, please generate a valid SQL query without any exp lanations for the question. \n2. If the provided context is almost sufficien t but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strings in that colu mn. Prepend the query with a comment saying intermediate sql \n3. If the pro vided context is insufficient, please explain why it can\'t be generated. \n 4. Please use the most relevant table(s). \n5. If the question has been aske d and answered before, please repeat the answer exactly as it was given befo re. \n'}, {'role': 'user', 'content': 'Get the total number of invoices for each customer'}, {'role': 'assistant', 'content': ' SELECT CustomerId, COUNT (\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assistant', 'c ontent': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddres s, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL s tatement SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\n GROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountr y, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCou ntry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nOR DER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry .\n Please fix the error and re-generate the SQL\n "}, {'role': 'assistan t', 'content': 'SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\n FROM customers\nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5'}, {'role': 'user', 'content': 'How many customers are there'}, {'role': 'assis tant', 'content': 'SELECT COUNT(\*) AS NumberOfCustomers FROM customers'}, {'role': 'user', 'content': 'List all albums and their corresponding artist names '}, {'role': 'assistant', 'content': 'SELECT a.Title AS AlbumTitle, a r.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.Arti stId'}, {'role': 'user', 'content': 'Find all tracks with a name containing "What" (case-insensitive) '}, {'role': 'assistant', 'content': " SELECT \* FR OM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {'role': 'user', 'content': 'C an you list all tables in the SQLite database catalog?'}, {'role': 'assistan 'content': "SELECT name FROM sqlite master WHERE type='table'"}, {'rol e': 'user', 'content': 'Find the total number of invoices per country'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

#### [( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n BillingCountry NVARCHAR(40),\r\n BillingCountry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER

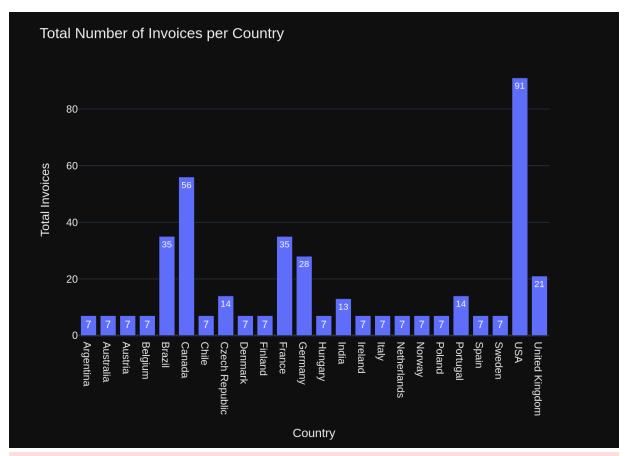
IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerId ON \"invoices\" (CustomerId)\n\nCREATE TABLE \"i InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT N nvoice items\"\r\n(\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NUL OT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Ouantity INTEGER NOT NU L.\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n LL.\r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) RE FERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO N\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (Invoic eId)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"invoice items\" (TrackId)\n \nCREATE TABLE \"employees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTO INCREMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName ReportsTo INTEGE NVARCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n HireDate DATETIME,\r\n R, r nBirthDate DATETIME,\r\n Address NVARC  $HAR(70), \r\n$ City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n  $NVARCHAR(40), \r\n$ PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NUL LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n  $RCHAR(24), \r\n$ Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL.\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employe es\" (EmployeeId)  $\r \n \t \n \$  DELETE NO ACTION ON UPDATE NO ACTION $\r \n \$ EATE INDEX IFK EmployeeReportsTo ON \"employees\" (ReportsTo)\n\nCREATE TABL E \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NUL  $L,\r\n$ FOREIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\t0 N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"tracks\"\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n AlbumId INTEGER,\r\n RCHAR(200) NOT NULL,\r\n MediaTypeId INTEGER NO T NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n econds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10, FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) 2) NOT NULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreI d) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO FOREIGN KEY (MediaTypeId) REFERENCES \"media types\" (MediaTy ACTION,\r\n peId) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additiona l Context \n\nIn the chinook database invoice means order\n\n\n ustomers' table, address column names do not have 'Billing' prefix, \n g. country column name is 'country', not 'BillingCountry'\n \n\n===Respon se Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provi ded context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find th e distinct strings in that column. Prepend the guery with a comment saying i ntermediate sql \n3. If the provided context is insufficient, please explain why it can't be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "Get the t otal number of invoices for each customer"}, {"role": "assistant", "conten t": " SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "which table stores customer's ord

ers"}, {"role": "assistant", "content": "SELECT DISTINCT InvoiceId, Customer Id, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi ngCountry .\n Please fix the error and re-generate the SQL\n "}, {"role": "assistant", "content": "SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5"}, {"role": "user", "content": "How many customers are ther
e"}, {"role": "assistant", "content": "SELECT COUNT(\*) AS NumberOfCustomers FROM customers"}, {"role": "user", "content": "List all albums and their cor responding artist names "}, {"role": "assistant", "content": "SELECT a.Titl e AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a. ArtistId = ar.ArtistId"}, {"role": "user", "content": "Find all tracks with a name containing \"What\" (case-insensitive) "}, {"role": "assistant", "con tent": " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalo g?"}, {"role": "assistant", "content": "SELECT name FROM sqlite master WHERE type='table'"}, {"role": "user", "content": "Find the total number of invoic es per country"}] [( Ollama Response )] {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:18:31.368 82431Z', 'message': {'role': 'assistant', 'content': ' SELECT BillingCountr y, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, 'don e reason': 'stop', 'done': True, 'total duration': 49668379427, 'load durati on': 8704609, 'prompt eval count': 1683, 'prompt eval duration': 4710410600 0, 'eval count': 19, 'eval duration': 1544408000} [( LLM Response )] SELECT BillingCountry, COUNT(\*) AS TotalInvoices FROM invoices GROUP BY BillingCountry **SELECT** BillingCountry, **COUNT(\*) AS** TotalInvoices FROM invoices

**GROUP BY** BillingCountry

	BillingCountry	TotalInvoices
0	Argentina	7
1	Australia	7
2	Austria	7
3	Belgium	7
4	Brazil	35
5	Canada	56
6	Chile	7
7	Czech Republic	14
8	Denmark	7
9	Finland	7
10	France	35
11	Germany	28
12	Hungary	7
13	India	13
14	Ireland	7
15	Italy	7
16	Netherlands	7
17	Norway	7
18	Poland	7
19	Portugal	14
20	Spain	7
21	Sweden	7
22	USA	91
23	United Kingdom	21

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [(Prompt Content)]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: 'Fi
 nd the total number of invoices per country'\n\nThe DataFrame was produced u
 sing this query: SELECT BillingCountry, COUNT(*) AS TotalInvoices\nFROM inv
oices\nGROUP BY BillingCountry\n\nThe following is information about the res
 ulting pandas DataFrame 'df': \nRunning df.dtypes gives:\n BillingCountry
 object\nTotalInvoices
 int64\ndtype: object"}, {"role": "user", "conten
 t": "Can you generate the Python plotly code to chart the results of the dat
aframe? Assume the data is in a pandas dataframe called 'df'. If there is on
 ly one value in the dataframe, use an Indicator. Respond with only Python co
de. Do not answer with any explanations -- just the code."}]
 [(Ollama Response)]
 {'model': 'deepseek-coder-v2:latest', 'created_at': '2024-10-12T17:18:43.087
 363037Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
otly.express as px\n\nif df[\'TotalInvoices\'].nunique() == 1:\n
x.indicator(value=df[\'TotalInvoices\'].iloc[0], title="Total Invoices")\nel
 fig = px.bar(df, x=\'BillingCountry\', y=\'TotalInvoices\', text=
 \'TotalInvoices\')\nfig.update layout(title=\'Total Number of Invoices per C
 ountry\', xaxis title=\'Country\', yaxis_title=\'Total Invoices\')\nfig.show
 ()\n```'}, 'done_reason': 'stop', 'done': True, 'total_duration': 1168142405
 5, 'load duration': 7737200, 'prompt eval count': 169, 'prompt eval duratio
 n': 3284618000, 'eval count': 125, 'eval duration': 8345774000}
import plotly.express as px
if df['TotalInvoices'].nunique() == 1:
 fig = px.indicator(value=df['TotalInvoices'].iloc[0], title="Total Invoices")
else:
 fig = px.bar(df, x='BillingCountry', y='TotalInvoices', text='TotalInvoices')
fig.update layout(title='Total Number of Invoices per Country', xaxis title='Country', yaxis ti
tle='Total Invoices')
```



Number of requested results 10 is greater than number of elements in index 8, updating n\_results = 8Number of requested results 10 is greater than number of elements in index 2, updating n results = 2 -----

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# QUESTION - 10: List all invoices with a total exceeding \$10

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[( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoice items"\r\n(\r\n InvoiceLineId IN TEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NUL TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NUL FOREIGN KEY (InvoiceId) REFEREN  $L,\r\n$ Quantity INTEGER NOT NULL,\r\n CES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DEL ETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoic eId ON "invoice items" (InvoiceId)\n\nCREATE TABLE "invoices"\r\n(\r\n voiceId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGE R NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NV  $ARCHAR(70), \r\n$ BillingCity NVARCHAR(40),\r\n BillingState NVARCHAR(4 0), r nBillingCountry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(1 Total NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) RE 0), r nFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO A CTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackI d)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCREAT E TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT N Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n ULL,\r\n iaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHAR Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n FOREIGN KEY (AlbumId) REFERENCES "a nitPrice NUMERIC(10,2) NOT NULL,\r\n lbums" (Albumid) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n EIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENCES "media type s" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCRE ATE INDEX IFK EmployeeReportsTo ON "employees" (ReportsTo)\n\nCREATE TABLE CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL "customers"\r\n(\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(20) NO  $L,\r\n$ T NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n y  $NVARCHAR(40), \r\n$ Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 SupportRepId INTEGER,\r\n Email NVARCHAR(60) NOT NULL,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DE LETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "employees"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARC FirstName NVARCHAR(20) NOT NULL,\r\n HAR(20) NOT NULL,\r\n Title NVA  $RCHAR(30), \r\n$ ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n Address NVARCHAR(70),\r\n ate DATETIME,\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR  $(10), \r\n$ Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n Email NVARC FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId)  $HAR(60), \r\n$ \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK Cus tomerSupportRepId ON "customers" (SupportRepId)\n\n===Additional Context \n\nIn the chinook database invoice means order\n\n\n In the \'customers \' table, address column names do not have \'Billing\' prefix, \n

untry column name is \'country\', not \'BillingCountry\'\n \n\n===Respons e Guidelines \n1. If the provided context is sufficient, please generate a v alid SQL query without any explanations for the question. \n2. If the provid ed context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find th e distinct strings in that column. Prepend the query with a comment saying i ntermediate sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': 'Get the t otal number of invoices for each customer'}, {'role': 'assistant', 'conten t': ' SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find the total number of invoices per country'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COU NT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assist ant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, Billin gAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Tota l\nFROM invoices'}, {'role': 'user', 'content': 'How many customers are ther e'}, {'role': 'assistant', 'content': 'SELECT COUNT(\*) AS NumberOfCustomers FROM customers'}, {'role': 'user', 'content': "\n For the question wh at are the top 5 countries that customers come from?, \n the generate d SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM cust omers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT Billing Country, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry \nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT Bi llingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCou ntry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry Please fix the error and re-generate the SQL\n "}, {'rol e': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT(\*) AS Cu stomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCount DESC\n LIMIT 5'}, {'role': 'user', 'content': 'List all albums and their correspond ing artist names '}, {'role': 'assistant', 'content': 'SELECT a.Title AS Al bumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistI d = ar.ArtistId'}, {'role': 'user', 'content': 'Find all tracks with a name containing "What" (case-insensitive) '}, {'role': 'assistant', 'content': " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {'role': 'user', 'c ontent': 'Can you list all tables in the SQLite database catalog?'}, {'rol e': 'assistant', 'content': "SELECT name FROM sqlite master WHERE type='tabl e'"}, {'role': 'user', 'content': 'List all invoices with a total exceeding \$10'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoice\_items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERE

NCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\tON D ELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvo iceId ON \"invoice items\" (InvoiceId)\n\nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTE InvoiceDate DATETIME NOT NULL,\r\n GER NOT NULL,\r\n BillinaAddress  $NVARCHAR(70), \r\n$ BillingCity NVARCHAR(40),\r\n BillingState NVARCHAR (40), r nBillingCountry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR Total NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) (10), r nREFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"invoice items\" (TrackId)\n\nCREATE INDEX IFK InvoiceCustomerId ON \"invoices\" (CustomerId) \n\nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCR AlbumId INTEGE EMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n MediaTypeId INTEGER NOT NULL,\r\n R, r nGenreId INTEGER,\r\n oser NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bvtes INTE UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACT FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFER ENCES \"media types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK EmployeeReportsTo ON \"employees\" (ReportsT o)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n Name NVARCHAR(20) NOT NULL.\r\n Company NVARCHAR(80),\r\n Address NVA City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n  $RCHAR(70), \r\n$ Count PostalCode NVARCHAR(10),\r\n ry NVARCHAR(40),\r\n Phone NVARCHAR(2 4),\r\n Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n Sup portRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employees TE TABLE \"employees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREM ENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARC HAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r State NVARCHAR(40),\r\n City NVARCHAR(40),\r\n Country NVARCHAR  $(40), \r\n$ PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n FOREIGN KEY (ReportsTo) REFE Email NVARCHAR(60),\r\n  $NVARCHAR(24), \r\n$ RENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO A CTION\r\n)\n\nCREATE INDEX IFK CustomerSupportRepId ON \"customers\" (Suppor  $tRepId)\n\n===Additional Context \n\nIn the chinook database invoice means$ In the 'customers' table, address column names do not have 'B order\n\n\n illing' prefix, \n e.g. country column name is 'country', not 'BillingCou \n\n===Response Guidelines \n1. If the provided context is suffic ient, please generate a valid SQL query without any explanations for the que stion. \n2. If the provided context is almost sufficient but requires knowle dge of a specific string in a particular column, please generate an intermed iate SQL query to find the distinct strings in that column. Prepend the quer y with a comment saying intermediate sql \n3. If the provided context is ins ufficient, please explain why it can't be generated. \n4. Please use the mos t relevant table(s). \n5. If the question has been asked and answered befor e, please repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "Get the total number of invoices for each customer"}, {"role": "assistant", "content": " SELECT CustomerId, COUNT(\*) AS TotalInvoi ces\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "Find the total number of invoices per country"}, {"role": "assistant", "content": " SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY

BillingCountry"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assistant", "content": "SELECT DISTINCT InvoiceId, Custo merId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountr y, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "H ow many customers are there"}, {"role": "assistant", "content": "SELECT COUN T(\*) AS NumberOfCustomers FROM customers"}, {"role": "user", "content": "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi Please fix the error and re-generate the SQL\n ngCountry .\n "}, {"role": "assistant", "content": "SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5"}, {"role": "user", "content": "List all albums and their c orresponding artist names "}, {"role": "assistant", "content": "SELECT a.Ti tle AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId"}, {"role": "user", "content": "Find all tracks wit h a name containing \"What\" (case-insensitive) "}, {"role": "assistant", "c ontent": " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalo g?"}, {"role": "assistant", "content": "SELECT name FROM sqlite\_master WHERE type='table'"}, {"role": "user", "content": "List all invoices with a total exceeding \$10"}]

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[(Ollama Response)]
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472941Z', 'message': {'role': 'assistant', 'content': ' SELECT * FROM invoic
es WHERE Total > 10'}, 'done_reason': 'stop', 'done': True, 'total_duratio
n': 48249622613, 'load_duration': 7998688, 'prompt_eval_count': 1657, 'prompt_eval_duration': 46247151000, 'eval_count': 11, 'eval_duration': 853854000}
[(LLM Response)]
```

SELECT \* FROM invoices WHERE Total > 10

SELECT \* FROM invoices WHERE Total > 10

	InvoiceId	CustomerId	InvoiceDate	BillingAddress	BillingCity	BillingState	BillingCou
0	5	23	2009-01-11 00:00:00	69 Salem Street	Boston	MA	
1	12	2	2009-02-11 00:00:00	Theodor-Heuss- Straße 34	Stuttgart	None	Geri
2	19	40	2009-03-14 00:00:00	8, Rue Hanovre	Paris	None	Fr
3	26	19	2009-04-14 00:00:00	1 Infinite Loop	Cupertino	CA	
4	33	57	2009-05-15 00:00:00	Calle Lira, 198	Santiago	None	
•••	•••	•••	•••	•••	•••	•••	
59	383	10	2013-08-12 00:00:00	Rua Dr. Falcão Filho, 155	São Paulo	SP	E
60	390	48	2013-09-12 00:00:00	Lijnbaansgracht 120bg	Amsterdam	VV	Netherl
61	397	27	2013-10-13 00:00:00	1033 N Park Ave	Tucson	AZ	
62	404	6	2013-11-13 00:00:00	Rilská 3174/6	Prague	None	Czech Rep
63	411	44	2013-12-14 00:00:00	Porthaninkatu 9	Helsinki	None	Fir
64 rows × 9 columns							

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [(Prompt Content)]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: 'Li
 st all invoices with a total exceeding $10'\n\nThe DataFrame was produced us
 ing this query: SELECT * FROM invoices WHERE Total > 10\n\nThe following is
 information about the resulting pandas DataFrame 'df': \nRunning df.dtypes g
 ives:\n InvoiceId
 int64\nCustomerId
 int64\nInvoiceD
 object\nBillingAddress
 object\nBillingCity
ate
 ject\nBillingState
 object\nBillingCountry
 object\nBillingPos
 float64\ndtype: object"}, {"role":
 talCode
 object\nTotal
 "user", "content": "Can you generate the Python plotly code to chart the res
 ults of the dataframe? Assume the data is in a pandas dataframe called 'df'.
 If there is only one value in the dataframe, use an Indicator. Respond with
 only Python code. Do not answer with any explanations -- just the code."}]
 [(Ollama Response)]
 {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:19:44.657
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 otly.graph objects as go\nimport pandas as pd\n\nif df.shape[0] == 1:\n
 ig = go.Figure(go.Indicator(\n
 mode="number",\n
 value=df[\'Tot
 title={"text": "Total Invoice Amount"}\n
 al\'].values[0],\n
 fig = go.Figure(data=[go.Bar(x=df[\'InvoiceDate\'], y=df[\'Total
 se:\n
 \'])])\n\nfig.update layout(title=\'Invoices with Total Exceeding $10\')\nfi
g.show()\n``'}, 'done reason': 'stop', 'done': True, 'total duration': 1316
8103078, 'load_duration': 9604344, 'prompt_eval_count': 207, 'prompt_eval_du
 ration': 4034706000, 'eval count': 134, 'eval duration': 9038262000}
import plotly.graph_objects as go
import pandas as pd
if df.shape[0] == 1:
 fig = go.Figure(go.Indicator(
 mode="number",
 value=df['Total'].values[0],
 title={"text": "Total Invoice Amount"}
))
else:
 fig = go.Figure(data=[go.Bar(x=df['InvoiceDate'], y=df['Total'])])
fig.update layout(title='Invoices with Total Exceeding $10')
```



Number of requested results 10 is greater than number of elements in index 9, updating  $n_results = 9$ Number of requested results 10 is greater than number of elements in index

file:///home/gongai/Downloads/ollama-deepseek-coder-chromadb-sqlite-test-6.html

2, updating n results = 2

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# QUESTION - 11: Find all invoices since 2010 and the total amount invoice d:

\_\_\_\_\_\_

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#### [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId)  $\r \n \t \n \$  DELETE NO ACTION ON UPDATE NO ACTION $\r \n \n \$ TABLE "invoice items"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) NOT NULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC TION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON "invoice items" (Invoi ceId)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCR EATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId)\n\nCREATE TAB EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT LE "employees"\r\n(\r\n NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER.\r\n ate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40), \r\n Country NVARCHAR(40),\r PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHA R(24), r nEmail NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY A UTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n ame NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVAR  $CHAR(70), \r\n$ City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n y NVARCHAR(40),\r\n Phone NVARCHAR(24),\r Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (Empl epId INTEGER,\r\n oyeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INT Composer NVARCHAR(220),\r\n GenreId INTEGER,\r\n EGER NOT NULL,\r\n UnitPrice NUMER Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumI IC(10,2) NOT NULL,\r\n d) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (Genr eId) REFERENCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO FOREIGN KEY (MediaTypeId) REFERENCES "media types" (MediaType Id) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "al  $bums"\r\n(\r\n$ AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n EIGN KEY (ArtistId) REFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACT

ION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "playlist track"\r\n(\r\n TrackId INTEGER NOT NULL,\r\n aylistId INTEGER NOT NULL,\r\n INT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "tracks" (Track Id) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chinook database invoice means order\n\n\n stomers\' table, address column names do not have \'Billing\' prefix, \n e.g. country column name is \'country\', not \'BillingCountry\'\n Response Guidelines \n1. If the provided context is sufficient, please gener ate a valid SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific s tring in a particular column, please generate an intermediate SQL query to f ind the distinct strings in that column. Prepend the query with a comment sa ying intermediate sql \n3. If the provided context is insufficient, please e xplain why it can\'t be generated. \n4. Please use the most relevant table (s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': 'List all invoices with a total exceeding \$10'}, {'role': 'assistant', 'cont ent': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'conten t': 'Find the total number of invoices per country'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices \nGROUP BY BillingCountry'}, {'role': 'user', 'content': 'Get the total numb er of invoices for each customer'}, {'role': 'assistant', 'content': ' SELEC T CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerI d'}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, Inv oiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, Billing PostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': 'How many cu stomers are there'}, {'role': 'assistant', 'content': 'SELECT COUNT(\*) AS Nu mberOfCustomers FROM customers'}, {'role': 'user', 'content': "\n the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi ngCountry .\n Please fix the error and re-generate the SQL\n "}, {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5'}, {'role': 'user', 'content': 'List all albums and their c orresponding artist names '}, {'role': 'assistant', 'content': 'SELECT a.Ti tle AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'content': 'Find all tracks wit h a name containing "What" (case-insensitive) '}, {'role': 'assistant', 'con tent': " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {'role': 'user', 'content': 'Can you list all tables in the SQLite database catalo q?'}, {'role': 'assistant', 'content': "SELECT name FROM sqlite master WHERE type='table'"}, {'role': 'user', 'content': 'Find all invoices since 2010 an d the total amount invoiced:'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},

keep alive=None

[( Prompt Content )] [{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOIN CREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (I nvoiceId)\n\nCREATE INDEX IFK InvoiceCustomerId ON \"invoices\" (CustomerId) \n\nCREATE INDEX IFK InvoiceLineTrackId ON \"invoice items\" (TrackId)\n\nCR EATE TABLE \"employees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVA RCHAR(20) NOT NULL,\r\n Title NVARCHAR(30).\r\n ReportsTo INTEGER.\r BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR State NVARCHAR(40),\r\n  $(70), \r\n$ City NVARCHAR(40),\r\n Country NV  $ARCHAR(40), \r\n$ PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) Fax NVARCHAR(24),\r\n REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NUL  $L,\r\n$ LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVA  $RCHAR(24), \r\n$ Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employe SupportRepId INTEGER,\r\n es\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCR EATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT Name NVARCHAR(200) NOT NULL,\r\n NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARC Bytes INTEGER,\r\n Milliseconds INTEGER NOT NULL,\r\n  $HAR(220), \r\n$ UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\t0N DELETE NO A FOREIGN KEY (MediaTypeId) REFERENCES \"med CTION ON UPDATE NO ACTION,\r\n ia types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE TABLE \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOI NCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INT EGER NOT NULL.\r\n FOREIGN KEY (ArtistId) REFERENCES \"artists\" (Artist Id) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"p PlaylistId INTEGER NOT NULL,\r\n laylist track\"\r\n(\r\n TrackId INT EGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, FOREIGN KEY (PlaylistId) REFERENCES \"playlists\" (Playlist TrackId),\r\n Id) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (Tra ckId) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE

NO ACTION\r\n)\n\n===Additional Context \n\nIn the chinook database invoic In the 'customers' table, address column names do not e means order\n\n\n have 'Billing' prefix, \n e.g. country column name is 'country', not 'Bil lingCountry'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without any explanations for t he question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an in termediate SQL query to find the distinct strings in that column. Prepend th e query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can't be generated. \n4. Please use t he most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n"}, {"rol e": "user", "content": "List all invoices with a total exceeding \$10"}, {"ro le": "assistant", "content": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "Find the total number of invoices per countr y"}, {"role": "assistant", "content": " SELECT BillingCountry, COUNT(\*) AS T otalInvoices\nFROM invoices\nGROUP BY BillingCountry"}, {"role": "user", "co ntent": "Get the total number of invoices for each customer"}, {"role": "ass istant", "content": " SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM inv oices\nGROUP BY CustomerId"}, {"role": "user", "content": "which table store s customer's orders"}, {"role": "assistant", "content": "SELECT DISTINCT Inv oiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "How many customers are there"}, {"role": "assistant", "content": "SELECT COUNT(\*) AS NumberOfCustomers FROM customers"}, {"role": "user", "co ntent": "\n For the question what are the top 5 countries that custom ers come from?, \n the generated SQL statement SELECT BillingCountr y, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFR OM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 \n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5': no such column: BillingCountry .\n Please fix the error and re -generate the SQL\n "}, {"role": "assistant", "content": "SELECT coun try AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY co untry\nORDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "content": "List all albums and their corresponding artist names "}, {"role": "assista nt", "content": "SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM a lbums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId"}, {"role": "user", "co ntent": "Find all tracks with a name containing \"What\" (case-insensitive) "}, {"role": "assistant", "content": " SELECT \* FROM tracks\nWHERE LOWER(Nam e) LIKE '%what%'"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assistant", "content": "SELECT nam e FROM sqlite master WHERE type='table'"}, {"role": "user", "content": "Find all invoices since 2010 and the total amount invoiced:"}]

```
[(Ollama Response)]
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846298Z', 'message': {'role': 'assistant', 'content': " SELECT InvoiceId, Cu
stomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-0
1';"}, 'done_reason': 'stop', 'done': True, 'total_duration': 57124861502,
'load_duration': 7623058, 'prompt_eval_count': 1850, 'prompt_eval_duration':
53043659000, 'eval_count': 32, 'eval_duration': 2722359000}
```

[( LLM Response )]

```
SELECT InvoiceId, CustomerId, InvoiceDate, Total
FROM invoices
WHERE InvoiceDate >= '2010-01-01';

[(Output from LLM)]
 SELECT InvoiceId, CustomerId, InvoiceDate, Total
FROM invoices
WHERE InvoiceDate >= '2010-01-01';
[(Extracted SQL)]
 SELECT InvoiceId, CustomerId, InvoiceDate, Total
FROM invoices
WHERE InvoiceDate >= '2010-01-01'
SELECT InvoiceId, CustomerId, InvoiceDate, Total
FROM invoiceDate >= '2010-01-01'
```

FROM invoices

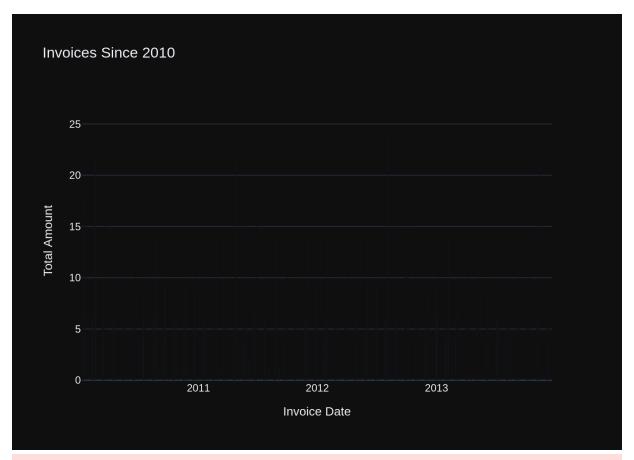
1 KOM III VOICES

WHERE InvoiceDate >= '2010-01-01'

	InvoiceId	CustomerId	InvoiceDate	Total
0	84	43	2010-01-08 00:00:00	1.98
1	85	45	2010-01-08 00:00:00	1.98
2	86	47	2010-01-09 00:00:00	3.96
3	87	51	2010-01-10 00:00:00	6.94
4	88	57	2010-01-13 00:00:00	17.91
•••	•••	•••		
324	408	25	2013-12-05 00:00:00	3.96
325	409	29	2013-12-06 00:00:00	5.94
326	410	35	2013-12-09 00:00:00	8.91
327	411	44	2013-12-14 00:00:00	13.86
328	412	58	2013-12-22 00:00:00	1.99

329 rows × 4 columns

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [(Prompt Content)]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: 'Fi
 nd all invoices since 2010 and the total amount invoiced: '\n\nThe DataFrame
was produced using this query: SELECT InvoiceId, CustomerId, InvoiceDate, To
 tal\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'\n\nThe following is in
 formation about the resulting pandas DataFrame 'df': \nRunning df.dtypes giv
 int64\nCustomerId
es:\n InvoiceId
 int64\nInvoiceDate
 \nTotal
 float64\ndtype: object"}, {"role": "user", "content": "Can
you generate the Python plotly code to chart the results of the dataframe? A
 ssume the data is in a pandas dataframe called 'df'. If there is only one va
 lue in the dataframe, use an Indicator. Respond with only Python code. Do no
 t answer with any explanations -- just the code."}]
 [(Ollama Response)]
 {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:20:56.830
 194673Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
 otly.graph objects as go\nimport pandas as pd\n\n# Check if the DataFrame ha
 s more than one row\nif len(df) == 1:\n
 fig = go.Figure(go.Indicator(\n
 value=df[\'Total\'].values[0],\n
mode="number",\n
t": "Total Amount Invoiced"}\n
))\nelse:\n
 fig = go.Figure(data=[go.Ba
 r(x=df[\'InvoiceDate\'], y=df[\'Total\'])])\n\nfig.update layout(title=\'Inv
oices Since 2010\', xaxis title=\'Invoice Date\', yaxis title=\'Total Amount
 \')\nfig.show()\n```'}, 'done reason': 'stop', 'done': True, 'total duratio
 n': 14942227853, 'load_duration': 7387043, 'prompt_eval_count': 200, 'prompt
 eval duration': 3978596000, 'eval count': 159, 'eval duration': 1083016900
 0}
import plotly.graph objects as go
import pandas as pd
Check if the DataFrame has more than one row
if len(df) == 1:
 fig = go.Figure(go.Indicator(
 mode="number",
 value=df['Total'].values[0],
 title={"text": "Total Amount Invoiced"}
))
else:
 fig = go.Figure(data=[go.Bar(x=df['InvoiceDate'], y=df['Total'])])
fig.update_layout(title='Invoices Since 2010', xaxis_title='Invoice Date', yaxis_title='Total Am
ount')
```



Number of requested results 10 is greater than number of elements in index 2, updating  $n_results = 2$ 

\_\_\_\_\_\_

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# QUESTION - 12: List all employees and their reporting manager's name (if any):

\_\_\_\_\_\_

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# [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK\_EmployeeReportsTo ON "employees" (Report sTo)\n\nCREATE TABLE "employees"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n Name NVARCHAR(20) NOT NULL, $\r\n$ Title NVARCHAR(30),\r\n ReportsTo INT BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NV City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n  $ARCHAR(70), \r\n$ Coun PostalCode NVARCHAR(10),\r\n try NVARCHAR(40),\r\n Phone NVARCHAR(2 Fax NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) N LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(8 OT NULL,\r\n 0),\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n  $CHAR(40), \r\n$ Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Fax NVARCHAR(24),\r\n Phone NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFEREN CES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION \r\n)\n\nCREATE INDEX IFK CustomerSupportRepId ON "customers" (SupportRepId) \n\nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRIMARY KEY AUTOIN CustomerId INTEGER NOT NULL,\r\n CREMENT NOT NULL,\r\n InvoiceDate DA TETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n BillingCity NVA BillingState NVARCHAR(40),\r\n BillingCountry NVARCHAR  $RCHAR(40), \r\n$  $(40), \r\n$ BillingPostalCode NVARCHAR(10),\r\n Total NUMERIC(10,2) NOT FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r NULL,\r\n \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "invoice InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL items"\r\n(\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n  $L,\r\n$ UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "trac ks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT N TABLE "artists"\r\n(\r\n Name NVARCHAR(120) $\r\n)\n\n$ CREATE TABLE "tracks" $\r\n(\r\n$ ckId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n Milliseconds INTEGER UnitPrice NUMERIC(10,2) NOT NULL,\r NOT NULL,\r\n Bytes INTEGER,\r\n FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES "genr es" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n N KEY (MediaTypeId) REFERENCES "media types" (MediaTypeId) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "albums"\r\n(\r\n mId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) R

EFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTI ON\r\n)\n\nCREATE TABLE sglite stat1(tbl,idx,stat)\n\n\n===Additional Contex In the \'customers\' table, address column names do not have \'B illing\' prefix, \n e.g. country column name is \'country\', not \'Billin \n\nIn the chinook database invoice means order\n\n===Respon gCountry\'\n se Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provi ded context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL guery to find th e distinct strings in that column. Prepend the guery with a comment saying i ntermediate sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': "which tab le stores customer's orders"}, {'role': 'assistant', 'content': 'SELECT DIST INCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, Billing gState, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': 'Find all invoices since 2010 and the total amount invoic ed:'}, {'role': 'assistant', 'content': "SELECT InvoiceId, CustomerId, Invoi ceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'content': 'Get the total number of invoices for each customer'}, {'role': 'assistant', 'content': ' SELECT CustomerId, COUNT(\*) AS TotalInvoi ces\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find the total number of invoices per country'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'content': 'List all albums and their cor responding artist names '}, {'role': 'assistant', 'content': 'SELECT a.Titl e AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a. ArtistId = ar.ArtistId'}, {'role': 'user', 'content': "\n For the que stion what are the top 5 countries that customers come from?, \n generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCount\nF ROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingC ountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SEL ECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bill ingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCo untrv .\n Please fix the error and re-generate the SQL\n {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCount D ESC\nLIMIT 5'}, {'role': 'user', 'content': 'List all invoices with a total exceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM invoices W HERE Total > 10'}, {'role': 'user', 'content': 'How many customers are ther e'}, {'role': 'assistant', 'content': 'SELECT COUNT(\*) AS NumberOfCustomers FROM customers'}, {'role': 'user', 'content': 'Can you list all tables in th e SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT name FROM sqlite master WHERE type='table'"}, {'role': 'user', 'content': 'Find a ll tracks with a name containing "What" (case-insensitive) '}, {'role': 'ass istant', 'content': " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%wha t%'"}, {'role': 'user', 'content': "List all employees and their reporting m anager's name (if any):"}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )] [{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK EmployeeReportsTo ON \"employees\" (Repo rtsTo)\n\nCREATE TABLE \"employees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n irstName NVARCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address  $NVARCHAR(70), \r\n$ City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n untry NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(2 Email NVARCHAR(60),\r\n 4),\r\n Fax NVARCHAR(24),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"employees\" (EmployeeId) \r\n\t\t0N DELETE NO ACTIO N ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n rId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(4 0) NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHA  $R(80), \r\n$ Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State N PostalCode NVARCHAR(10).\r  $VARCHAR(40).\r\n$ Country NVARCHAR(40),\r\n Email NVARCHAR(60) Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REF ERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK CustomerSupportRepId ON \"customers\" (Suppo rtRepId)\n\nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL.\r\n iceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n Billi ngCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCountry  $NVARCHAR(40), \r\n$ BillingPostalCode NVARCHAR(10),\r\n Total NUMERIC(1 FOREIGN KEY (CustomerId) REFERENCES \"customers\" (Cu 0,2) NOT NULL,\r\n stomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TAB LE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCRE MENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER N OT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"artists\"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120)\r\n)\n\nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaType GenreId INTEGER,\r\n Composer NVARCHAR(22 Id INTEGER NOT NULL,\r\n Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n Price NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"alb ums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n IGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTIO FOREIGN KEY (MediaTypeId) REFERENCES \"media t N ON UPDATE NO ACTION,\r\n ypes\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n \nCREATE TABLE \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREM Title NVARCHAR(160) NOT NULL,\r\n ENT NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE sqlite st atl(tbl,idx,stat)\n\n===Additional Context \n\n\n In the 'customers' ta ble, address column names do not have 'Billing' prefix, \n e.g. country c olumn name is 'country', not 'BillingCountry'\n \n\nIn the chinook databa se invoice means order\n\n===Response Guidelines \n1. If the provided contex t is sufficient, please generate a valid SQL query without any explanations

for the question. \n2. If the provided context is almost sufficient but requ ires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strings in that column. Prepe nd the query with a comment saying intermediate sql \n3. If the provided con text is insufficient, please explain why it can't be generated. \n4. Please use the most relevant table(s).  $\normalfont{n5}$ . If the question has been asked and answ ered before, please repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "which table stores customer's orders"}, {"rol e": "assistant", "content": "SELECT DISTINCT InvoiceId, CustomerId, InvoiceD ate, BillingAddress, BillingCity, BillingState, BillingCountry, BillingPosta lCode, Total\nFROM invoices"}, {"role": "user", "content": "Find all invoice s since 2010 and the total amount invoiced:"}, {"role": "assistant", "conten t": "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": "Get the total nu mber of invoices for each customer"}, {"role": "assistant", "content": " SEL ECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerI d"}, {"role": "user", "content": "Find the total number of invoices per coun try"}, {"role": "assistant", "content": " SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry"}, {"role": "user", "c ontent": "List all albums and their corresponding artist names "}, {"role": "assistant", "content": "SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName \nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId"}, {"role": "us er", "content": "\n For the question what are the top 5 countries tha t customers come from?, \n the generated SQL statement SELECT Billin qCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry \nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [E RROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS Customer Count\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC \nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS Cus tomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry .\n Please fix the err "}, {"role": "assistant", "content": "SE or and re-generate the SQL\n LECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGR OUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "co ntent": "List all invoices with a total exceeding \$10"}, {"role": "assistan t", "content": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "How many customers are there"}, {"role": "assistant", "content": "SELECT COUNT(\*) AS NumberOfCustomers FROM customers"}, {"role": "user", "co ntent": "Can you list all tables in the SQLite database catalog?"}, {"role": "assistant", "content": "SELECT name FROM sqlite master WHERE type='tabl e'"}, {"role": "user", "content": "Find all tracks with a name containing \"What\" (case-insensitive) "}, {"role": "assistant", "content": " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {"role": "user", "content": "List all employees and their reporting manager's name (if any):"}]

[( Ollama Response )]
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745575Z', 'message': {'role': 'assistant', 'content': ' SELECT e.FirstName,
e.LastName, m.FirstName AS ManagerFirstName, m.LastName AS ManagerLastName\n
FROM employees e\nLEFT JOIN employees m ON e.ReportsTo = m.EmployeeId;'}, 'd
one\_reason': 'stop', 'done': True, 'total\_duration': 56696198017, 'load\_dura
tion': 6869050, 'prompt\_eval\_count': 1816, 'prompt\_eval\_duration': 515880440
00, 'eval count': 43, 'eval duration': 3640299000}

[( LLM Response )]
SELECT e.FirstName, e.LastName, m.FirstName AS ManagerFirstName, m.LastName

**SELECT** e.FirstName, e.LastName, m.FirstName **AS** ManagerFirstName, m.LastName **AS** ManagerLastName

FROM employees e

**LEFT JOIN** employees m **ON** e.ReportsTo = m.EmployeeId

	FirstName	LastName	ManagerFirstName	ManagerLastName
0	Andrew	Adams	None	None
1	Nancy	Edwards	Andrew	Adams
2	Jane	Peacock	Nancy	Edwards
3	Margaret	Park	Nancy	Edwards
4	Steve	Johnson	Nancy	Edwards
5	Michael	Mitchell	Andrew	Adams
6	Robert	King	Michael	Mitchell
7	Laura	Callahan	Michael	Mitchell

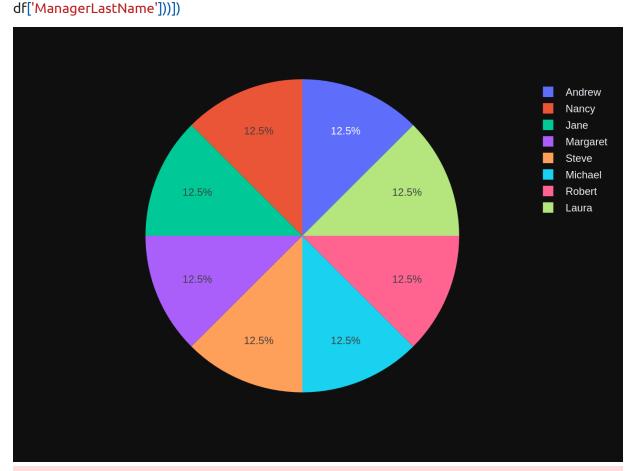
```
[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None
[(Prompt Content)]
[{"role": "system", "content": "The following is a pandas DataFrame that con
tains the results of the query that answers the question the user asked: 'Li
st all employees and their reporting manager's name (if any):\\n\nThe DataFr
ame was produced using this query: SELECT e.FirstName, e.LastName, m.FirstNa
me AS ManagerFirstName, m.LastName AS ManagerLastName\nFROM employees e\nLEF
T JOIN employees m ON e.ReportsTo = m.EmployeeId\n\nThe following is informa
tion about the resulting pandas DataFrame 'df': \nRunning df.dtypes gives:\n
FirstName
 object\nLastName
 object\nManagerFirstName
 object\ndtype: object"}, {"role": "user", "conte
object\nManagerLastName
nt": "Can you generate the Python plotly code to chart the results of the da
taframe? Assume the data is in a pandas dataframe called 'df'. If there is o
nly one value in the dataframe, use an Indicator. Respond with only Python c
ode. Do not answer with any explanations -- just the code."}]
[(Ollama Response)]
{'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:22:12.095
13988Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport plo
tly.graph objects as go\nimport pandas as pd\n\n# Assuming df is your DataFr
ame\nif len(df) == 1:\n fig = go.Figure(go.Indicator(\n
er",\n
 value=len(df),\n
 title={"text": f"{df[\'FirstName\'].il
oc[0]} {df[\'LastName\'].iloc[0]}\'s Manager" if pd.notna(df[\'ManagerFirstN
ame\'].iloc[0]) else "No Manager", "font": {"size": 24}},\n
{"prefix": "", "suffix": ""}\n))\nelse:\n fig = go.Figure(data=[go.Ta])
ble(header=dict(values=[\'First Name\', \'Last Name\', \'Manager First Name
\', \'Manager Last Name\']),\n
 cells=dict(v
 alues=[df[\'FirstName\'], \ df[\'ManagerFirstName\'], \
ration': 18424368104, 'load duration': 8075487, 'prompt eval count': 203, 'p
rompt eval duration': 3958144000, 'eval count': 208, 'eval duration': 143325
```

39000}

cells=dict(values=[df['FirstName'], df['LastName'], df['ManagerFirstName'],

```
import plotly.graph_objects as go
import pandas as pd
```

```
Assuming df is your DataFrame
if len(df) == 1:
 fig = go.Figure(go.Indicator(
 mode="number",
 value=len(df),
 title={"text": f"{df['FirstName'].iloc[0]} {df['LastName'].iloc[0]}'s Manager" if pd.notna(df
['ManagerFirstName'].iloc[0]) else "No Manager", "font": {"size": 24}},
 number={"prefix": "", "suffix": ""}
))
else:
 fig = go.Figure(data=[go.Table(header=dict(values=['First Name', 'Last Name', 'Manager First Name', 'Manager Last Name']),
```



Number of requested results 10 is greater than number of elements in index 2, updating n results = 2

\_\_\_\_\_\_

====

# QUESTION - 13: Get the average invoice total for each customer:

\_\_\_\_\_

====

# [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL.\r\n CustomerId INTEGER NOT NULL.\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou BillingPostalCode NVARCHAR(10),\r\n Total NUMER ntry NVARCHAR(40),\r\n IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCREATE INDEX IFK I nvoiceLineInvoiceId ON "invoice\_items" (InvoiceId)\n\nCREATE TABLE "invoice\_ InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL  $items"\r\n(\r\n$ InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "trac ks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId)\n\nCREATE TABLE sq lite stat1(tbl,idx,stat)\n\nCREATE INDEX IFK CustomerSupportRepId ON "custom ers" (SupportRepId)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEG ER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NU LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVA  $RCHAR(24), \r\n$ Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employee s" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREA TE INDEX IFK EmployeeReportsTo ON "employees" (ReportsTo)\n\nCREATE TABLE "e mployees"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL  $L,\r\n$ LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NO T NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n HireDate DATETIME,\r\n e DATETIME,\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n ty NVARCHAR(40), r nCountry NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 FOREIGN KEY (ReportsTo) REFERENCES "em Email NVARCHAR(60),\r\n ployees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n \n\n===Additional Context \n\nIn the chinook database invoice means order\n In the \'customers\' table, address column names do not have \'Billi ng\' prefix, \n e.g. country column name is \'country\', not \'BillingCou \n\n===Response Guidelines \n1. If the provided context is suffi cient, please generate a valid SQL query without any explanations for the qu estion. \n2. If the provided context is almost sufficient but requires knowl edge of a specific string in a particular column, please generate an interme diate SQL query to find the distinct strings in that column. Prepend the que ry with a comment saying intermediate\_sql \n3. If the provided context is in sufficient, please explain why it can\'t be generated. \n4. Please use the m ost relevant table(s). \n5. If the question has been asked and answered befo

re, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': 'Get the total number of invoices for each customer'}, {'role': 'assistant', 'content': ' SELECT CustomerId, COUNT(\*) AS TotalInvoi ces\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find the total number of invoices per country'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'content': 'Find all invoices since 2010 and the total amount invoiced:'}, {'role': 'assistant', 'content': "SELECT I nvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate > = '2010-01-01'"}, {'role': 'user', 'content': 'List all invoices with a tota l exceeding 10', {'role': 'assistant', 'content': 'SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': "which table stores custome r's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, C ustomerId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCo untry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'conten t': 'How many customers are there'}, {'role': 'assistant', 'content': 'SELEC T COUNT(\*) AS NumberOfCustomers FROM customers'}, {'role': 'user', 'conten t': "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, CO UNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY C ustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Fai led to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n E xecution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nF ROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry .\n Please fix the error and re-ge "}, {'role': 'assistant', 'content': 'SELECT country nerate the SQL\n AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY countr y\nORDER BY CustomerCount DESC\nLIMIT 5'}, {'role': 'user', 'content': "List all employees and their reporting manager's name (if any):"}, {'role': 'assi stant', 'content': 'SELECT e.FirstName, e.LastName, m.FirstName AS ManagerFi rstName, m.LastName AS ManagerLastName\nFROM employees e\nLEFT JOIN employee s m ON e.ReportsTo = m.EmployeeId'}, {'role': 'user', 'content': 'Find all t racks with a name containing "What" (case-insensitive) '}, {'role': 'assista nt', 'content': " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {'role': 'user', 'content': 'List all albums and their corresponding artist names '}, {'role': 'assistant', 'content': 'SELECT a.Title AS AlbumTitle, a r.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.Arti stId'}, {'role': 'user', 'content': ' Get the average invoice total for each customer:'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep\_alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" IC(10,2) NOT NULL,\r\n

(CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerId ON \"invoices\" (CustomerId)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (InvoiceId)\n\nCREATE TABLE \"inv oice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT InvoiceId INTEGER NOT NULL,\r\n NULL,\r\n TrackId INTEGER NOT NUL UnitPrice NUMERIC(10,2) NOT NULL,\r\n Ouantity INTEGER NOT NU L.\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n LL.\r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) RE FERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO N\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"invoice items\" (TrackId) \n\nCREATE TABLE sqlite stat1(tbl,idx,stat)\n\nCREATE INDEX IFK CustomerSupp ortRepId ON \"customers\" (SupportRepId)\n\nCREATE TABLE \"customers\"\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n City NVARCHAR(4 State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCod  $0), \r\n$ e NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n mail NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO AC TION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK EmployeeReportsTo ON \"emp loyees\" (ReportsTo)\n\nCREATE TABLE \"employees\"\r\n(\r\n EmployeeId IN TEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT FirstName NVARCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r NULL,\r\n ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n HireDate DATETIM E,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARC Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n  $HAR(40), \r\n$ Fax NVARCHAR(24),\r\n Phone NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DEL ETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chinook database invoice means order\n\n\n In the 'customers' table, addr ess column names do not have 'Billing' prefix, \n e.g. country column nam e is 'country', not 'BillingCountry'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query withou t any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular colum n, please generate an intermediate SQL query to find the distinct strings in that column. Prepend the query with a comment saying intermediate sql \n3. I f the provided context is insufficient, please explain why it can't be gener ated. \n4. Please use the most relevant table(s). \n5. If the question has b een asked and answered before, please repeat the answer exactly as it was gi ven before. \n"}, {"role": "user", "content": "Get the total number of invoi ces for each customer"}, {"role": "assistant", "content": " SELECT CustomerI d, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "Find the total number of invoices per country"}, {"rol e": "assistant", "content": " SELECT BillingCountry, COUNT(\*) AS TotalInvoic es\nFROM invoices\nGROUP BY BillingCountry"}, {"role": "user", "content": "F ind all invoices since 2010 and the total amount invoiced:"}, {"role": "assi stant", "content": "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nFROM i nvoices\nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": "L ist all invoices with a total exceeding \$10"}, {"role": "assistant", "conten t": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assistant", "content": "S ELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCi ty, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "How many customers are there"}, {"role": "assis tant", "content": "SELECT COUNT(\*) AS NumberOfCustomers FROM customers"},

{"role": "user", "content": "\n For the question what are the top 5 c ountries that customers come from?, \n the generated SQL statement S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS  $CustomerCount\nFROM\ customers\nGROUP\ BY\ BillingCountry\nORDER\ BY\ Customer$ Count DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY Cust omerCount DESC\nLIMIT 5': no such column: BillingCountry .\n "}, {"role": "assistant", "con ix the error and re-generate the SQL\n tent": "SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM cus tomers\nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "content": "List all employees and their reporting manager's name (i f any):"}, {"role": "assistant", "content": "SELECT e.FirstName, e.LastName, m.FirstName AS ManagerFirstName, m.LastName AS ManagerLastName\nFROM employe es e\nLEFT JOIN employees m ON e.ReportsTo = m.EmployeeId"}, {"role": "use r", "content": "Find all tracks with a name containing \"What\" (case-insens itive) "}, {"role": "assistant", "content": " SELECT \* FROM tracks\nWHERE LO WER(Name) LIKE '%what%'"}, {"role": "user", "content": "List all albums and their corresponding artist names "}, {"role": "assistant", "content": "SELE CT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId"}, {"role": "user", "content": " Get the aver age invoice total for each customer:"}]

[( Ollama Response )]
{'model': 'deepseek-coder-v2:latest', 'created\_at': '2024-10-12T17:22:58.698
337866Z', 'message': {'role': 'assistant', 'content': ' SELECT CustomerId, A
VG(Total) AS AverageInvoiceTotal\nFROM invoices\nGROUP BY CustomerId'}, 'don
e\_reason': 'stop', 'done': True, 'total\_duration': 46501902258, 'load\_durati
on': 8127573, 'prompt\_eval\_count': 1583, 'prompt\_eval\_duration': 4339629700
0, 'eval\_count': 21, 'eval\_duration': 1676645000}

[( LLM Response )]
 SELECT CustomerId, AVG(Total) AS AverageInvoiceTotal
FROM invoices
GROUP BY CustomerId

**SELECT** CustomerId, **AVG**(Total) **AS** AverageInvoiceTotal

FROM invoices

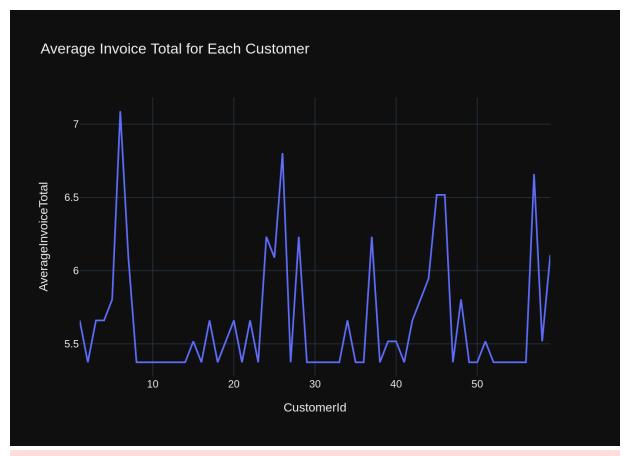
**GROUP BY** CustomerId

	CustomerId	AverageInvoiceTotal
0	1	5.660000
1	2	5.374286
2	3	5.660000
3	4	5.660000
4	5	5.802857
5	6	7.088571
6	7	6.088571
7	8	5.374286
8	9	5.374286
9	10	5.374286
10	11	5.374286
11	12	5.374286
12	13	5.374286
13	14	5.374286
14	15	5.517143
15	16	5.374286
16	17	5.660000
17	18	5.374286
18	19	5.517143
19	20	5.660000
20	21	5.374286
21	22	5.660000
22	23	5.374286
23	24	6.231429
24	25	6.088571
25	26	6.802857
26	27	5.374286
27	28	6.231429
28	29	5.374286
29	30	5.374286
30	31	5.374286
31	32	5.374286
32	33	5.374286
33	34	5.660000

	CustomerId	AverageInvoiceTotal
34	35	5.374286
35	36	5.374286
36	37	6.231429
37	38	5.374286
38	39	5.517143
39	40	5.517143
40	41	5.374286
41	42	5.660000
42	43	5.802857
43	44	5.945714
44	45	6.517143
45	46	6.517143
46	47	5.374286
47	48	5.802857
48	49	5.374286
49	50	5.374286
50	51	5.517143
51	52	5.374286
52	53	5.374286
53	54	5.374286
54	55	5.374286
55	56	5.374286
56	57	6.660000
57	58	5.517143
58	59	6.106667

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None
 [(Prompt Content)]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
tains the results of the query that answers the question the user asked: ' G
et the average invoice total for each customer:'\n\nThe DataFrame was produc
ed using this query: SELECT CustomerId, AVG(Total) AS AverageInvoiceTotal\n
FROM invoices\nGROUP BY CustomerId\n\nThe following is information about the
 resulting pandas DataFrame 'df': \nRunning df.dtypes gives:\n CustomerId
int64\nAverageInvoiceTotal
 float64\ndtype: object"}, {"role": "user", "co
ntent": "Can you generate the Python plotly code to chart the results of the
dataframe? Assume the data is in a pandas dataframe called 'df'. If there is
only one value in the dataframe, use an Indicator. Respond with only Python
code. Do not answer with any explanations -- just the code."}]
 [(Ollama Response)]
 {'model': 'deepseek-coder-v2:latest', 'created_at': '2024-10-12T17:23:05.366
198279Z', 'message': {'role': 'assistant', 'content': " ```python\nimport pl
otly.express as px\n\nfiq = px.line(df, x='CustomerId', y='AverageInvoiceTot
al', title='Average Invoice Total for Each Customer')\nfig.show()\n```"}, 'd
one_reason': 'stop', 'done': True, 'total_duration': 6638085692, 'load durat
ion': 8315588, 'prompt eval count': 173, 'prompt eval duration': 3390614000,
 'eval count': 48, 'eval duration': 3112056000}
import plotly.express as px
```

fig = px.line(df, x='CustomerId', y='AverageInvoiceTotal', title='Average Invoice Total for Each Customer')



Number of requested results 10 is greater than number of elements in index 2, updating  $n_results = 2$ 

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# QUESTION - 14: Find the top 5 most expensive tracks (based on unit pric
e):

\_\_\_\_\_\_

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[( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n mId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n (AlbumId) REFERENCES "albums" (AlbumId)  $\r \$  DELETE NO ACTION ON UPDAT E NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeI d) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackAlbumId ON "tracks" (AlbumId)\n \nCREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)\n\nCREATE INDEX IFK Pl aylistTrackTrackId ON "playlist track" (TrackId)\n\nCREATE INDEX IFK Invoice LineTrackId ON "invoice\_items" (TrackId)\n\nCREATE INDEX IFK TrackMediaTypeI d ON "tracks" (MediaTypeId)\n\nCREATE TABLE "invoice items"\r\n(\r\n iceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId INTEG ER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10, 2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (Invoice Id) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t \tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "playlist tra  $ck"\r\n(\r\n$ PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NU CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r  $LL,\r\n$ FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\t0 N DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFEREN CES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n) \n\nCREATE INDEX IFK AlbumArtistId ON "albums" (ArtistId)\n\nCREATE TABLE "a  $lbums"\r\n(\r\n$ AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n EIGN KEY (ArtistId) REFERENCES "artists" (ArtistId) \r\n\t\t0N DELETE NO ACT ION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chinook d atabase invoice means order\n\n\n In the \'customers\' table, address col umn names do not have \'Billing\' prefix, \n e.g. country column name is \'country\', not \'BillingCountry\'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query withou t any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular colum n, please generate an intermediate SQL query to find the distinct strings in that column. Prepend the query with a comment saying intermediate sql \n3. I f the provided context is insufficient, please explain why it can\'t be gene rated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was g iven before. \n'}, {'role': 'user', 'content': 'Find all tracks with a name containing "What" (case-insensitive) '}, {'role': 'assistant', 'content': " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {'role': 'user', 'c

ontent': 'List all invoices with a total exceeding \$10'}, {'role': 'assistan t', 'content': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': 'List all albums and their corresponding artist names '}, {'rol e': 'assistant', 'content': 'SELECT a.Title AS AlbumTitle, ar.Name AS Artist Name\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'content': 'Find all invoices since 2010 and the total amount invoic ed:'}, {'role': 'assistant', 'content': "SELECT InvoiceId, CustomerId, Invoi ceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'content': ' Get the average invoice total for each customer:'}, {'r ole': 'assistant', 'content': ' SELECT CustomerId, AVG(Total) AS AverageInvo iceTotal\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find the total number of invoices per country'}, {'role': 'assistant', 'con tent': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGR OUP BY BillingCountry'}, {'role': 'user', 'content': "which table stores cus tomer's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceI d, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingState, Billi ngCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'cont ent': 'Can you list all tables in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT name FROM sqlite master WHERE type='tabl e'"}, {'role': 'user', 'content': 'How many customers are there'}, {'role': 'assistant', 'content': 'SELECT COUNT(\*) AS NumberOfCustomers FROM customer s'}, {'role': 'user', 'content': "\n For the question what are the to p 5 countries that customers come from?, \n the generated SQL stateme nt SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the follo wing exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COU NT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY Cu stomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry .\n se fix the error and re-generate the SOL\n "}, {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5'}, {'rol e': 'user', 'content': 'Find the top 5 most expensive tracks (based on unit price):'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMA RY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n lbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGE Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n R, r nBvtes INTEGER.\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (Albumid) REFERENCES \"albums\" (Albumid) \r\n\t\tON DELETE NO ACTION ON UPD FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) ATE NO ACTION,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTy peId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION 0 N UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackAlbumId ON \"tracks\" (Albu mId)\n\nCREATE INDEX IFK TrackGenreId ON \"tracks\" (GenreId)\n\nCREATE INDE X IFK PlaylistTrackTrackId ON \"playlist\_track\" (TrackId)\n\nCREATE INDEX I FK InvoiceLineTrackId ON \"invoice items\" (TrackId)\n\nCREATE INDEX IFK Tra ckMediaTypeId ON \"tracks\" (MediaTypeId)\n\nCREATE TABLE \"invoice items \"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n ice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREI GN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES \"tracks \" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"playlist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY (Pl ackId INTEGER NOT NULL,\r\n aylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK AlbumArtistId ON \"albums\" (Artis tId)\n\nCREATE TABLE \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTO INCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n TEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENCES \"artists\" (Artis tId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chinook database invoice means order\n\n\n In the 'cus tomers' table, address column names do not have 'Billing' prefix, \n country column name is 'country', not 'BillingCountry'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a val id SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the d istinct strings in that column. Prepend the query with a comment saying inte rmediate sql \n3. If the provided context is insufficient, please explain wh y it can't be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer ex actly as it was given before. \n"}, {"role": "user", "content": "Find all tr acks with a name containing \"What\" (case-insensitive) "}, {"role": "assist ant", "content": " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {"role": "user", "content": "List all invoices with a total exceeding \$10"}, {"role": "assistant", "content": " SELECT \* FROM invoices WHERE Total > 1 0"}, {"role": "user", "content": "List all albums and their corresponding ar tist names "}, {"role": "assistant", "content": "SELECT a.Title AS AlbumTit le, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = a r.ArtistId"}, {"role": "user", "content": "Find all invoices since 2010 and the total amount invoiced:"}, {"role": "assistant", "content": "SELECT Invoi ceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2 010-01-01'"}, {"role": "user", "content": " Get the average invoice total fo r each customer:"}, {"role": "assistant", "content": " SELECT CustomerId, AV G(Total) AS AverageInvoiceTotal\nFROM invoices\nGROUP BY CustomerId"}, {"rol e": "user", "content": "Find the total number of invoices per country"}, {"r ole": "assistant", "content": " SELECT BillingCountry, COUNT(\*) AS TotalInvo ices\nFROM invoices\nGROUP BY BillingCountry"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assistant", "content": "S ELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCi ty, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assistant", "content": "SELECT name FROM sqlite\_master WHERE type='table'"}, {"role": "user", "content": "How many customers are th ere"}, {"role": "assistant", "content": "SELECT COUNT(\*) AS NumberOfCustomer s FROM customers"}, {"role": "user", "content": "\n For the question what are the top 5 countries that customers come from?, \n the genera ted SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql 'SELECT BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry \( \).\n \quad \text{Please fix the error and re-generate the SQL\n \quad \text{"}}, \{\text{"rol} e": "assistant", "content": "SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCount DESC\n LIMIT 5"}, \{\text{"role": "user", "content": "Find the top 5 most expensive tracks (based on unit price):"}}

[( Ollama Response )]

{'model': 'deepseek-coder-v2:latest', 'created\_at': '2024-10-12T17:23:47.223 773233Z', 'message': {'role': 'assistant', 'content': ' SELECT Name, UnitPri ce\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5'}, 'done\_reason': 'stop', 'done': True, 'total\_duration': 41766671846, 'load\_duration': 7690130, 'prom pt\_eval\_count': 1445, 'prompt\_eval\_duration': 38828730000, 'eval\_count': 19, 'eval duration': 1515956000}

[( LLM Response )]
 SELECT Name, UnitPrice
FROM tracks
ORDER BY UnitPrice DESC
LIMIT 5

**SELECT** Name, UnitPrice

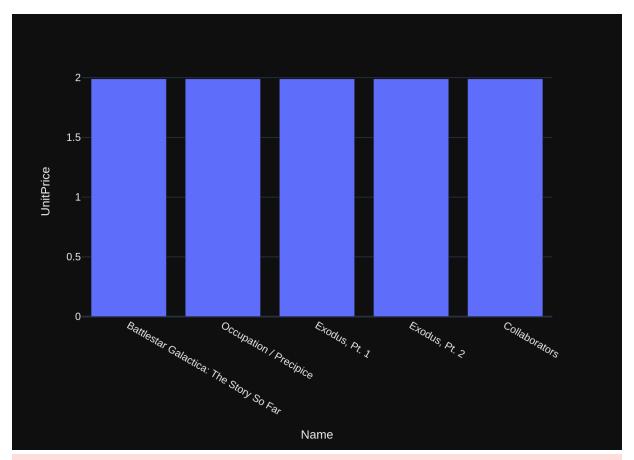
FROM tracks

**ORDER BY UnitPrice DESC** 

LIMIT 5

	Name	UnitPrice
0	Battlestar Galactica: The Story So Far	1.99
1	Occupation / Precipice	1.99
2	Exodus, Pt. 1	1.99
3	Exodus, Pt. 2	1.99
4	Collaborators	1.99

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [(Prompt Content)]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: 'Fi
 nd the top 5 most expensive tracks (based on unit price):'\n\nThe DataFrame
was produced using this query: SELECT Name, UnitPrice\nFROM tracks\nORDER B
Y UnitPrice DESC\nLIMIT 5\n\nThe following is information about the resultin
g pandas DataFrame 'df': \nRunning df.dtypes gives:\n Name
 float64\ndtype: object"}, {"role": "user", "content": "Can you
UnitPrice
 generate the Python plotly code to chart the results of the dataframe? Assum
e the data is in a pandas dataframe called 'df'. If there is only one value
 in the dataframe, use an Indicator. Respond with only Python code. Do not an
 swer with any explanations -- just the code."}]
 [(Ollama Response)]
 {'model': 'deepseek-coder-v2:latest', 'created_at': '2024-10-12T17:23:59.687
860558Z', 'message': {'role': 'assistant', 'content': " ```python\nimport pl
otly.express as px\n\nif df['UnitPrice'].nunique() == 1:\n
 fiq = px.indic
 ator(value=df['UnitPrice'][0], title='Top 5 Most Expensive Tracks by Unit Pr
 fig = px.bar(df, x='Name', y='UnitPrice', text='UnitPric
 ice')\nelse:\n
 e', title='Top 5 Most Expensive Tracks by Unit Price')\n\nfiq.update xaxes(t
 itle text='Track Name')\nfig.update yaxes(title text='Unit Price')\nfig.show
 ()\n```"}, 'done reason': 'stop', 'done': True, 'total_duration': 1243194343
 0, 'load duration': 8091242, 'prompt eval count': 173, 'prompt eval duratio
 n': 3317589000, 'eval count': 134, 'eval duration': 8981050000}
import plotly.express as px
if df['UnitPrice'].nunique() == 1:
 fig = px.indicator(value=df['UnitPrice'][0], title='Top 5 Most Expensive Tracks by Unit Price')
 fig = px.bar(df, x='Name', y='UnitPrice', text='UnitPrice', title='Top 5 Most Expensive Tracks
by Unit Price')
fig.update xaxes(title text='Track Name')
fig.update_yaxes(title_text='Unit Price')
```



Number of requested results 10 is greater than number of elements in index 2, updating  $n_results = 2$ 

\_\_\_\_\_\_

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# QUESTION - 15: List all genres and the number of tracks in each genre:

\_\_\_\_\_

[( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n MediaTypeId INTEGER NOT NULL,\r\n mId INTEGER,\r\n GenreId INTEGER,\r Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Bytes INTEGER,\r\n FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId)  $\r \$  DELETE NO ACTION ON UPDAT FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n E NO ACTION,\r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeI d) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)\n \nCREATE TABLE "genres"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUTOINCREMEN Name NVARCHAR(120) $\r\n)\n$ CREATE INDEX IFK PlaylistTrack T NOT NULL,\r\n TrackId ON "playlist track" (TrackId)\n\nCREATE INDEX IFK TrackAlbumId ON "t racks" (AlbumId)\n\nCREATE TABLE "playlists"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120)\r\n)\n\nCREATE INDEX IFK TrackMediaTypeId ON "tracks" (MediaTypeId)\n\nCREATE TABLE "playli st track"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, Track NOT NULL,\r\n FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO N\r\n)\n\nCREATE TABLE "albums"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTO INCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId IN FOREIGN KEY (ArtistId) REFERENCES "artists" (ArtistI TEGER NOT NULL,\r\n d) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK AlbumArtistId ON "albums" (ArtistId)\n\n===Additional Context \n\nIn the c hinook database invoice means order\n\n In the \'customers\' table, add ress column names do not have \'Billing\' prefix, \n e.g. country column name is \'country\', not \'BillingCountry\'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL quer y without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particula r column, please generate an intermediate SQL query to find the distinct str ings in that column. Prepend the query with a comment saying intermediate sq l \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the questi on has been asked and answered before, please repeat the answer exactly as i t was given before. \n'}, {'role': 'user', 'content': 'Find the top 5 most e xpensive tracks (based on unit price):'}, {'role': 'assistant', 'content': ' SELECT Name, UnitPrice\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5'}, {'r ole': 'user', 'content': 'List all albums and their corresponding artist nam es '}, {'role': 'assistant', 'content': 'SELECT a.Title AS AlbumTitle, ar.N ame AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistI d'}, {'role': 'user', 'content': 'Find all tracks with a name containing "Wh at" (case-insensitive) '}, {'role': 'assistant', 'content': " SELECT \* FROM

tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {'role': 'user', 'content': 'Find the total number of invoices per country'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'content': 'How many customers are ther e'}, {'role': 'assistant', 'content': 'SELECT COUNT(\*) AS NumberOfCustomers FROM customers'}, {'role': 'user', 'content': 'List all invoices with a tota l exceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': 'Can you list all tables in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT nam e FROM sqlite master WHERE type='table'"}, {'role': 'user', 'content': 'Get the total number of invoices for each customer'}, {'role': 'assistant', 'con tent': ' SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find all invoices since 2010 a nd the total amount invoiced:'}, {'role': 'assistant', 'content': "SELECT In voiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'content': "which table stores customer's o rders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, Custom erId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountr y, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': 'L ist all genres and the number of tracks in each genre:'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

#### [( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMA RY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n lbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGE Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n R, r nBvtes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPD FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) ATE NO ACTION,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTv peId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION 0 N UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackGenreId ON \"tracks\" (Genr eId)\n\nCREATE TABLE \"genres\"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUTO INCREMENT NOT NULL,\r\n Name NVARCHAR(120)\r\n)\n\nCREATE INDEX IFK Playl istTrackTrackId ON \"playlist track\" (TrackId)\n\nCREATE INDEX IFK TrackAlb umId ON \"tracks\" (AlbumId)\n\nCREATE TABLE \"playlists\"\r\n(\r\n istId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) \r\n)\n\nCREATE INDEX IFK TrackMediaTypeId ON \"tracks\" (MediaTypeId)\n\nCR EATE TABLE \"playlist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL.\r\n TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES \"playlist s\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n EIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\t0N DELETE NO ACTI ON ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"albums\"\r\n(\r\n NTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT N ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERE ULL.\r\n NCES \"artists\" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION \r\n)\n\nCREATE INDEX IFK AlbumArtistId ON \"albums\" (ArtistId)\n\n===Add

itional Context \n\nIn the chinook database invoice means order\n\n\n the 'customers' table, address column names do not have 'Billing' prefix, \n e.g. country column name is 'country', not 'BillingCountry'\n n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the pro vided context is almost sufficient but requires knowledge of a specific stri ng in a particular column, please generate an intermediate SQL guery to find the distinct strings in that column. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explai n why it can't be generated. \n4. Please use the most relevant table(s). \n 5. If the question has been asked and answered before, please repeat the ans wer exactly as it was given before. \n"}, {"role": "user", "content": "Find the top 5 most expensive tracks (based on unit price):"}, {"role": "assistan t", "content": " SELECT Name, UnitPrice\nFROM tracks\nORDER BY UnitPrice DES C\nLIMIT 5"}, {"role": "user", "content": "List all albums and their corresp onding artist names "}, {"role": "assistant", "content": "SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.Artis tId = ar.ArtistId"}, {"role": "user", "content": "Find all tracks with a nam e containing \"What\" (case-insensitive) "}, {"role": "assistant", "conten t": " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {"role": "use r", "content": "Find the total number of invoices per country"}, {"role": "a ssistant", "content": " SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFR OM invoices\nGROUP BY BillingCountry"}, {"role": "user", "content": "How man y customers are there"}, {"role": "assistant", "content": "SELECT COUNT(\*) A S NumberOfCustomers FROM customers"}, {"role": "user", "content": "List all invoices with a total exceeding \$10"}, {"role": "assistant", "content": " SE LECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "Can yo u list all tables in the SQLite database catalog?"}, {"role": "assistant", "content": "SELECT name FROM sqlite master WHERE type='table'"}, {"role": "u ser", "content": "Get the total number of invoices for each customer"}, {"ro le": "assistant", "content": " SELECT CustomerId, COUNT(\*) AS TotalInvoices \nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "Find al l invoices since 2010 and the total amount invoiced:"}, {"role": "assistan t", "content": "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nFROM invoi ces\nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assistant", "content": "SELECT D ISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, Bil lingState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"rol e": "user", "content": "List all genres and the number of tracks in each gen re:"}]

[( Ollama Response )]
{'model': 'deepseek-coder-v2:latest', 'created\_at': '2024-10-12T17:24:36.164
672734Z', 'message': {'role': 'assistant', 'content': ' intermediate\_sql\nS
ELECT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks\nFROM genres g
\nLEFT JOIN tracks t ON g.GenreId = t.GenreId\nGROUP BY g.GenreId'}, 'done\_r
eason': 'stop', 'done': True, 'total\_duration': 36386913789, 'load\_duratio
n': 8345351, 'prompt\_eval\_count': 1210, 'prompt\_eval\_duration': 30863716000,
'eval\_count': 52, 'eval\_duration': 4106143000}

```
[(LLM Response)]
 intermediate_sql
SELECT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks
FROM genres g
LEFT JOIN tracks t ON g.GenreId = t.GenreId
GROUP BY g.GenreId
```

```
[(Running Intermediate SQL)]
 intermediate sql
SELECT q.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks
FROM genres g
LEFT JOIN tracks t ON g.GenreId = t.GenreId
GROUP BY g.GenreId
[(Final SQL Prompt)]
[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene
rate a SQL query to answer the question. Your response should ONLY be based
on the given context and follow the response guidelines and format instructi
ons. \n===Tables \nCREATE TABLE "tracks"\r\n(\r\n
 TrackId INTEGER PRIMARY
 Name NVARCHAR(200) NOT NULL,\r\n
KEY AUTOINCREMENT NOT NULL,\r\n
mId INTEGER,\r\n
 MediaTypeId INTEGER NOT NULL,\r\n
 GenreId INTEGER,\r
 Composer NVARCHAR(220),\r\n
 Milliseconds INTEGER NOT NULL,\r\n
Bytes INTEGER,\r\n
 UnitPrice NUMERIC(10,2) NOT NULL,\r\n
 FOREIGN KEY
(AlbumId) REFERENCES "albums" (AlbumId) \r \ DELETE NO ACTION ON UPDAT
E NO ACTION,\r\n
 FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n
\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n
 FOREIGN KEY (MediaTypeI
d) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPD
ATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)\n
\nCREATE TABLE "genres"\r\n(\r\n
 GenreId INTEGER PRIMARY KEY AUTOINCREMEN
T NOT NULL,\r\n Name NVARCHAR(120)\r\n)\n\nCREATE INDEX IFK PlaylistTrack
TrackId ON "playlist track" (TrackId)\n\nCREATE INDEX IFK TrackAlbumId ON "t
racks" (AlbumId)\n\nCREATE TABLE "playlists"\r\n(\r\n
 PlaylistId INTEGER
PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n
 Name NVARCHAR(120)\r\n)\n\nCREATE
INDEX IFK TrackMediaTypeId ON "tracks" (MediaTypeId)\n\nCREATE TABLE "playli
st track"\r\n(\r\n
 PlaylistId INTEGER NOT NULL,\r\n
 TrackId INTEGER
NOT NULL,\r\n
 CONSTRAINT PK_PlaylistTrack PRIMARY KEY (PlaylistId, Track
 FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r
\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n
 FOREIGN KEY (TrackId)
REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO
N\r\n)\n\nCREATE TABLE "albums"\r\n(\r\n
 AlbumId INTEGER PRIMARY KEY AUTO
INCREMENT NOT NULL,\r\n
 Title NVARCHAR(160) NOT NULL,\r\n
 ArtistId IN
TEGER NOT NULL,\r\n
 FOREIGN KEY (ArtistId) REFERENCES "artists" (ArtistI
d) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK
AlbumArtistId ON "albums" (ArtistId)\n\n===Additional Context \n\nIn the c
hinook database invoice means order\n\n In the \'customers\' table, add
ress column names do not have \'Billing\' prefix, \n
 e.g. country column
name is \'country\', not \'BillingCountry\'\n
 \n\nThe following is a pand
as DataFrame with the results of the intermediate SQL query
 intermediate s
ql\nSELECT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks\nFROM gen
res q\nLEFT JOIN tracks t ON g.GenreId = t.GenreId\nGROUP BY g.GenreId: \n|
| GenreName
 NumberOfTracks |\n|---:|:------|-----
----:|\n| 0 | Rock
 1297 |\n| 1 | Jazz
 130 |\n| 2 | Metal
 374 |\n| 3 |
Alternative & Punk |
 332 |\n| 4 | Rock And Roll
12 |\n| 5 | Blues
 81 |\n| 6 | Latin
 579 |\n|
 7 | Reggae
 58 |\n| 8 |
 48 |\n| 9 | Soundtrack
Pop
43 |\n| 10 | Bossa Nova
 15 |\n| 11 | Easy Listening
 24 |\n| 12 | Heavy Metal
 28 |\n| 13 |
R&B/Soul
 61 |\n| 14 | Electronica/Dance
30 |\n| 15 | World
 28 |\n| 16 | Hip Hop/Rap
 13 |\n| 18 |
 35 \\n | 17 | Science Fiction
```

```
TV Shows
 93 |\n| 19 | Sci Fi & Fantasy
26 |\n| 20 | Drama
 64 |\n| 21 | Comedy
 17 |\n| 22 | Alternative
 40 |\n| 23 |
Classical
 74 |\n| 24 | Opera
1 |\n\n===Response Guidelines \n1. If the provided context is sufficient, pl
ease generate a valid SQL query without any explanations for the question.
\n2. If the provided context is almost sufficient but requires knowledge of
a specific string in a particular column, please generate an intermediate SQ
L query to find the distinct strings in that column. Prepend the guery with
a comment saying intermediate sql \n3. If the provided context is insufficie
nt, please explain why it can\'t be generated. \n4. Please use the most rele
vant table(s). \n5. If the question has been asked and answered before, plea
se repeat the answer exactly as it was given before. \n'}, {'role': 'user',
'content': 'Find the top 5 most expensive tracks (based on unit price):'},
{'role': 'assistant', 'content': ' SELECT Name, UnitPrice\nFROM tracks\nORDE
R BY UnitPrice DESC\nLIMIT 5'}, {'role': 'user', 'content': 'List all albums
and their corresponding artist names '}, {'role': 'assistant', 'content':
'SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN ar
tists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'content': 'Find al
l tracks with a name containing "What" (case-insensitive) '}, {'role': 'assi
stant', 'content': " SELECT * FROM tracks\nWHERE LOWER(Name) LIKE '%wha
t%'"}, {'role': 'user', 'content': 'Find the total number of invoices per co
untry'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(*)
AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user',
'content': 'How many customers are there'}, {'role': 'assistant', 'content':
'SELECT COUNT(*) AS NumberOfCustomers FROM customers'}, {'role': 'user', 'co
ntent': 'List all invoices with a total exceeding $10'}, {'role': 'assistan
t', 'content': ' SELECT * FROM invoices WHERE Total > 10'}, {'role': 'user',
'content': 'Can you list all tables in the SQLite database catalog?'}, {'rol
e': 'assistant', 'content': "SELECT name FROM sqlite_master WHERE type='tabl
e'"}, {'role': 'user', 'content': 'Get the total number of invoices for each
customer'}, {'role': 'assistant', 'content': ' SELECT CustomerId, COUNT(*) A
S TotalInvoices\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'con
tent': 'Find all invoices since 2010 and the total amount invoiced:'}, {'rol
e': 'assistant', 'content': "SELECT InvoiceId, CustomerId, InvoiceDate, Tota
l\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'con
tent': "which table stores customer's orders"}, {'role': 'assistant', 'conte
nt': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, Bi
llingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invo
ices'}, {'role': 'user', 'content': 'List all genres and the number of track
s in each genre:'}]
```

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None
```

### [( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMA RY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n A lbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGE R,\r\n Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY

(AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTv peId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\t0N DELETE NO ACTION 0 N UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackGenreId ON \"tracks\" (Genr eId)\n\nCREATE TABLE \"genres\"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUTO INCREMENT NOT NULL,\r\n Name NVARCHAR(120)\r\n)\n\nCREATE INDEX IFK Playl istTrackTrackId ON \"playlist track\" (TrackId)\n\nCREATE INDEX IFK TrackAlb umId ON \"tracks\" (AlbumId)\n\nCREATE TABLE \"playlists\"\r\n(\r\n istId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) \r\n)\n\nCREATE INDEX IFK TrackMediaTypeId ON \"tracks\" (MediaTypeId)\n\nCR EATE TABLE \"playlist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES \"playlist s\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n EIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\t0N DELETE NO ACTI ON ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"albums\"\r\n(\r\n NTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT N ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERE NCES \"artists\" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION  $\r\n)\n\n\CREATE INDEX IFK AlbumArtistId ON \"albums\" (ArtistId)\n\n\n===Add$ itional Context \n\nIn the chinook database invoice means order\n\n\n the 'customers' table, address column names do not have 'Billing' prefix, \n e.g. country column name is 'country', not 'BillingCountry'\n lowing is a pandas DataFrame with the results of the intermediate SQL query intermediate sql\nSELECT q.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTr acks $\nFROM$  genres g $\nLEFT$  JOIN tracks t ON g.GenreId = t.GenreId $\nGROUP$  BY g.GenreId: \n| | GenreName NumberOfTracks |\n|---:|:---------:|\n| 0 | Rock 129 7 |\n| 1 | Jazz 130 |\n| 2 | Metal 374 |\n| 3 | Alternative & Punk | 332 |\n| Rock And Roll 12 |\n| 5 | Blues 81 |\n| 6 | Latin 579 |\n| 7 | Reggae 1 58 |\n| 8 | Pop 48 |\n| Soundtrack 43 |\n| 10 | Bossa Nova 15 |\n| 11 | Easy Listening 24 |\n| 12 | Heavy Metal 28 |\n| 13 | R&B/Soul 61 |\n| 14 | Electronica/Dance | 30 |\n| 15 | World 28 |\n| 16 | Hip Hop/Rap 35 |\n| 17 | Science Fiction 13 |\n| 18 | TV Shows 93 |\n| 19 | Sci Fi & Fantasy 26 |\n| 20 | Drama 64 |\n| 21 | Comedy 17 |\n| 22 | Alternative 74 |\n| 24 | 40 |\n| 23 | Classical 1 |\n\n===Response Guidelines \n1. If th Opera e provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is almost su fficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strings in th at column. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can't be generat ed. \n4. Please use the most relevant table(s). \n5. If the question has bee n asked and answered before, please repeat the answer exactly as it was give n before. \n"}, {"role": "user", "content": "Find the top 5 most expensive t racks (based on unit price):"}, {"role": "assistant", "content": " SELECT Na me, UnitPrice\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5"}, {"role": "us er", "content": "List all albums and their corresponding artist names "},

{"role": "assistant", "content": "SELECT a.Title AS AlbumTitle, ar.Name AS A rtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId"}, {"r ole": "user", "content": "Find all tracks with a name containing \"What\" (c ase-insensitive) "}, {"role": "assistant", "content": " SELECT \* FROM tracks \nWHERE LOWER(Name) LIKE '%what%'"}, {"role": "user", "content": "Find the t otal number of invoices per country"}, {"role": "assistant", "content": " SE LECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY Bill ingCountry"}, {"role": "user", "content": "How many customers are there"}, {"role": "assistant", "content": "SELECT COUNT(\*) AS NumberOfCustomers FROM customers"}, {"role": "user", "content": "List all invoices with a total exc eeding \$10"}, {"role": "assistant", "content": " SELECT \* FROM invoices WHER E Total > 10"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assistant", "content": "SELECT name FR OM sqlite\_master WHERE type='table'"}, {"role": "user", "content": "Get the total number of invoices for each customer"}, {"role": "assistant", "conten t": " SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "Find all invoices since 2010 and the total amount invoiced:"}, {"role": "assistant", "content": "SELECT Invoi ceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2 010-01-01'"}, {"role": "user", "content": "which table stores customer's ord ers"}, {"role": "assistant", "content": "SELECT DISTINCT InvoiceId, Customer Id, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "List all genres and the number of tracks in each genre:"}]

```
[(Ollama Response)]
{'model': 'deepseek-coder-v2:latest', 'created_at': '2024-10-12T17:25:11.871
325796Z', 'message': {'role': 'assistant', 'content': 'intermediate_sql\nSE
LECT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks\nFROM genres g
\nLEFT JOIN tracks t ON g.GenreId = t.GenreId\nGROUP BY g.GenreId'}, 'done_r
eason': 'stop', 'done': True, 'total_duration': 35704325405, 'load_duratio
n': 7625282, 'prompt_eval_count': 1650, 'prompt_eval_duration': 29971753000,
'eval_count': 51, 'eval_duration': 4266061000}

[(LLM Response)]
intermediate_sql
SELECT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks
FROM genres g
LEFT JOIN tracks t ON g.GenreId = t.GenreId
GROUP BY g.GenreId
```

SELECT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks
FROM genres g
LEFT JOIN tracks t ON g.GenreId = t.GenreId
GROUP BY g.GenreId

	GenreName	NumberOfTracks
0	Rock	1297
1	Jazz	130
2	Metal	374
3	Alternative & Punk	332
4	Rock And Roll	12
5	Blues	81
6	Latin	579
7	Reggae	58
8	Рор	48
9	Soundtrack	43
10	Bossa Nova	15
11	Easy Listening	24
12	Heavy Metal	28
13	R&B/Soul	61
14	Electronica/Dance	30
15	World	28
16	Hip Hop/Rap	35
17	Science Fiction	13
18	TV Shows	93
19	Sci Fi & Fantasy	26
20	Drama	64
21	Comedy	17
22	Alternative	40
23	Classical	74
24	Орега	1

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep_alive=None
```

[( Prompt Content )]

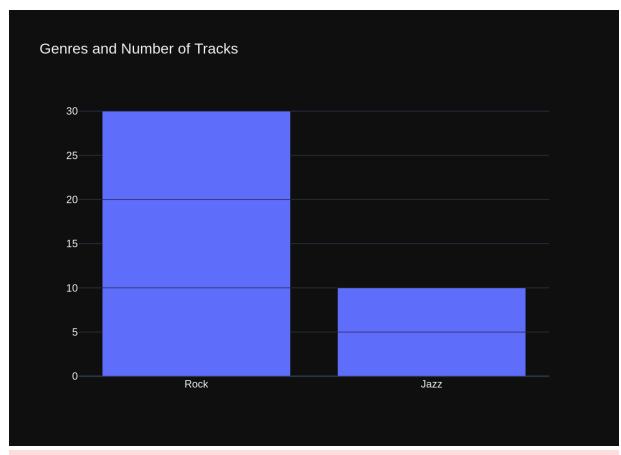
[{"role": "system", "content": "The following is a pandas DataFrame that con tains the results of the query that answers the question the user asked: 'Li st all genres and the number of tracks in each genre:'\n\nThe DataFrame was produced using this query: \nSELECT g.Name AS GenreName, COUNT(t.TrackId) A S NumberOfTracks\nFROM genres g\nLEFT JOIN tracks t ON g.GenreId = t.GenreId \nGROUP BY g.GenreId\n\nThe following is information about the resulting pan das DataFrame 'df': \nRunning df.dtypes gives:\n GenreName object\nN umberOfTracks int64\ndtype: object"}, {"role": "user", "content": "Can y ou generate the Python plotly code to chart the results of the dataframe? As sume the data is in a pandas dataframe called 'df'. If there is only one val ue in the dataframe, use an Indicator. Respond with only Python code. Do not answer with any explanations -- just the code."}]

# [( Ollama Response )] {'model': 'deepseek-ce

{'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:25:31.417 208977Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl otly.graph objs as go\nfrom plotly.subplots import make subplots\nimport pan das as pd\n\ndf = pd.DataFrame({\n \'GenreName\': [\'Rock\', \'Rock\', \'Rock\', \'Jazz\', \'Jazz\'],\n \'NumberOfTracks\': [10, 10, 10, 5, 5]  $\n})\n\$  = make subplots(rows=1, cols=1)\n\nif df[\'NumberOfTracks\'].nun fig.add trace(go.Indicator(\n  $ique() == 1: \n$ mode="number",\n value=df[\'NumberOfTracks\'].iloc[0],\n title={"text": "Number of Tra cks per Genre"}\n ))\nelse:\n fig.add bar(x=df[\'GenreName\'], y=df [\'NumberOfTracks\'], name=\'Number of Tracks\')\n\nfig.update layout(title text="Genres and Number of Tracks")\nfig.show()\n``'}, 'done reason': 'sto p', 'done': True, 'total\_duration': 19517417824, 'load\_duration': 8236385, 'prompt eval count': 201, 'prompt eval duration': 3929305000, 'eval count': 226, 'eval duration': 15455523000}

```
import plotly.graph_objs as go
from plotly.subplots import make_subplots
import pandas as pd
df = pd.DataFrame({
 'GenreName': ['Rock', 'Rock', 'Rock', 'Jazz', 'Jazz'],
 'NumberOfTracks': [10, 10, 10, 5, 5]
})
fig = make_subplots(rows=1, cols=1)
if df['NumberOfTracks'].nunique() == 1:
 fig.add_trace(go.Indicator(
 mode="number",
 value=df['NumberOfTracks'].iloc[0],
 title={"text": "Number of Tracks per Genre"}
))
else:
 fig.add_bar(x=df['GenreName'], y=df['NumberOfTracks'], name='Number of Tracks')
```

# fig.update\_layout(title\_text="Genres and Number of Tracks")



Number of requested results 10 is greater than number of elements in index 2, updating n results = 2

\_\_\_\_\_\_

====

# QUESTION - 16: Get all genres that do not have any tracks associated with them:

====

### [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)\n\nCR EATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NO T NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARC Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n  $HAR(220), \r\n$ UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n OREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTI ON ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENCES "media t ypes" (MediaTypeId) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n CREATE INDEX IFK PlaylistTrackTrackId ON "playlist track" (TrackId)\n\nCREAT E INDEX IFK TrackMediaTypeId ON "tracks" (MediaTypeId)\n\nCREATE INDEX IFK T rackAlbumId ON "tracks" (AlbumId)\n\nCREATE TABLE "genres"\r\n(\r\n Id INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120)\r  $\n)\n\n\CREATE TABLE "albums"\r\n(\r\n$ AlbumId INTEGER PRIMARY KEY AUTOINC REMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEG FOREIGN KEY (ArtistId) REFERENCES "artists" (ArtistId) ER NOT NULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "playli PlaylistId INTEGER NOT NULL,\r\n st track"\r\n(\r\n TrackId INTEGER CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, Track NOT NULL,\r\n FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO N\r\n)\n\nCREATE INDEX IFK AlbumArtistId ON "albums" (ArtistId)\n\nCREATE TA PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT BLE "playlists"\r\n(\r\n Name NVARCHAR(120)\r\n)\n\n===Additional Context  $\n\n\$ NULL,\r\n the \'customers\' table, address column names do not have \'Billing\' prefi e.g. country column name is \'country\', not \'BillingCountry\'\n  $\n \n$  the chinook database invoice means order  $\n ==$  Response Guidelines  $\n$ 1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is a lmost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strin gs in that column. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can\'t b e generated. \n4. Please use the most relevant table(s). \n5. If the questio n has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': 'List all genres and the number of tracks in each genre:'}, {'role': 'assistant', 'content': ' \nSELE CT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks\nFROM genres g\nL EFT JOIN tracks t ON g.GenreId = t.GenreId\nGROUP BY g.GenreId'}, {'role': 'user', 'content': 'Find all tracks with a name containing "What" (case-inse nsitive) '}, {'role': 'assistant', 'content': " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {'role': 'user', 'content': 'List all albums an d their corresponding artist names '}, {'role': 'assistant', 'content': 'SE LECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artis ts ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'content': 'Find the t op 5 most expensive tracks (based on unit price):'}, {'role': 'assistant', 'content': ' SELECT Name, UnitPrice\nFROM tracks\nORDER BY UnitPrice DESC\nL IMIT 5'}, {'role': 'user', 'content': 'Can you list all tables in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT name FROM sqli te\_master WHERE type='table'"}, {'role': 'user', 'content': 'List all invoic es with a total exceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': 'Find all invo ices since 2010 and the total amount invoiced: '}, {'role': 'assistant', 'con tent': "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHE RE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'content': "which table s tores customer's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingStat e, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'use r', 'content': 'Find the total number of invoices per country'}, {'role': 'a ssistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFR OM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'content': "List al l employees and their reporting manager's name (if any):"}, {'role': 'assist ant', 'content': 'SELECT e.FirstName, e.LastName, m.FirstName AS ManagerFirs tName, m.LastName AS ManagerLastName\nFROM employees e\nLEFT JOIN employees m ON e.ReportsTo = m.EmployeeId'}, {'role': 'user', 'content': 'Get all genr es that do not have any tracks associated with them:'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

#### [( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK TrackGenreId ON \"tracks\" (GenreId)\n\n CREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMEN T NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARC  $HAR(220), \r\n$ Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\t0N DELETE NO A CTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENCES \"med ia types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE INDEX IFK PlaylistTrackTrackId ON \"playlist track\" (TrackId) \n\nCREATE INDEX IFK TrackMediaTypeId ON \"tracks\" (MediaTypeId)\n\nCREATE INDEX IFK TrackAlbumId ON \"tracks\" (AlbumId)\n\nCREATE TABLE \"genres\"\r GenreId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n  $VARCHAR(120)\r\n)\n\nCREATE TABLE \"albums\"\r\n(\r\n$ AlbumId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENCES \"artis ts\" (ArtistId)  $\r \n \DELETE NO ACTION ON UPDATE NO ACTION \n \n \CREA$ TE TABLE \"playlist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY FOREIGN KEY (PlaylistId) REFERENCES \"playlist (PlaylistId, TrackId),\r\n s\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n

EIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\t0N DELETE NO ACTI ON ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK AlbumArtistId ON \"albums\" (ArtistId)\n\nCREATE TABLE \"playlists\"\r\n(\r\n PlaylistId INTEGER PRIM ARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n)\n\n===Addit$ In the 'customers' table, address column names do no ional Context \n\n\n t have 'Billing' prefix, \n e.g. country column name is 'country', not 'B illingCountry'\n \n\nIn the chinook database invoice means order\n\n===Re sponse Guidelines \n1. If the provided context is sufficient, please generat e a valid SQL query without any explanations for the question. \n2. If the p rovided context is almost sufficient but requires knowledge of a specific st ring in a particular column, please generate an intermediate SQL query to fi nd the distinct strings in that column. Prepend the query with a comment say ing intermediate sql \n3. If the provided context is insufficient, please ex plain why it can't be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the a nswer exactly as it was given before. \n"}, {"role": "user", "content": "Lis t all genres and the number of tracks in each genre:"}, {"role": "assistan t", "content": " \nSELECT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfT racks\nFROM genres g\nLEFT JOIN tracks t ON g.GenreId = t.GenreId\nGROUP BY g.GenreId"}, {"role": "user", "content": "Find all tracks with a name contai ning \"What\" (case-insensitive) "}, {"role": "assistant", "content": " SELE CT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {"role": "user", "conte nt": "List all albums and their corresponding artist names "}, {"role": "as sistant", "content": "SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nF ROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId"}, {"role": "use r", "content": "Find the top 5 most expensive tracks (based on unit pric e):"}, {"role": "assistant", "content": " SELECT Name, UnitPrice\nFROM track s\nORDER BY UnitPrice DESC\nLIMIT 5"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assistant", "co ntent": "SELECT name FROM sqlite master WHERE type='table'"}, {"role": "use r", "content": "List all invoices with a total exceeding \$10"}, {"role": "as sistant", "content": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "Find all invoices since 2010 and the total amount invoic ed:"}, {"role": "assistant", "content": "SELECT InvoiceId, CustomerId, Invoi ceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assist ant", "content": "SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, Billin gAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Tota l\nFROM invoices"}, {"role": "user", "content": "Find the total number of in voices per country"}, {"role": "assistant", "content": " SELECT BillingCount ry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry"}, {"r ole": "user", "content": "List all employees and their reporting manager's n ame (if any):"}, {"role": "assistant", "content": "SELECT e.FirstName, e.Las tName, m.FirstName AS ManagerFirstName, m.LastName AS ManagerLastName\nFROM employees e\nLEFT JOIN employees m ON e.ReportsTo = m.EmployeeId"}, {"role": "user", "content": "Get all genres that do not have any tracks associated wi th them:"}]

# [( Ollama Response )]

{'model': 'deepseek-coder-v2:latest', 'created\_at': '2024-10-12T17:26:08.528 16112Z', 'message': {'role': 'assistant', 'content': ' SELECT g.\*\nFROM gen res g\nLEFT JOIN tracks t ON g.GenreId = t.GenreId\nWHERE t.TrackId IS NUL L'}, 'done\_reason': 'stop', 'done': True, 'total\_duration': 37030777695, 'lo ad\_duration': 8213078, 'prompt\_eval\_count': 1284, 'prompt\_eval\_duration': 33 055620000, 'eval count': 32, 'eval duration': 2563894000}

```
[(LLM Response)]
 SELECT g.*
FROM genres g
LEFT JOIN tracks t ON g.GenreId = t.GenreId
WHERE t.TrackId IS NULL
SELECT g.*
FROM genres g
LEFT JOIN tracks t ON g.GenreId = t.GenreId
```

#### Genreld Name

WHERE t.TrackId IS NULL

Number of requested results 10 is greater than number of elements in index 2, updating n results = 2

\_\_\_\_\_\_

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# QUESTION - 17: List all customers who have not placed any orders:

\_\_\_\_\_

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[( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT N OT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(2 0) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n City NVARCHAR(40),\r\n Country NVARCHAR(40),\r PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHA Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DE LETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "invoice items"\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n voiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPric e NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTIO N ON UPDATE NO ACTION.\r\n FOREIGN KEY (TrackId) REFERENCES "tracks" (Tra ckid) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "employees"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL LastName NVARCHAR(20) NOT  $NULL, \r\n$ FirstName NVARCHAR(20) NO  $L,\r\n$ T NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n e DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n ty NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES "em 4),\r\n ployees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n \nCREATE TABLE "playlist track"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES "play lists" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\t0N DELETE NO ACT ION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "albums"\r\n(\r\n AlbumId IN TEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NU ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFEREN CES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE INDEX IFK CustomerSupportRepId ON "customers" (SupportRepId)\n \nCREATE TABLE "playlists"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOIN CREMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n)\n\cREATE$  TABLE "tracks" $\r$ TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n  $n(\r\n$ VARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n iseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(1 0,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreI d) REFERENCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC FOREIGN KEY (MediaTypeId) REFERENCES "media types" (MediaTypeI d) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\n===Additional Context \n\n In the \'customers\' table, address column names do not have \'Billing e.g. country column name is \'country\', not \'BillingCount \n\nIn the chinook database invoice means order\n\n===Response Gui ry\'\n delines \n1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided co ntext is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the dis tinct strings in that column. Prepend the query with a comment saying interm ediate sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer ex actly as it was given before. \n'}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINC T InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingSt ate, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'us er', 'content': 'How many customers are there'}, {'role': 'assistant', 'cont ent': 'SELECT COUNT(\*) AS NumberOfCustomers FROM customers'}, {'role': 'use r', 'content': 'Find all invoices since 2010 and the total amount invoice d:'}, {'role': 'assistant', 'content': "SELECT InvoiceId, CustomerId, Invoic eDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'content': 'Get the total number of invoices for each customer'}, {'role': 'assistant', 'content': ' SELECT CustomerId, COUNT(\*) AS TotalInvoi ces\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi naCountry .\n Please fix the error and re-generate the SQL\n "}, {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5'}, {'role': 'user', 'content': ' Get the average invoice to tal for each customer:'}, {'role': 'assistant', 'content': ' SELECT Customer Id, AVG(Total) AS AverageInvoiceTotal\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'List all invoices with a total exceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM invoices WHERE Total > 1 0'}, {'role': 'user', 'content': "List all employees and their reporting man ager's name (if any):"}, {'role': 'assistant', 'content': 'SELECT e.FirstNam e, e.LastName, m.FirstName AS ManagerFirstName, m.LastName AS ManagerLastNam e\nFROM employees e\nLEFT JOIN employees m ON e.ReportsTo = m.EmployeeId'}, {'role': 'user', 'content': 'Find the total number of invoices per countr y'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS T otalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'co ntent': 'List all albums and their corresponding artist names '}, {'role': 'assistant', 'content': 'SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName \nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'us er', 'content': 'List all customers who have not placed any orders:'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR (20) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r City NVARCHAR(40),\r\n State NVARCHAR(40), \r\n Country NVARCHAR PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n  $(40), r\n$ Email NVARCHAR(60) NOT NULL,\r\n  $NVARCHAR(24), \r\n$ SupportRepId INTEG FOREIGN KEY (SupportRepId) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoi InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT N ce items\"\r\n(\r\n ULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NUL \n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t L.\r\n \t0N DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFE RENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION \r\n)\n\nCREATE TABLE \"employees\"\r\n(\r\n EmployeeId INTEGER PRIMARY K EY AUTOINCREMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n rstName NVARCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER.\r\n BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address  $NVARCHAR(70), \r\n$ City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n untry NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(2 Email NVARCHAR(60),\r\n 4),\r\n Fax NVARCHAR(24),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTIO N ON UPDATE NO ACTION $\r\n)\n\n$ CREATE TABLE \"playlist track\"\ $\r\n$ (\ $\r\n$ ) aylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n CONSTRA INT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO ACTI ON ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TAB LE \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NUL L.\r\n FOREIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\t0  $L.\r\n$ N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK CustomerSupp ortRepId ON \"customers\" (SupportRepId)\n\nCREATE TABLE \"playlists\"\r\n PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n  $(\r\n$  $NVARCHAR(120)\r\n)\n\nCREATE TABLE \"tracks\"\r\n(\r\n$ TrackId INTEGER PR IMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGE Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Bytes INTEGER,\r\n FOREIGN KEY

(Albumid) REFERENCES \"albums\" (Albumid) \r\n\t\tON DELETE NO ACTION ON UPD FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) ATE NO ACTION,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTv peId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\t0N DELETE NO ACTION 0 N UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerId ON \"invoices \" (CustomerId)\n\n===Additional Context \n\n\n In the 'customers' tabl e, address column names do not have 'Billing' prefix, \n e.g. country col umn name is 'country', not 'BillingCountry'\n \n\nIn the chinook database invoice means order\n\n===Response Guidelines \n1. If the provided context i s sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an in termediate SQL query to find the distinct strings in that column. Prepend th e query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can't be generated. \n4. Please use t he most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n"}, {"rol e": "user", "content": "which table stores customer's orders"}, {"role": "as sistant", "content": "SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, Bi llingAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "How many customers are there"}, {"role": "assistant", "content": "SELECT COUNT(\*) AS NumberOfCustom ers FROM customers"}, {"role": "user", "content": "Find all invoices since 2 010 and the total amount invoiced:"}, {"role": "assistant", "content": "SELE CT InvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDa te >= '2010-01-01'"}, {"role": "user", "content": "Get the total number of i nvoices for each customer"}, {"role": "assistant", "content": " SELECT Custo merId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId"}, {"ro le": "user", "content": "\n For the question what are the top 5 count ries that customers come from?, \n the generated SQL statement SELEC T BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Billin qCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exce ption [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCou nt DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY Customer Count DESC\nLIMIT 5': no such column: BillingCountry .\n Please fix t he error and re-generate the SQL\n "}, {"role": "assistant", "conten t": "SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM custom ers\nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "use r", "content": " Get the average invoice total for each customer:"}, {"rol e": "assistant", "content": " SELECT CustomerId, AVG(Total) AS AverageInvoic eTotal\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "L ist all invoices with a total exceeding \$10"}, {"role": "assistant", "conten t": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "List all employees and their reporting manager's name (if any):"}, {"role": "assistant", "content": "SELECT e.FirstName, e.LastName, m.FirstName AS Mana gerFirstName, m.LastName AS ManagerLastName\nFROM employees e\nLEFT JOIN emp loyees m ON e.ReportsTo = m.EmployeeId"}, {"role": "user", "content": "Find the total number of invoices per country"}, {"role": "assistant", "content": " SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry"}, {"role": "user", "content": "List all albums and their cor responding artist names "}, {"role": "assistant", "content": "SELECT a.Titl e AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a. ArtistId = ar.ArtistId"}, {"role": "user", "content": "List all customers wh o have not placed any orders:"}]

```
[(Ollama Response)]
{'model': 'deepseek-coder-v2:latest', 'created_at': '2024-10-12T17:27:08.449
147376Z', 'message': {'role': 'assistant', 'content': ' SELECT c.*\nFROM cu
stomers c\nLEFT JOIN invoices i ON c.CustomerId = i.CustomerId\nWHERE i.Invo
iceId IS NULL'}, 'done_reason': 'stop', 'done': True, 'total_duration': 5987
8820316, 'load_duration': 8277361, 'prompt_eval_count': 1946, 'prompt_eval_d
uration': 55688497000, 'eval_count': 32, 'eval_duration': 2714397000}

[(LLM Response)]
 SELECT c.*
FROM customers c
LEFT JOIN invoices i ON c.CustomerId = i.CustomerId
WHERE i.InvoiceId IS NULL
SELECT c.*
```

FROM customers c

**LEFT JOIN** invoices i **ON c**.CustomerId = i.CustomerId

WHERE i.InvoiceId IS NULL

CustomerId FirstName LastName Company Address City State Country PostalCode

Number of requested results 10 is greater than number of elements in index 2, updating n results = 2

\_\_\_\_\_\_

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#### # OUESTION - 18:

Can you find the top 10 most popular artists based on the number of tracks?

Hint: There are 3 tables - artists, albums and tracks,

where albums and artists are linked by ArtistId, albums and tracks a re linked by AlbumId,

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#### [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n mId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Bytes INTEGER,\r\n (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDAT FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n E NO ACTION,\r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeI d) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION\r\n)\n\nCREATE TABLE "albums"\r\n(\r\n AlbumId INTEGER PRIM ARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENCES "artist s" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK AlbumArtistId ON "albums" (ArtistId)\n\nCREATE TABLE "artists"\r\n ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n ARCHAR(120)\r\n)\n\nCREATE INDEX IFK TrackAlbumId ON "tracks" (AlbumId)\n\nC REATE TABLE "playlists"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOINCRE Name NVARCHAR(120) $\r\n)\n\n$ CREATE TABLE "genres" $\r\n$ MENT NOT NULL,\r\n GenreId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n  $(\r\n$  $RCHAR(120)\r\n)\nCREATE TABLE "playlist track"\r\n(\r\n$ PlaylistId INTE TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK Playli GER NOT NULL,\r\n stTrack PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\t0 ACTION,\r\n N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)\n\nCREATE INDEX IFK PlaylistTrackTrackId ON "playlist track'' (TrackId)\n\n===Additional Context \n\n\n In the \'customers\' t able, address column names do not have \'Billing\' prefix, \n \n\nIn the chinook y column name is \'country\', not \'BillingCountry\'\n database invoice means order\n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without any explana tions for the question. \n2. If the provided context is almost sufficient bu t requires knowledge of a specific string in a particular column, please gen erate an intermediate SQL query to find the distinct strings in that column. Prepend the query with a comment saying intermediate sql \n3. If the provide d context is insufficient, please explain why it can\'t be generated. \n4. P lease use the most relevant table(s). \n5. If the question has been asked an d answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': 'List all genres and the number of tracks

in each genre:'}, {'role': 'assistant', 'content': ' \nSELECT g.Name AS Genr eName, COUNT(t.TrackId) AS NumberOfTracks\nFROM genres g\nLEFT JOIN tracks t ON q.GenreId = t.GenreId\nGROUP BY q.GenreId'}, {'role': 'user', 'content': 'Find the top 5 most expensive tracks (based on unit price):'}, {'role': 'as sistant', 'content': ' SELECT Name, UnitPrice\nFROM tracks\nORDER BY UnitPri ce DESC\nLIMIT 5'}, {'role': 'user', 'content': 'List all albums and their c orresponding artist names '}, {'role': 'assistant', 'content': 'SELECT a.Ti tle AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'content': "\n uestion what are the top 5 countries that customers come from?, \n e generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCount \nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMI T 5 results in the following exception [ERROR-DB] Failed to execute SQL: SE LECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bil lingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi ngCountry .\n Please fix the error and re-generate the SQL\n "}, {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5'}, {'role': 'user', 'content': 'Find all tracks with a name containing "What" (case-insensitive) '}, {'role': 'assistant', 'content': " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {'role': 'user', 'c ontent': 'How many customers are there'}, {'role': 'assistant', 'content': 'SELECT COUNT(\*) AS NumberOfCustomers FROM customers'}, {'role': 'user', 'co ntent': 'Can you list all tables in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELECT name FROM sqlite master WHERE type='tabl e'"}, {'role': 'user', 'content': 'List all invoices with a total exceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': 'Find the total number of invoices per c ountry'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assistant', 'c ontent': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddres s, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': ' \n Can you find the top 10 most popular artists based on the number of tracks?\n Hint: There are 3 tables - artists, albums and tracks, \n where albums and artists ar e linked by ArtistId, albums and tracks are linked by AlbumId,\n

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMA RY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n MediaTypeId INTEGER NOT NULL,\r\n lbumId INTEGER,\r\n GenreId INTEGE Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n R, r nBytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPD FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) ATE NO ACTION,\r\n

\r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTv peId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION O N UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"albums\"\r\n(\r\n AlbumId INTEG ER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NUL ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENC L.\r\n ES \"artists\" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE INDEX IFK AlbumArtistId ON \"albums\" (ArtistId)\n\nCREATE TAB LE \"artists\"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NU Name NVARCHAR(120)\r\n)\n\nCREATE INDEX IFK TrackAlbumId ON \"tra cks\" (AlbumId)\n\nCREATE TABLE \"playlists\"\r\n(\r\n PlaylistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name  $NVARCHAR(120)\r\n)\n\nCREATE$ GenreId INTEGER PRIMARY KEY AUTOINCREMENT NOT N TABLE \"genres\"\r\n(\r\n Name NVARCHAR(120)\r\n)\n\nCREATE TABLE \"playlist track\"\r\n ULL,\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n GN KEY (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES \"tra cks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREA TE INDEX IFK TrackGenreId ON \"tracks\" (GenreId)\n\nCREATE INDEX IFK Playli stTrackTrackId ON \"playlist track\" (TrackId)\n\n===Additional Context \n In the 'customers' table, address column names do not have 'Billing'  $n\n$ e.g. country column name is 'country', not 'BillingCountry'\n prefix, \n \n\nIn the chinook database invoice means order\n\n===Response Guidelines \n 1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is a lmost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strin gs in that column. Prepend the query with a comment saying intermediate sgl \n3. If the provided context is insufficient, please explain why it can't be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it w as given before. \n"}, {"role": "user", "content": "List all genres and the number of tracks in each genre:"}, {"role": "assistant", "content": " \nSELE CT q.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks\nFROM genres q\nL EFT JOIN tracks t ON g.GenreId = t.GenreId\nGROUP BY g.GenreId"}, {"role": "user", "content": "Find the top 5 most expensive tracks (based on unit pric e):"}, {"role": "assistant", "content": " SELECT Name, UnitPrice\nFROM track s\nORDER BY UnitPrice DESC\nLIMIT 5"}, {"role": "user", "content": "List all albums and their corresponding artist names "}, {"role": "assistant", "cont ent": "SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJ OIN artists ar ON a.ArtistId = ar.ArtistId"}, {"role": "user", "content": For the question what are the top 5 countries that customers come "\n from?, \n the generated SQL statement SELECT BillingCountry, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY Cust omerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM cust omers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execu tion failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': n o such column: BillinaCountry .\n Please fix the error and re-generat e the SQL\n "}, {"role": "assistant", "content": "SELECT country AS T op5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY country\nO RDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "content": "Find all tracks with a name containing \"What\" (case-insensitive) "}, {"role": "assi stant", "content": " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%wha t%'"}, {"role": "user", "content": "How many customers are there"}, {"role":

"assistant", "content": "SELECT COUNT(\*) AS NumberOfCustomers FROM customer s"}, {"role": "user", "content": "Can you list all tables in the SQLite data base catalog?"}, {"role": "assistant", "content": "SELECT name FROM sqlite m aster WHERE type='table'"}, {"role": "user", "content": "List all invoices w ith a total exceeding \$10"}, {"role": "assistant", "content": " SELECT \* FRO M invoices WHERE Total > 10"}, {"role": "user", "content": "Find the total n umber of invoices per country"}, {"role": "assistant", "content": " SELECT B illingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCou ntry"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assistant", "content": "SELECT DISTINCT InvoiceId, CustomerId, Inv oiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, Billing PostalCode, Total\nFROM invoices"}, {"role": "user", "content": " \n Can you find the top 10 most popular artists based on the number of tracks? Hint: There are 3 tables - artists, albums and tracks, \n here albums and artists are linked by ArtistId, albums and tracks are linked by AlbumId,\n "}]

[( Ollama Response )]

{'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:27:53.459 472353Z', 'message': {'role': 'assistant', 'content': ' SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTracks\nFROM artists a\nJO IN albums al ON a.ArtistId = al.ArtistId\nJOIN tracks t ON al.AlbumId = t.Al bumId\nGROUP BY a.ArtistId\nORDER BY NumberOfTracks DESC\nLIMIT 10'}, 'done reason': 'stop', 'done': True, 'total duration': 44966048070, 'load duratio n': 8993834, 'prompt\_eval\_count': 1444, 'prompt eval duration': 37297194000, 'eval count': 76, 'eval duration': 6247885000}

[( LLM Response )]

SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTracks FROM artists a

JOIN albums al ON a.ArtistId = al.ArtistId

JOIN tracks t ON al.AlbumId = t.AlbumId

GROUP BY a.ArtistId

ORDER BY NumberOfTracks DESC

LIMIT 10

**SELECT** a.ArtistId, a.Name **AS** ArtistName, **COUNT**(t.TrackId) **AS** NumberOfTracks

FROM artists a

JOIN albums al ON a.ArtistId = al.ArtistId

**JOIN** tracks t **ON** al.AlbumId = t.AlbumId

**GROUP BY** a.ArtistId

**ORDER BY** NumberOfTracks **DESC** 

LIMIT 10

ArtistId		ArtistName	NumberOfTracks	
0	90	Iron Maiden	213	
1	150	U2	135	
2	22	Led Zeppelin	114	
3	50	Metallica	112	
4	58	Deep Purple	92	
5	149	Lost	92	
6	118	Pearl Jam	67	
7	100	Lenny Kravitz	57	
8	21	Various Artists	56	
9	156	The Office	53	

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

#### [( Prompt Content )]

[{"role": "system", "content": "The following is a pandas DataFrame that con tains the results of the query that answers the question the user asked: ' Can you find the top 10 most popular artists based on the number o Hint: There are 3 tables - artists, albums and tracks, \n f tracks?\n where albums and artists are linked by ArtistId, albums and tracks are linke d by AlbumId,\n '\n\nThe DataFrame was produced using this guery: SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTracks\nFROM a rtists a\nJOIN albums al ON a.ArtistId = al.ArtistId\nJOIN tracks t ON al.Al bumId = t.AlbumId\nGROUP BY a.ArtistId\nORDER BY NumberOfTracks DESC\nLIMIT 10\n\nThe following is information about the resulting pandas DataFrame 'd f': \nRunning df.dtypes gives:\n ArtistId int64\nArtistName int64\ndtype: object"}, {"role": "user", "conten object\nNumberOfTracks t": "Can you generate the Python plotly code to chart the results of the dat aframe? Assume the data is in a pandas dataframe called 'df'. If there is on ly one value in the dataframe, use an Indicator. Respond with only Python co de. Do not answer with any explanations -- just the code."}]

#### [( Ollama Response )]

{'model': 'deepseek-coder-v2:latest', 'created\_at': '2024-10-12T17:28:06.364 632778Z', 'message': {'role': 'assistant', 'content': '```python\nimport pl otly.express as px\nimport pandas as pd\n\# Check if the DataFrame has more than one row\nif len(df) > 1:\n fig = px.bar(df, x=\'ArtistName\', y=\'Nu mberOfTracks\', text\_auto=\'.2s\')\nelse:\n fig = px.scatter(df, x=\'ArtistName\', y=\'NumberOfTracks\', trendline="ols")\n\nfig.show()\n```'\}, 'done \_reason': 'stop', 'done': True, 'total\_duration': 12874426231, 'load\_duration': 7435794, 'prompt\_eval\_count': 285, 'prompt\_eval\_duration': 5744670000, 'eval count': 102, 'eval duration': 6995642000\}

import plotly.express as px
import pandas as pd

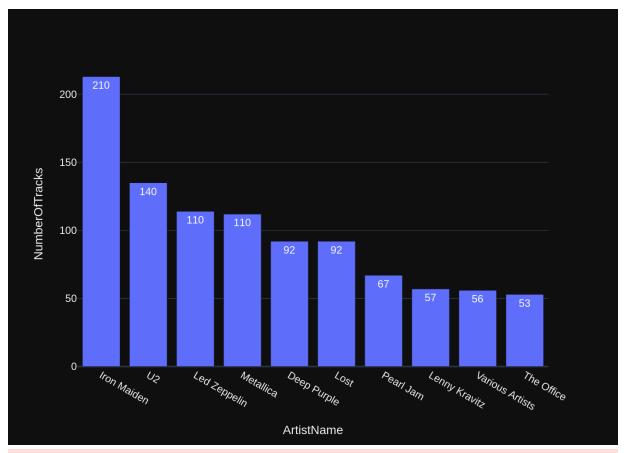
# Check if the DataFrame has more than one row

**if** len(df) > 1:

fig = px.bar(df, x='ArtistName', y='NumberOfTracks', text\_auto='.2s')

## else:

fig = px.scatter(df, x='ArtistName', y='NumberOfTracks', trendline="ols")



Number of requested results 10 is greater than number of elements in index 2, updating n results = 2

# QUESTION - 19: List all customers from Canada and their email addresses: \_\_\_\_\_

[( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK CustomerSupportRepId ON "customers" (Sup portRepId)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMAR Y KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n  $NVARCHAR(70), \r\n$ PostalCode NVARCHAR(10),\r\n untry NVARCHAR(40),\r\n Phone NVARCHAR(2 Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n  $4), r\n$ portRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE InvoiceId INTEGER PRIMARY KEY AUTOINCREMENT NOT TABLE "invoices"\r\n(\r\n CustomerId INTEGER NOT NULL,\r\n NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n BillingCity NVARCHAR(40),\r BillingState NVARCHAR(40),\r\n BillingCountry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELE TE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCREATE TABLE "employees"\r\n(\r\n d INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NOT NULL,\r\n Title NVARCHAR(3 0), r nReportsTo INTEGER.\r\n BirthDate DATETIME,\r\n HireDate DAT ETIME,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n  $VARCHAR(40), \r\n$ Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r Fax NVARCHAR(24),\r\n Phone NVARCHAR(24),\r\n Email NVARCHAR(6 0), r nFOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "invoice it InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE FOREIGN KEY (TrackId) REFERENCES "trac NO ACTION ON UPDATE NO ACTION,\r\n ks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE sqlite sequence(name, seq)\n\nCREATE TABLE "playlist track"\r\n(\r\n TrackId INTEGER NOT NULL,\r\n PlaylistId INTEGER NOT NULL,\r\n RAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KE Y (PlaylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\t0N DELETE NO ACTI ON ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "tracks" (Tr ackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK EmployeeReportsTo ON "employees" (ReportsTo)\n\nCREATE TABLE "albums"\r AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n NVARCHAR(160) NOT NULL,\r\n FOREIGN K EY (ArtistId) REFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\n\n In the \'customer s\' table, address column names do not have \'Billing\' prefix, \n ountry column name is \'country\', not \'BillingCountry\'\n inook database invoice means order\n\n===Response Guidelines \n1. If the pro vided context is sufficient, please generate a valid SQL query without any e xplanations for the question. \n2. If the provided context is almost suffici ent but requires knowledge of a specific string in a particular column, plea se generate an intermediate SQL query to find the distinct strings in that c olumn. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can\'t be generated.  $\n$ 4. Please use the most relevant table(s).  $\n$ 5. If the question has been as ked and answered before, please repeat the answer exactly as it was given be fore. \n'}, {'role': 'user', 'content': "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL s tatement SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\n GROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountr y, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCou ntry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nOR DER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry .\n Please fix the error and re-generate the SQL\n "}, {'role': 'assistan t', 'content': 'SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\n FROM customers\nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5'}, {'role': 'user', 'content': "which table stores customer's orders"}, {'rol e': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceD ate, BillingAddress, BillingCity, BillingState, BillingCountry, BillingPosta lCode, Total\nFROM invoices'}, {'role': 'user', 'content': 'How many custome rs are there'}, {'role': 'assistant', 'content': 'SELECT COUNT(\*) AS Number0 fCustomers FROM customers'}, {'role': 'user', 'content': 'Get the total numb er of invoices for each customer'}, {'role': 'assistant', 'content': ' SELEC T CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerI d'}, {'role': 'user', 'content': 'Find the total number of invoices per coun try'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'c ontent': "List all employees and their reporting manager's name (if any):"}, {'role': 'assistant', 'content': 'SELECT e.FirstName, e.LastName, m.FirstNam e AS ManagerFirstName, m.LastName AS ManagerLastName\nFROM employees e\nLEFT JOIN employees m ON e.ReportsTo = m.EmployeeId'}, {'role': 'user', 'conten t': 'Find all invoices since 2010 and the total amount invoiced:'}, {'role': 'assistant', 'content': "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nF ROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'conten t': ' Get the average invoice total for each customer:'}, {'role': 'assistan t', 'content': ' SELECT CustomerId, AVG(Total) AS AverageInvoiceTotal\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'List all invoi ces with a total exceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': 'Can you lis t all tables in the SQLite database catalog?'}, {'role': 'assistant', 'conte nt': "SELECT name FROM sqlite master WHERE type='table'"}, {'role': 'user', 'content': 'List all customers from Canada and their email addresses:'}]

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[Ollama parameters]
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options={},
keep_alive=None
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[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi

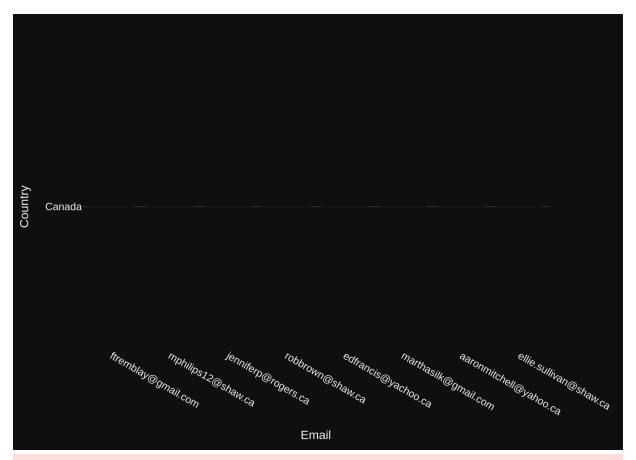
[( Prompt Content )]

ons. \n===Tables \nCREATE INDEX IFK CustomerSupportRepId ON \"customers\" (S upportRepId)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PR IMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL.\r LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r ddress NVARCHAR(70),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVA Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n  $RCHAR(24).\r\n$ SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employe es\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCR EATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER PRIMARY KEY AUTOINCREM ENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETI ME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n BillingCity NVARCHA BillingState NVARCHAR(40),\r\n BillingCountry NVARCHAR(4  $R(40), \r\n$ 0),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMERIC(10,2) NOT N FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) ULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK Inv oiceCustomerId ON \"invoices\" (CustomerId)\n\nCREATE TABLE \"employees\"\r  $n(\r\n$ EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n tName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r HireDate DATETIME,\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVA Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n  $RCHAR(10), \r\n$ Email  $NVARCHAR(60), \r\n$ FOREIGN KEY (ReportsTo) REFERENCES \"employees\" (Emplo veeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMEN InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT T NOT NULL,\r\n NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r NULL,\r\n \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACT ION\r\n)\n\nCREATE TABLE sqlite sequence(name, seq)\n\nCREATE TABLE \"playlis t track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEGER CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, Track NOT NULL,\r\n Id),\r\n FOREIGN KEY (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK EmployeeReportsTo ON \"employees\" (ReportsT o)\n\nCREATE TABLE \"albums\"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOIN Title NVARCHAR(160) NOT NULL,\r\n CREMENT NOT NULL,\r\n ArtistId INTE GER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENCES \"artists\" (ArtistI d) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional C In the 'customers' table, address column names do not have ontext \n\n\n e.g. country column name is 'country', not 'BillingC 'Billing' prefix, \n \n\nIn the chinook database invoice means order\n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a val id SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the d istinct strings in that column. Prepend the query with a comment saying inte rmediate sql \n3. If the provided context is insufficient, please explain wh y it can't be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer ex actly as it was given before. \n"}, {"role": "user", "content": "\n or the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCoun

t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi Please fix the error and re-generate the SQL\n "}, {"role": "assistant", "content": "SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5"}, {"role": "user", "content": "which table stores custome r's orders"}, {"role": "assistant", "content": "SELECT DISTINCT InvoiceId, C ustomerId, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCo untry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "conten t": "How many customers are there"}, {"role": "assistant", "content": "SELEC T COUNT(\*) AS NumberOfCustomers FROM customers"}, {"role": "user", "conten t": "Get the total number of invoices for each customer"}, {"role": "assista nt", "content": " SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoice s\nGROUP BY CustomerId"}, {"role": "user", "content": "Find the total number of invoices per country"}, {"role": "assistant", "content": " SELECT Billing Country, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountr y"}, {"role": "user", "content": "List all employees and their reporting man  $\label{eq:agers} \textit{ager's name (if any):"}, \ \{"role": "assistant", "content": "SELECT e.FirstNam"\}$ e, e.LastName, m.FirstName AS ManagerFirstName, m.LastName AS ManagerLastNam e\nFROM employees e\nLEFT JOIN employees m ON e.ReportsTo = m.EmployeeId"}, {"role": "user", "content": "Find all invoices since 2010 and the total amou nt invoiced:"}, {"role": "assistant", "content": "SELECT InvoiceId, Customer Id, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": " Get the average invoice total for each custome r:"}, {"role": "assistant", "content": " SELECT CustomerId, AVG(Total) AS Av erageInvoiceTotal\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "c ontent": "List all invoices with a total exceeding \$10"}, {"role": "assistan t", "content": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"rol e": "assistant", "content": "SELECT name FROM sqlite\_master WHERE type='tabl e'"}, {"role": "user", "content": "List all customers from Canada and their email addresses:"}]

[( Ollama Response )]
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853265Z', 'message': {'role': 'assistant', 'content': " SELECT Email, Countr
y\nFROM customers\nWHERE Country = 'Canada'"}, 'done\_reason': 'stop', 'don
e': True, 'total\_duration': 50727000750, 'load\_duration': 8669878, 'prompt\_e
val\_count': 1716, 'prompt\_eval\_duration': 48054060000, 'eval\_count': 15, 'ev
al\_duration': 1200834000}

[( LLM Response )]
 SELECT Email, Country
FROM customers
WHERE Country = 'Canada'
SELECT Email, Country
FROM customers
WHERE Country = 'Canada'



Number of requested results 10 is greater than number of elements in index 2, updating  $n_results = 2$ 

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# QUESTION - 20: Find the customer with the most invoices

\_\_\_\_\_

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#### [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL.\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou BillingPostalCode NVARCHAR(10),\r\n ntry NVARCHAR(40),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCREATE INDEX IFK I nvoiceLineInvoiceId ON "invoice items" (InvoiceId)\n\nCREATE TABLE "invoice InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL  $items"\r\n(\r\n$ InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES "trac ks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId)\n\nCREATE TABLE "c ustomers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL  $L,\r\n$ FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(20) NO T NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n v NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DE LETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK CustomerSupportR epId ON "customers" (SupportRepId)\n\nCREATE TABLE "employees"\r\n(\r\n mployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARCH AR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NOT NULL,\r\n Title NVAR ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n  $CHAR(30), \r\n$ te DATETIME,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n tate NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR(1 0), r nPhone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n Email NVARCHA FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r \n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK Emplo yeeReportsTo ON "employees" (ReportsTo)\n\nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(20 AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NUL 0) NOT NULL,\r\n L.\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n Millisecond Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) N s INTEGER NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\t OT NULL.\r\n ON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERE NCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chinook database invoice means order\n\n\n In the \'customers\' tabl e, address column names do not have \'Billing\' prefix, \n e.g. country c olumn name is \'country\', not \'BillingCountry\'\n \n\n===Response Guide lines \n1. If the provided context is sufficient, please generate a valid SQ L query without any explanations for the question. \n2. If the provided cont ext is almost sufficient but requires knowledge of a specific string in a pa rticular column, please generate an intermediate SQL query to find the disti nct strings in that column. Prepend the query with a comment saying intermed iate sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactl y as it was given before. \n'}, {'role': 'user', 'content': 'Get the total n umber of invoices for each customer'}, {'role': 'assistant', 'content': ' SE LECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY Customer Id'}, {'role': 'user', 'content': 'List all invoices with a total exceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': 'Find all invoices since 2010 and the to tal amount invoiced:'}, {'role': 'assistant', 'content': "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01 -01'"}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, Inv oiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, Billing PostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': ' Get the av erage invoice total for each customer:'}, {'role': 'assistant', 'content': ' SELECT CustomerId, AVG(Total) AS AverageInvoiceTotal\nFROM invoices\nGROUP B Y CustomerId'}, {'role': 'user', 'content': 'Find the total number of invoic es per country'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'rol e': 'user', 'content': 'Find the top 5 most expensive tracks (based on unit price):'}, {'role': 'assistant', 'content': ' SELECT Name, UnitPrice\nFROM t racks\nORDER BY UnitPrice DESC\nLIMIT 5'}, {'role': 'user', 'content': 'How many customers are there'}, {'role': 'assistant', 'content': 'SELECT COUNT (\*) AS NumberOfCustomers FROM customers'}, {'role': 'user', 'content': "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi ngCountry .\n Please fix the error and re-generate the SQL\n "}, {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5'}, {'role': 'user', 'content': "List all employees and thei r reporting manager's name (if any):"}, {'role': 'assistant', 'content': 'SE LECT e.FirstName, e.LastName, m.FirstName AS ManagerFirstName, m.LastName AS ManagerLastName\nFROM employees e\nLEFT JOIN employees m ON e.ReportsTo = m. EmployeeId'}, {'role': 'user', 'content': 'Find the customer with the most i nvoices '}l [Ollama parameters]

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[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep_alive=None

[(Prompt Content)]
[{"role": "system", "content": "You are a SQLite expert. Please help to gene
```

rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillinaCou BillingPostalCode NVARCHAR(10),\r\n ntry NVARCHAR(40),\r\n IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK\_InvoiceCustomerId ON \"invoices\" (CustomerId)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (InvoiceId)\n\nCREATE TABLE \"inv oice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT InvoiceId INTEGER NOT NULL.\r\n TrackId INTEGER NOT NUL NULL,\r\n  $L,\r\n$ UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NU FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n LL,\r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) RE FERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO N\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"invoice items\" (TrackId) \n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AU TOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n Company NVARCHAR(80),\r\n me NVARCHAR(20) NOT NULL,\r\n Address NVARC  $HAR(70), \r\n$ City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n  $NVARCHAR(40), \r\n$ Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n SupportRepId I FOREIGN KEY (SupportRepId) REFERENCES \"employees\" (Employee NTEGER.\r\n Id) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK CustomerSupportRepId ON \"customers\" (SupportRepId)\n\nCREATE TABLE \"empl oyees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(20) NOT NU LL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n BirthDate DA HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n TETIME,\r\n  $VARCHAR(40), \r\n$ State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 FOREIGN KEY (ReportsTo) REFERENCES \"e 4),\r\n Email NVARCHAR(60),\r\n mployees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n) \n\nCREATE INDEX IFK EmployeeReportsTo ON \"employees\" (ReportsTo)\n\nCREAT TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT E TABLE \"tracks\"\r\n(\r\n Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n NULL,\r\n diaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHA Milliseconds INTEGER NOT NULL,\r\n  $R(220), \r\n$ Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\t0N DELETE NO A FOREIGN KEY (MediaTypeId) REFERENCES \"med CTION ON UPDATE NO ACTION,\r\n ia types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r  $\n)\n\n===Additional Context \n\nIn the chinook database invoice means ord$ In the 'customers' table, address column names do not have 'Bill er\n\n\n e.g. country column name is 'country', not 'BillingCountr ing' prefix, \n \n\n===Response Guidelines \n1. If the provided context is sufficien t, please generate a valid SQL query without any explanations for the questi on. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strings in that column. Prepend the query wit h a comment saying intermediate sql \n3. If the provided context is insuffic ient, please explain why it can't be generated. \n4. Please use the most rel evant table(s). \n5. If the question has been asked and answered before, ple

ase repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": "Get the total number of invoices for each customer"}, {"role": "assistant", "content": " SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "List all invoi ces with a total exceeding \$10"}, {"role": "assistant", "content": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "Find all in voices since 2010 and the total amount invoiced:"}, {"role": "assistant", "c  $ontent": "SELECT InvoiceId, CustomerId, InvoiceDate, Total \verb|\nFROM invoices| nW| \\$ HERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assistant", "content": "SELECT DISTINC T InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingSt ate, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "us er", "content": " Get the average invoice total for each customer:"}, {"rol e": "assistant", "content": " SELECT CustomerId, AVG(Total) AS AverageInvoic eTotal\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "F ind the total number of invoices per country"}, {"role": "assistant", "conte nt": " SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROU P BY BillingCountry"}, {"role": "user", "content": "Find the top 5 most expe nsive tracks (based on unit price):"}, {"role": "assistant", "content": " SE LECT Name, UnitPrice\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5"}, {"rol e": "user", "content": "How many customers are there"}, {"role": "assistan t", "content": "SELECT COUNT(\*) AS NumberOfCustomers FROM customers"}, {"rol e": "user", "content": "\n For the question what are the top 5 countr ies that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingC ountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following except ion [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS Cu stomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCou nt DESC\nLIMIT 5': no such column: BillingCountry .\n error and re-generate the SQL\n "}, {"role": "assistant", "content": "SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers \nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "content": "List all employees and their reporting manager's name (if an y):"}, {"role": "assistant", "content": "SELECT e.FirstName, e.LastName, m.F irstName AS ManagerFirstName, m.LastName AS ManagerLastName\nFROM employees e\nLEFT JOIN employees m ON e.ReportsTo = m.EmployeeId"}, {"role": "user", "content": "Find the customer with the most invoices "}]

[( Ollama Response )]
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c.FirstName, c.LastName, COUNT(i.InvoiceId) AS NumberOfInvoices\nFROM custom
ers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nGROUP BY c.CustomerId
\nORDER BY NumberOfInvoices DESC\nLIMIT 1'}, 'done\_reason': 'stop', 'done':
True, 'total\_duration': 56804189030, 'load\_duration': 7710886, 'prompt\_eval\_
count': 1761, 'prompt\_eval\_duration': 49857228000, 'eval\_count': 64, 'eval\_d
uration': 5449401000}

```
[(LLM Response)]
 SELECT c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceId) AS NumberO
fInvoices
FROM customers c
JOIN invoices i ON c.CustomerId = i.CustomerId
GROUP BY c.CustomerId
```

```
ORDER BY NumberOfInvoices DESC LIMIT 1
```

SELECT c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceId) AS NumberOfInvoices

FROM customers c

**JOIN** invoices i **ON c**.CustomerId = i.CustomerId

CustomerId FirstName LastName NumberOfInvoices

**GROUP BY c.**CustomerId

**ORDER BY NumberOfInvoices DESC** 

LIMIT 1

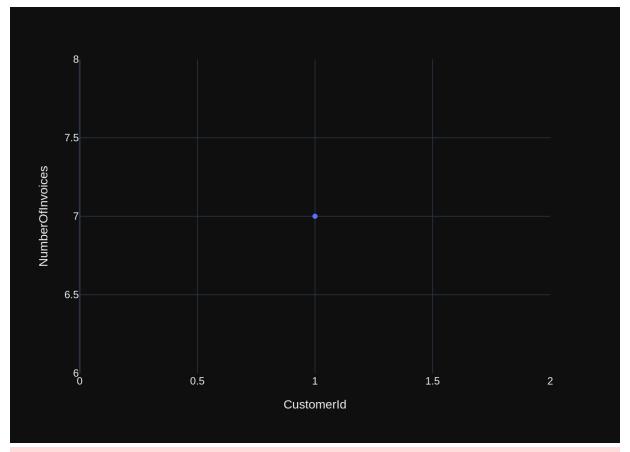
```
0
 1
 Luís
 Gonçalves
 7
[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None
[(Prompt Content)]
[{"role": "system", "content": "The following is a pandas DataFrame that con
tains the results of the query that answers the question the user asked: 'Fi
nd the customer with the most invoices '\n\nThe DataFrame was produced using
this query: SELECT c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceI
d) AS NumberOfInvoices\nFROM customers c\nJOIN invoices i ON c.CustomerId =
i.CustomerId\nGROUP BY c.CustomerId\nORDER BY NumberOfInvoices DESC\nLIMIT 1
\n\nThe following is information about the resulting pandas DataFrame 'df':
\nRunning df.dtypes gives:\n CustomerId
 int64\nFirstName
 object\nNumberOfInvoices
obiect\nLastName
 int64\ndtvpe: obiec
t"}, {"role": "user", "content": "Can you generate the Python plotly code to
chart the results of the dataframe? Assume the data is in a pandas dataframe
called 'df'. If there is only one value in the dataframe, use an Indicator.
Respond with only Python code. Do not answer with any explanations -- just t
he code."}]
[(Ollama Response)]
{'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:30:18.083
883604Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
otly.express as px\n\nif len(df) == 1:\n
 fig = px.indicator(\n
le="Number of Invoices",\n
 value=df[\'NumberOfInvoices\'].iloc[0],\n
gauge={\'axis\': {\'visible\': False}},\n
 template=\'plotly dark\'\n
 fig = px.bar(df, x=\'CustomerId\', y=\'NumberOfInvoices\', tex
t=\'NumberOfInvoices\')\n
 fig.update traces(texttemplate=\'%{text}\', tex
 fig.update layout(title=\'Number of Invoices by
tposition=\'outside\')\n
```

Customer\')\n\nfig.show()\n\`\'\}, 'done\_reason': 'stop', 'done': True, 'tota
l\_duration': 15124318181, 'load\_duration': 8031258, 'prompt\_eval\_count': 22
3, 'prompt eval duration': 4472039000, 'eval count': 152, 'eval duration': 1

0516422000}

# **import** plotly.express **as** px

```
if len(df) == 1:
 fig = px.indicator(
 title="Number of Invoices",
 value=df['NumberOfInvoices'].iloc[0],
 gauge={'axis': {'visible': False}},
 template='plotly_dark'
)
else:
 fig = px.bar(df, x='CustomerId', y='NumberOfInvoices', text='NumberOfInvoices')
 fig.update_traces(texttemplate='%{text}', textposition='outside')
 fig.update_layout(title='Number of Invoices by Customer')
```



Number of requested results 10 is greater than number of elements in index 2, updating n\_results = 2

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# QUESTION - 21: Find the customer who bought the most albums in total quantity (across all invoices):

\_\_\_\_\_\_

====

#### [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n mId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDAT FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n E NO ACTION,\r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeI d) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION\r\n)\n\nCREATE TABLE "invoice items"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NU TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NU  $LL,\r\n$ LL.\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERE NCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DEL ETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "albums"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(16 0) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistI d) REFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK AlbumArtistId ON "albums" (ArtistId)\n\nCREA TE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME BillingAddress NVARCHAR(70),\r\n NOT NULL,\r\n BillingCity NVARCHAR(4 BillingState NVARCHAR(40),\r\n BillingCountry NVARCHAR(40),\r BillingPostalCode NVARCHAR(10),\r\n Total NUMERIC(10,2) NOT NUL FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK Invoice LineTrackId ON "invoice items" (TrackId)\n\nCREATE INDEX IFK InvoiceLineInvo iceId ON "invoice items" (InvoiceId)\n\nCREATE INDEX IFK InvoiceCustomerId O N "invoices" (CustomerId)\n\nCREATE INDEX IFK TrackAlbumId ON "tracks" (Albu mId)\n\nCREATE TABLE "artists"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTO INCREMENT NOT NULL,\r\n Name  $NVARCHAR(120)\r\n)\n\n===Additional Contex$ t \n\nIn the chinook database invoice means order\n\n\n In the \'customer s\' table, address column names do not have \'Billing\' prefix, \n ountry column name is \'country\', not \'BillingCountry\'\n \n\n===Respon se Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provi ded context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find th e distinct strings in that column. Prepend the query with a comment saying i ntermediate sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': 'Find the

customer with the most invoices '}, {'role': 'assistant', 'content': ' SELEC T c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceId) AS NumberOfInvoi ces\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nGROUP BY c.CustomerId\nORDER BY NumberOfInvoices DESC\nLIMIT 1'}, {'role': 'user', Can you find the top 10 most popular artists based on 'content': ' \n the number of tracks?\n Hint: There are 3 tables - artists, albums an where albums and artists are linked by ArtistId, albums and tracks are linked by AlbumId,\n '}, {'role': 'assistant', 'content': ' SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTrack s\nFROM artists a\nJOIN albums al ON a.ArtistId = al.ArtistId\nJOIN tracks t ON al.AlbumId = t.AlbumId\nGROUP BY a.ArtistId\nORDER BY NumberOfTracks DESC \nLIMIT 10'}, {'role': 'user', 'content': 'List all invoices with a total ex ceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM invoices WHE RE Total > 10'}, {'role': 'user', 'content': 'Get the total number of invoic es for each customer'}, {'role': 'assistant', 'content': ' SELECT CustomerI d, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find all invoices since 2010 and the total amount invoic ed:'}, {'role': 'assistant', 'content': "SELECT InvoiceId, CustomerId, Invoi ceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'content': 'Find the top 5 most expensive tracks (based on unit pric e):'}, {'role': 'assistant', 'content': ' SELECT Name, UnitPrice\nFROM track s\nORDER BY UnitPrice DESC\nLIMIT 5'}, {'role': 'user', 'content': 'Find the total number of invoices per country'}, {'role': 'assistant', 'content': ' S ELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY Bil lingCountry'}, {'role': 'user', 'content': ' Get the average invoice total f or each customer:'}, {'role': 'assistant', 'content': ' SELECT CustomerId, A VG(Total) AS AverageInvoiceTotal\nFROM invoices\nGROUP BY CustomerId'}, {'ro le': 'user', 'content': "which table stores customer's orders"}, {'role': 'a ssistant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, B illingAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': 'List all albums and the ir corresponding artist names '}, {'role': 'assistant', 'content': 'SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'content': 'Find the custome r who bought the most albums in total quantity (across all invoices):'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMA RY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n lbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGE Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n R, r nBvtes INTEGER.\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPD FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) ATE NO ACTION,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTv peId) REFERENCES \"media\_types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION 0 N UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n eLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10.2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO FOREIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t \tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"albums\"\r AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n  $\n(\r\n$ Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n EY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK AlbumArtistId ON \"albums\" (Ar tistId)\n\nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER PRIMARY K EY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n Invoi ceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n gCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillinaCountry  $NVARCHAR(40), \r\n$ BillingPostalCode NVARCHAR(10),\r\n Total NUMERIC(1 FOREIGN KEY (CustomerId) REFERENCES \"customers\" (Cu 0,2) NOT NULL,\r\n stomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE IND EX IFK InvoiceLineTrackId ON \"invoice items\" (TrackId)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (InvoiceId)\n\nCREATE INDEX IFK I nvoiceCustomerId ON \"invoices\" (CustomerId)\n\nCREATE INDEX IFK TrackAlbum Id ON \"tracks\" (AlbumId)\n\nCREATE TABLE \"artists\"\r\n(\r\n INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name  $NVARCHAR(120)\r\n)\n$ \n\n===Additional Context \n\nIn the chinook database invoice means order\n In the 'customers' table, address column names do not have 'Billing' n ne.g. country column name is 'country', not 'BillingCountry'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, pleas e generate a valid SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a spe cific string in a particular column, please generate an intermediate SQL que ry to find the distinct strings in that column. Prepend the query with a com ment saying intermediate sql \n3. If the provided context is insufficient, p lease explain why it can't be generated. \n4. Please use the most relevant t able(s). \n5. If the question has been asked and answered before, please rep eat the answer exactly as it was given before. \n"}, {"role": "user", "conte nt": "Find the customer with the most invoices "}, {"role": "assistant", "co ntent": " SELECT c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceId) A S NumberOfInvoices\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.Cu stomerId\nGROUP BY c.CustomerId\nORDER BY NumberOfInvoices DESC\nLIMIT 1"}, {"role": "user", "content": " \n Can you find the top 10 most popular artists based on the number of tracks?\n Hint: There are 3 tables - a where albums and artists are linked by rtists, albums and tracks, \n ArtistId, albums and tracks are linked by AlbumId,\n "}, {"role": "assist ant", "content": " SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTracks\nFROM artists a\nJOIN albums al ON a.ArtistId = al.ArtistI d\nJOIN tracks t ON al.AlbumId = t.AlbumId\nGROUP BY a.ArtistId\nORDER BY Nu mberOfTracks DESC\nLIMIT 10"}, {"role": "user", "content": "List all invoice s with a total exceeding \$10"}, {"role": "assistant", "content": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "Get the total number of invoices for each customer"}, {"role": "assistant", "content": " S ELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY Custome rId"}, {"role": "user", "content": "Find all invoices since 2010 and the tot al amount invoiced:"}, {"role": "assistant", "content": "SELECT InvoiceId, C ustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": "Find the top 5 most expensive tracks (ba sed on unit price):"}, {"role": "assistant", "content": " SELECT Name, UnitP rice\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5"}, {"role": "user", "con tent": "Find the total number of invoices per country"}, {"role": "assistan

t", "content": " SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invo
ices\nGROUP BY BillingCountry"}, {"role": "user", "content": " Get the avera
ge invoice total for each customer:"}, {"role": "assistant", "content": " SE
LECT CustomerId, AVG(Total) AS AverageInvoiceTotal\nFROM invoices\nGROUP BY
CustomerId"}, {"role": "user", "content": "which table stores customer's ord
ers"}, {"role": "assistant", "content": "SELECT DISTINCT InvoiceId, Customer
Id, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountry,
BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "List
all albums and their corresponding artist names "}, {"role": "assistant",
"content": "SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM albums
a\nJOIN artists ar ON a.ArtistId = ar.ArtistId"}, {"role": "user", "conten
t": "Find the customer who bought the most albums in total quantity (across
all invoices):"}]

[( Ollama Response )]

{'model': 'deepseek-coder-v2:latest', 'created\_at': '2024-10-12T17:31:07.054 245438Z', 'message': {'role': 'assistant', 'content': ' SELECT c.CustomerI d, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM cus tomers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice\_items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbum Quantity DESC\nLIMIT 1'}, 'done\_reason': 'stop', 'done': True, 'total\_durati on': 48882717647, 'load\_duration': 8382774, 'prompt\_eval\_count': 1517, 'prom pt\_eval\_duration': 40995979000, 'eval\_count': 78, 'eval\_duration': 645961200 0}

[( LLM Response )]

SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlb umQuantity

FROM customers c

JOIN invoices i ON c.CustomerId = i.CustomerId

JOIN invoice items ii ON i.InvoiceId = ii.InvoiceId

GROUP BY c.CustomerId

ORDER BY TotalAlbumQuantity DESC

LIMIT 1

**SELECT c**.CustomerId, **c**.FirstName, **c**.LastName, **SUM**(ii.Quantity) **AS** TotalAlbumQuantity

**FROM** customers **c** 

**JOIN** invoices i **ON c**.CustomerId = i.CustomerId

**JOIN** invoice\_items ii **ON** i.InvoiceId = ii.InvoiceId

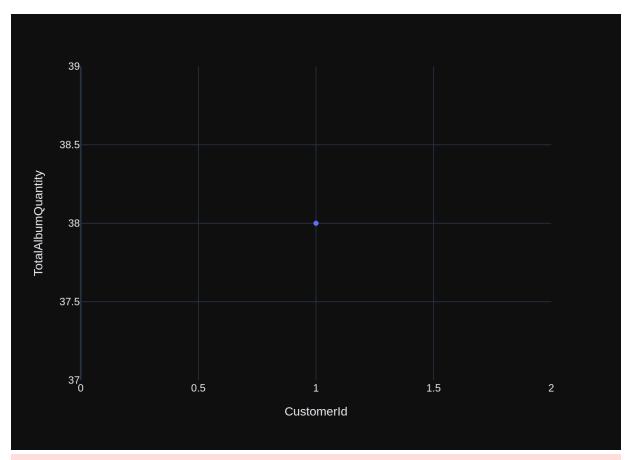
**GROUP BY c.**CustomerId

**ORDER BY** TotalAlbumQuantity **DESC** 

LIMIT 1

	CustomerId	FirstName	LastName	TotalAlbumQuantity
0	1	Luís	Gonçalves	38

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [(Prompt Content)]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: 'Fi
 nd the customer who bought the most albums in total quantity (across all inv
oices):'\n\nThe DataFrame was produced using this guery: SELECT c.Customer
 Id, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM cu
 stomers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice item
 s ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlb
 umQuantity DESC\nLIMIT 1\n\nThe following is information about the resulting
 pandas DataFrame 'df': \nRunning df.dtypes gives:\n CustomerId
 nt64\nFirstName
 object\nLastName
 object\nTotalAlbum
 int64\ndtype: object"}, {"role": "user", "content": "Can you ge
Quantity
nerate the Python plotly code to chart the results of the dataframe? Assume
 the data is in a pandas dataframe called 'df'. If there is only one value in
 the dataframe, use an Indicator. Respond with only Python code. Do not answe
 r with any explanations -- just the code."}]
 [(Ollama Response)]
 {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:31:22.586
 705185Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
 otly.express as px\nimport pandas as pd\n\n# Check if the DataFrame has more
 than one row\nif len(df) > 1:\n
 fig = px.bar(df, x=\'CustomerId\', y=\'To
 talAlbumQuantity\', text=\'TotalAlbumQuantity\')\nelse:\n
 fig = px.indica
 tor(title="Top Customer by Total Album Quantity", value=df[\'TotalAlbumQuant
 ity'].iloc[0], domain={\'y\': [0, 1]})\n\nfig.update_layout(title=\'Custome')
 r with the Most Albums Purchased\', xaxis title=\'Customer ID\', yaxis title
e': True, 'total duration': 15484701863, 'load duration': 8312835, 'prompt e
val count': 245, 'prompt eval duration': 4926926000, 'eval count': 152, 'eva
 l duration': 10420736000}
import plotly.express as px
import pandas as pd
Check if the DataFrame has more than one row
if len(df) > 1:
 fig = px_bar(df, x='CustomerId', y='TotalAlbumQuantity', text='TotalAlbumQuantity')
else:
 fig = px.indicator(title="Top Customer by Total Album Quantity", value=df['TotalAlbumQua
ntity'].iloc[0], domain={'y': [0, 1]})
fig.update_layout(title='Customer with the Most Albums Purchased', xaxis_title='Customer I
D', yaxis title='Total Album Quantity')
```



Number of requested results 10 is greater than number of elements in index 2, updating  $n_results = 2$ 

\_\_\_\_\_

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#### # OUESTION - 22:

Find the top 5 customers who bought the most albums in total quantit y (across all invoices):

Hint: album quantity is found in invoice items,

\_\_\_\_\_

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## [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoice items"\r\n(\r\n InvoiceLineId IN TEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NUL TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NUL  $L,\r\n$ Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFEREN CES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DEL N, r nETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(20 AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NUL 0) NOT NULL,\r\n  $L.\r\n$ GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n Millisecond s INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) N FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\t OT NULL,\r\n ON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERE NCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENCES "media\_types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "albums"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(16 0) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistI d) REFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON "invoice items" (Inv oiceId)\n\nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n ate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n BillinaCi BillingState NVARCHAR(40),\r\n ty NVARCHAR(40),\r\n BillingCountry NVA  $RCHAR(40), \r\n$  BillingPostalCode NVARCHAR(10), \r\n Total NUMERIC(10,2) FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerI NOT NULL,\r\n d) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId)\n\nCREATE INDEX IFK AlbumArt istId ON "albums" (ArtistId)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoi ces" (CustomerId)\n\nCREATE TABLE "artists"\r\n(\r\n ArtistId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n Name  $NVARCHAR(120)\r\n)\n\nCREATE IN$ DEX IFK TrackAlbumId ON "tracks" (AlbumId)\n\n===Additional Context \n\nIn the chinook database invoice means order\n\n\n In the \'customers\' tabl e, address column names do not have \'Billing\' prefix, \n e.g. country c olumn name is \'country\', not \'BillingCountry\'\n \n\n===Response Guide lines \n1. If the provided context is sufficient, please generate a valid SQ L query without any explanations for the question. \n2. If the provided cont ext is almost sufficient but requires knowledge of a specific string in a pa rticular column, please generate an intermediate SQL query to find the disti nct strings in that column. Prepend the query with a comment saying intermed iate sql \n3. If the provided context is insufficient, please explain why it

can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactl y as it was given before. \n'}, {'role': 'user', 'content': 'Find the custom er who bought the most albums in total quantity (across all invoices):'}, {'role': 'assistant', 'content': ' SELECT c.CustomerId, c.FirstName, c.Last Name, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM customers c\nJOIN invoice s i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.InvoiceId = i i.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQuantity DESC\nLIMIT 1'}, {'role': 'user', 'content': ' \n Can you find the top 10 most po pular artists based on the number of tracks?\n Hint: There are 3 tabl es - artists, albums and tracks, \n where albums and artists are link ed by ArtistId, albums and tracks are linked by AlbumId,\n '}, {'role': 'assistant', 'content': ' SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.T rackId) AS NumberOfTracks\nFROM artists a\nJOIN albums al ON a.ArtistId = a l.ArtistId\nJOIN tracks t ON al.AlbumId = t.AlbumId\nGROUP BY a.ArtistId\nOR DER BY NumberOfTracks DESC\nLIMIT 10'}, {'role': 'user', 'content': 'Find th e customer with the most invoices '}, {'role': 'assistant', 'content': ' SEL ECT c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceId) AS NumberOfInv oices\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nGRO UP BY c.CustomerId\nORDER BY NumberOfInvoices DESC\nLIMIT 1'}, {'role': 'use r', 'content': 'List all invoices with a total exceeding \$10'}, {'role': 'as sistant', 'content': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': 'Find the top 5 most expensive tracks (based on unit pric e):'}, {'role': 'assistant', 'content': ' SELECT Name, UnitPrice\nFROM track s\nORDER BY UnitPrice DESC\nLIMIT 5'}, {'role': 'user', 'content': 'Get the total number of invoices for each customer'}, {'role': 'assistant', 'conten t': ' SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find the total number of invoices per country'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COU NT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'content': 'Find all invoices since 2010 and the total amount invoic ed:'}, {'role': 'assistant', 'content': "SELECT InvoiceId, CustomerId, Invoi ceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'content': ' Get the average invoice total for each customer:'}, {'r ole': 'assistant', 'content': ' SELECT CustomerId, AVG(Total) AS AverageInvo iceTotal\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': "which table stores customer's orders"}, {'role': 'assistant', 'content': 'S ELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCi ty, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': ' \n Find the top 5 customers who bo ught the most albums in total quantity (across all invoices):\n album quantity is found in invoice items, \n

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructions. \n===Tables \nCREATE TABLE \"invoice\_items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERE

NCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\tON D ELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(20 AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NUL 0) NOT NULL,\r\n L.\r\n GenreId INTEGER.\r\n Composer NVARCHAR(220),\r\n Millisecond s INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) N OT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t \tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFE RENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (MediaTypeId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"album AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL.\r\n s\"\r\n(\r\n itle NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n F0RE IGN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\tON DELETE NO AC TION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (InvoiceId)\n\nCREATE TABLE \"invoices\"\r\n(\r\n ceId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER InvoiceDate DATETIME NOT NULL.\r\n BillingAddress NVARC  $HAR(70), \r\n$ BillingCity NVARCHAR(40),\r\n BillingState NVARCHAR(4 BillingPostalCode NVARCHAR(1 0),\r\n BillingCountry NVARCHAR(40),\r\n 0),\r\n Total NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) RE FERENCES \"customers\" (CustomerId) \r\n\t\t0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"invoice items\" (Tra ckId)\n\nCREATE INDEX IFK AlbumArtistId ON \"albums\" (ArtistId)\n\nCREATE I NDEX IFK InvoiceCustomerId ON \"invoices\" (CustomerId)\n\nCREATE TABLE \"ar ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n tists\"\r\n(\r\n Name NVARCHAR(120)\r\n)\n\nCREATE INDEX IFK TrackAlbumId ON \"tracks\" (Albu mId)\n\n===Additional Context \n\nIn the chinook database invoice means or In the 'customers' table, address column names do not have 'Bil e.g. country column name is 'country', not 'BillingCount ling' prefix, \n \n\n===Response Guidelines \n1. If the provided context is sufficie nt, please generate a valid SQL query without any explanations for the quest ion. \n2. If the provided context is almost sufficient but requires knowledg e of a specific string in a particular column, please generate an intermedia te SQL query to find the distinct strings in that column. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insuf ficient, please explain why it can't be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n"}, {"role": "use r", "content": "Find the customer who bought the most albums in total quanti ty (across all invoices):"}, {"role": "assistant", "content": " SELECT c.Cu stomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nF ROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoic e items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY To talAlbumQuantity DESC\nLIMIT 1"}, {"role": "user", "content": " \n n you find the top 10 most popular artists based on the number of tracks?\n Hint: There are 3 tables - artists, albums and tracks, \n s and artists are linked by ArtistId, albums and tracks are linked by AlbumI "}, {"role": "assistant", "content": " SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTracks\nFROM artists a\nJOIN albums al ON a.ArtistId = al.ArtistId\nJOIN tracks t ON al.AlbumId = t.AlbumId\nGRO UP BY a.ArtistId\nORDER BY NumberOfTracks DESC\nLIMIT 10"}, {"role": "user", "content": "Find the customer with the most invoices "}, {"role": "assistan t", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, COUNT(i.Invoi ceId) AS NumberOfInvoices\nFROM customers c\nJOIN invoices i ON c.CustomerId

ollama-deepseek-coder-chromadb-sqlite-test-6 = i.CustomerId\nGROUP BY c.CustomerId\nORDER BY NumberOfInvoices DESC\nLIMIT 1"}, {"role": "user", "content": "List all invoices with a total exceeding \$10"}, {"role": "assistant", "content": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "Find the top 5 most expensive tracks (b ased on unit price):"}, {"role": "assistant", "content": " SELECT Name, Unit Price\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5"}, {"role": "user" ntent": "Get the total number of invoices for each customer"}, {"role": "ass istant", "content": " SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM inv oices\nGROUP BY CustomerId"}, {"role": "user", "content": "Find the total nu mber of invoices per country"}, {"role": "assistant", "content": " SELECT Bi llingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY BillingCoun try"}, {"role": "user", "content": "Find all invoices since 2010 and the tot al amount invoiced:"}, {"role": "assistant", "content": "SELECT InvoiceId, C ustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": " Get the average invoice total for each customer:"}, {"role": "assistant", "content": " SELECT CustomerId, AVG(Tota l) AS AverageInvoiceTotal\nFROM invoices\nGROUP BY CustomerId"}, {"role": "u ser", "content": "which table stores customer's orders"}, {"role": "assistan t", "content": "SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingA ddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total \nFROM invoices"}, {"role": "user", "content": " \n Find the top 5 customers who bought the most albums in total quantity (across all invoice Hint: album quantity is found in invoice items, \n s):\n [( Ollama Response )] {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:32:14.532 903115Z', 'message': {'role': 'assistant', 'content': ' SELECT c.CustomerI d, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM cus tomers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbum Quantity DESC\nLIMIT 5'}, 'done reason': 'stop', 'done': True, 'total durati on': 51816123312, 'load\_duration': 6911213, 'prompt\_eval\_count': 1591, 'prom pt eval duration': 43901734000, 'eval count': 78, 'eval duration': 649879600 0} [( LLM Response )] SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlb

umOuantity

FROM customers c

JOIN invoices i ON c.CustomerId = i.CustomerId

JOIN invoice items ii ON i.InvoiceId = ii.InvoiceId

GROUP BY c.CustomerId

ORDER BY TotalAlbumQuantity DESC

LIMIT 5

**SELECT c.**CustomerId, **c.**FirstName, **c.**LastName, **SUM**(ii.Quantity) **AS** TotalAlbumQuantity

**FROM** customers **c** 

**JOIN** invoices i **ON c**.CustomerId = i.CustomerId

**JOIN** invoice items ii **ON** i.InvoiceId = ii.InvoiceId

**GROUP BY c.**CustomerId

**ORDER BY** TotalAlbumQuantity **DESC** 

**LIMIT** 5

	CustomerId	FirstName	LastName	TotalAlbumQuantity
0	1	Luís	Gonçalves	38
1	2	Leonie	Köhler	38
2	3	François	Tremblay	38
3	4	Bjørn	Hansen	38
4	5	František	Wichterlová	38

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

## [( Prompt Content )]

[{"role": "system", "content": "The following is a pandas DataFrame that con tains the results of the query that answers the question the user asked: ' Find the top 5 customers who bought the most albums in total quant ity (across all invoices):\n Hint: album quantity is found in invoice items, \n '\n\nThe DataFrame was produced using this query: SELECT c.C ustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\n FROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoi ce items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY T otalAlbumQuantity DESC\nLIMIT 5\n\nThe following is information about the re sulting pandas DataFrame 'df': \nRunning df.dtypes gives:\n CustomerId int64\nFirstName object\nLastName object\nTotalAlbu int64\ndtype: object"}, {"role": "user", "content": "Can you g mOuantity enerate the Python plotly code to chart the results of the dataframe? Assume the data is in a pandas dataframe called 'df'. If there is only one value in the dataframe, use an Indicator. Respond with only Python code. Do not answe r with any explanations -- just the code."}]

## [( Ollama Response )]

import plotly.express as px
import numpy as np

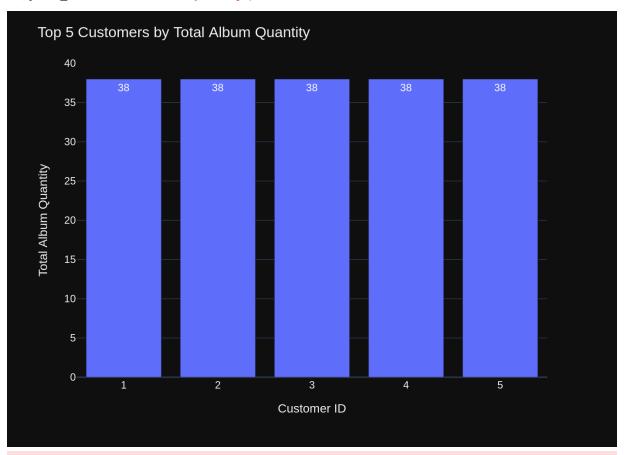
**if** len(df) == 1:

fig = px.indicator(title="Top Customers by Total Album Quantity", value=df['TotalAlbumQuantity'].values[0], domain={"x": [0, 1], "y": [0, 1]})

#### else

fig = px.bar(df, x='CustomerId', y='TotalAlbumQuantity', text\_auto='.2s')

fig.update\_layout(title="Top 5 Customers by Total Album Quantity", xaxis\_title="Customer I D", yaxis\_title="Total Album Quantity")



Number of requested results 10 is greater than number of elements in index 2, updating  $n_results = 2$ 

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#### # OUESTION - 23:

Find the top 5 customers who spent the most money overall,
Hint: order total can be found on invoices table, calculation using
invoice items detail table is unnecessary

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# [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "invoice items"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Ouantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC TION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON "invoice items" (Invoi ceId)\n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCR EATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId)\n\nCREATE TAB CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT LE "customers"\r\n(\r\n NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(20) Company NVARCHAR(80),\r\n Address NVARCHAR(70),\r\n NOT NULL,\r\n ity NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHA Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DE LETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "employees"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n LastName NVARC FirstName NVARCHAR(20) NOT NULL,\r\n HAR(20) NOT NULL,\r\n Title NVA  $RCHAR(30), \r\n$ ReportsTo INTEGER,\r\n BirthDate DATETIME,\r\n ate DATETIME,\r\n Address NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId)  $HAR(60), \r\n$ \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "track TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n AlbumId INTEGER,\r\n me NVARCHAR(200) NOT NULL,\r\n MediaTypeId INTEG ER NOT NULL.\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMER FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumI IC(10,2) NOT NULL,\r\n d) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (Genr eId) REFERENCES "genres" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO FOREIGN KEY (MediaTypeId) REFERENCES "media types" (MediaType Id) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "pl aylist track"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n TrackId INTEG CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, T ER NOT NULL,\r\n rackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC TION\r\n)\n\nCREATE INDEX IFK EmployeeReportsTo ON "employees" (ReportsTo)\n \n\n===Additional Context \n\nIn the chinook database invoice means order\n In the \'customers\' table, address column names do not have \'Billi  $n\n$ e.g. country column name is \'country\', not \'BillingCou ng\' prefix, \n ntry\'\n \n\n===Response Guidelines \n1. If the provided context is suffi cient, please generate a valid SQL query without any explanations for the qu estion. \n2. If the provided context is almost sufficient but requires knowl edge of a specific string in a particular column, please generate an interme diate SQL query to find the distinct strings in that column. Prepend the que ry with a comment saying intermediate sql \n3. If the provided context is in sufficient, please explain why it can\'t be generated. \n4. Please use the m ost relevant table(s). \n5. If the question has been asked and answered befo re, please repeat the answer exactly as it was given before. \n'}, {'role': Find the top 5 customers who bought the 'user', 'content': ' \n most albums in total quantity (across all invoices):\n Hint: album qu antity is found in invoice items, \n '}, {'role': 'assistant', 'content': SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAl bumQuantity\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerI d\nJOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerI d\nORDER BY TotalAlbumQuantity DESC\nLIMIT 5'}, {'role': 'user', 'content': 'Find the customer who bought the most albums in total quantity (across all invoices):'}, {'role': 'assistant', 'content': ' SELECT c.CustomerId, c.Fir stName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM customers c \nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQuanti ty DESC\nLIMIT 1'}, {'role': 'user', 'content': 'Find the customer with the most invoices '}, {'role': 'assistant', 'content': ' SELECT c.CustomerId, c. FirstName, c.LastName, COUNT(i.InvoiceId) AS NumberOfInvoices\nFROM customer s c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nGROUP BY c.CustomerId\n ORDER BY NumberOfInvoices DESC\nLIMIT 1'}, {'role': 'user', 'content': ' Get the average invoice total for each customer:'}, {'role': 'assistant', 'conte nt': 'SELECT CustomerId, AVG(Total) AS AverageInvoiceTotal\nFROM invoices\n GROUP BY CustomerId'}, {'role': 'user', 'content': 'Find the top 5 most expe nsive tracks (based on unit price):'}, {'role': 'assistant', 'content': ' SE LECT Name, UnitPrice\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5'}, {'rol e': 'user', 'content': 'Get the total number of invoices for each custome r'}, {'role': 'assistant', 'content': ' SELECT CustomerId, COUNT(\*) AS Total Invoices\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find the total number of invoices per country'}, {'role': 'assistant', 'con tent': ' SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGR OUP BY BillingCountry'}, {'role': 'user', 'content': 'List all invoices with a total exceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM in voices WHERE Total > 10'}, {'role': 'user', 'content': 'Find all invoices si nce 2010 and the total amount invoiced:'}, {'role': 'assistant', 'content': "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE Invo iceDate >= '2010-01-01'"}, {'role': 'user', 'content': "\n For the qu estion what are the top 5 countries that customers come from?, \n generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCount\nF ROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingC

ountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql 'SEL ECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bill ingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCo untry .\n Please fix the error and re-generate the SQL\n "}, {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCount D ESC\nLIMIT 5'}, {'role': 'user', 'content': '\n Find the top 5 cus tomers who spent the most money overall, \n Hint: order total can b e found on invoices table, calculation using invoice\_items detail table is u nnecessary \n '}

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOIN CREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (I nvoiceId)\n\nCREATE INDEX IFK InvoiceCustomerId ON \"invoices\" (CustomerId) \n\nCREATE INDEX IFK InvoiceLineTrackId ON \"invoice items\" (TrackId)\n\nCR CustomerId INTEGER PRIMARY KEY AUTOINCR EATE TABLE \"customers\"\r\n(\r\n EMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVA RCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n Address NVARCHAR(7 State NVARCHAR(40),\r\n 0),\r\n City NVARCHAR(40),\r\n Country NVAR PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24), $\r\$  $CHAR(40), \r\n$ Email NVARCHAR(60) NOT NULL,\r\n Fax NVARCHAR(24),\r\n SupportRepId I FOREIGN KEY (SupportRepId) REFERENCES \"employees\" (Employee NTEGER,\r\n Id)  $\r \n \t \n \$  DELETE NO ACTION ON UPDATE NO ACTION $\r \n \$   $\n \$  TABLE  $\$  "e mployees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL  $L,\r\n$ LastName NVARCHAR(20) NOT NULL, $\r\n$ FirstName NVARCHAR(20) NO T NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER.\r\n BirthDat e DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n ty NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(2 Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"e  $4), r\n$ mployees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n) \n\nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCR Name NVARCHAR(200) NOT NULL,\r\n EMENT NOT NULL,\r\n AlbumId INTEGE MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n oser NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bytes INTE GER.\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACT FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON  $ION, \r\n$ DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFER ENCES \"media types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"playlist track\"\r\n(\r\n PlavlistId INTEGE TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK Playlist Track PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) RE FERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t \t0N DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK EmployeeR eportsTo ON \"employees\" (ReportsTo)\n\n===Additional Context \n\nIn the In the 'customers' table, addr chinook database invoice means order\n\n\n ess column names do not have 'Billing' prefix, \n e.g. country column nam e is 'country', not 'BillingCountry'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query withou t any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular colum n, please generate an intermediate SQL query to find the distinct strings in that column. Prepend the query with a comment saying intermediate sql \n3. I f the provided context is insufficient, please explain why it can't be gener ated. \n4. Please use the most relevant table(s). \n5. If the question has b een asked and answered before, please repeat the answer exactly as it was gi ven before. \n"}, {"role": "user", "content": " \n Find the top 5 customers who bought the most albums in total quantity (across all invoice Hint: album quantity is found in invoice items, \n s):\n "}, {"rol e": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.InvoiceId = ii.Invoi ceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQuantity DESC\nLIMIT 5"}, {"role": "user", "content": "Find the customer who bought the most albums in total quantity (across all invoices):"}, {"role": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbum Quantity\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\n JOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\n ORDER BY TotalAlbumQuantity DESC\nLIMIT 1"}, {"role": "user", "content": "Fi nd the customer with the most invoices "}, {"role": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceId) AS Number OfInvoices\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId \nGROUP BY c.CustomerId\nORDER BY NumberOfInvoices DESC\nLIMIT 1"}, {"role": "user", "content": " Get the average invoice total for each customer:"}, {"r ole": "assistant", "content": " SELECT CustomerId, AVG(Total) AS AverageInvo iceTotal\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "Find the top 5 most expensive tracks (based on unit price):"}, {"role": "as sistant", "content": " SELECT Name, UnitPrice\nFROM tracks\nORDER BY UnitPri ce DESC\nLIMIT 5"}, {"role": "user", "content": "Get the total number of inv oices for each customer"}, {"role": "assistant", "content": " SELECT Custome rId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId"}, {"rol e": "user", "content": "Find the total number of invoices per country"}, {"r ole": "assistant", "content": " SELECT BillingCountry, COUNT(\*) AS TotalInvo ices\nFROM invoices\nGROUP BY BillingCountry"}, {"role": "user", "content": "List all invoices with a total exceeding \$10"}, {"role": "assistant", "cont ent": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "conten t": "Find all invoices since 2010 and the total amount invoiced:"}, {"role": "assistant", "content": "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nF ROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "conten

For the question what are the top 5 countries that customers the generated SQL statement SELECT BillingCountry, CO come from?, \n UNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY C ustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Fai led to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n E xecution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nF ROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry .\n Please fix the error and re-ge "}, {"role": "assistant", "content": "SELECT country nerate the SQL\n AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY countr v\n0RDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "content": " \n Find the top 5 customers who spent the most money overall, \n Hint: order total can be found on invoices table, calculation using invoice items detail table is unnecessary \n "}]

Number of requested results 10 is greater than number of elements in index 2, updating n results = 2

## [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "invoice items"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) NOT NULL,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC TION\r\n)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n  $NVARCHAR(70), \r\n$ untry NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(2 Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n 4),\r\n portRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT N TABLE "employees"\r\n(\r\n OT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(2 0) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n rthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR(70),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r City NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24), $\r\n$ Fax NVARCHA Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON "invoice items" (InvoiceId) \n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCREATE ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT N TABLE "artists"\r\n(\r\n ULL.\r\n Name NVARCHAR(120) $\r\n)\n\n$ CREATE TABLE "albums" $\r\n(\r\n$ umId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) R NOT NULL,\r\n EFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTI ON\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId) TrackId INTEGER PRIMARY KEY AUTOINCREM \n\nCREATE TABLE "tracks"\r\n(\r\n Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r ENT NOT NULL,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGE UnitPrice NUMERIC(10,2) NOT NULL,\r\n  $R_{i} r n$ FOREIGN KEY (AlbumId) RE FERENCES "albums" (Albumid) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n\t\tON DEL N, r n

ETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENC ES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTI ON\r\n)\n\n===Additional Context \n\nIn the chinook database invoice means In the \'customers\' table, address column names do not have e.g. country column name is \'country\', not \'Bil \'Billing\' prefix, \n \n\n===Response Guidelines \n1. If the provided context i lingCountry\'\n s sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an in termediate SQL query to find the distinct strings in that column. Prepend th e query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'rol e': 'user', 'content': ' \n Find the top 5 customers who bought the most albums in total quantity (across all invoices):\n Hint: albu m quantity is found in invoice items, \n '}, {'role': 'assistant', 'conte nt': ' SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS To talAlbumQuantity\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.Cust omerId\nJOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.Cust omerId\nORDER BY TotalAlbumQuantity DESC\nLIMIT 5'}, {'role': 'user', 'conte nt': 'Find the customer who bought the most albums in total quantity (across all invoices):'}, {'role': 'assistant', 'content': ' SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM custom ers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQua ntity DESC\nLIMIT 1'}, {'role': 'user', 'content': 'Find the customer with t he most invoices '}, {'role': 'assistant', 'content': ' SELECT c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceId) AS NumberOfInvoices\nFROM custom ers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nGROUP BY c.CustomerId \nORDER BY NumberOfInvoices DESC\nLIMIT 1'}, {'role': 'user', 'content': "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT BillingCountry, COUNT(\*) AS CustomerCoun t\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIM IT 5 results in the following exception [ERROR-DB] Failed to execute SQL: S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: Billi ngCountry .\n Please fix the error and re-generate the SQL\n "}, {'role': 'assistant', 'content': 'SELECT country AS Top5Countries, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY country\nORDER BY CustomerCou nt DESC\nLIMIT 5'}, {'role': 'user', 'content': ' Get the average invoice to tal for each customer:'}, {'role': 'assistant', 'content': ' SELECT Customer Id, AVG(Total) AS AverageInvoiceTotal\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find the total number of invoices per countr y'}, {'role': 'assistant', 'content': ' SELECT BillingCountry, COUNT(\*) AS T otalInvoices\nFROM invoices\nGROUP BY BillingCountry'}, {'role': 'user', 'co ntent': 'Get the total number of invoices for each customer'}, {'role': 'ass istant', 'content': ' SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM inv oices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find all invoices since 2010 and the total amount invoiced:'}, {'role': 'assistant', 'conten t': "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'content': 'List all invoice s with a total exceeding \$10'}, {'role': 'assistant', 'content': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': "which table s

tores customer's orders"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingStat e, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'use r', 'content': '\n For the question \n Find the top 5 custo mers who spent the most money overall, \n Hint: order total can be found on invoices table, calculation using invoice items detail table is unn the generated SQL statement None results in the f ollowing exception [ERROR-SQL] Failed to generate SQL for prompt: Find the top 5 customers who spent the most money overall, \n Hint: order total can be found on invoices table, calculation using invoice items detail table is unnecessary \n with the following exception: \nan unknow n error was encountered while running the model .\n Please fix the e rror and re-generate the SQL\n '}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL.\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou ntry NVARCHAR(40),\r\n BillingPostalCode NVARCHAR(10),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOIN CREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n ddress NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n  $RCHAR(24), \r\n$ SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employe es\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCR EATE TABLE \"employees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCR LastName NVARCHAR(20) NOT NULL,\r\n EMENT NOT NULL,\r\n FirstName NVA RCHAR(20) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n (70), r nCountry NV  $ARCHAR(40), \r\n$ PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) Fax NVARCHAR(24),\r\n REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (InvoiceId)\n\nCREATE INDEX IFK InvoiceCustomerId ON \"invoices\" (CustomerI d)\n\nCREATE TABLE \"artists\"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTO INCREMENT NOT NULL,\r\n Name  $NVARCHAR(120)\r\n)\n\nCREATE TABLE \"albums"$ 

AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n \"\r\n(\r\n tle NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREI GN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\tON DELETE NO ACT ION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"inv oice items\" (TrackId)\n\nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGE R PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r AlbumId INTEGER.\r\n MediaTypeId INTEGER NOT NULL,\r\n INTEGER,\r\n Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NUL UnitPrice NUMERIC(10,2) NOT NULL,\r\n Bytes INTEGER,\r\n REIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACT ION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n Y (MediaTypeId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\tON DELETE N O ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chin ook database invoice means order\n\n\n In the 'customers' table, address column names do not have 'Billing' prefix, \n e.g. country column name is 'country', not 'BillingCountry'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without an y explanations for the question. \n2. If the provided context is almost suff icient but requires knowledge of a specific string in a particular column, p lease generate an intermediate SQL query to find the distinct strings in tha t column. Prepend the guery with a comment saying intermediate sql \n3. If t he provided context is insufficient, please explain why it can't be generate d. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": " \n Find the top 5 cu stomers who bought the most albums in total quantity (across all invoice s):\n Hint: album quantity is found in invoice items, \n "}, {"rol e": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.InvoiceId = ii.Invoi ceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQuantity DESC\nLIMIT 5"}, {"role": "user", "content": "Find the customer who bought the most albums in total quantity (across all invoices):"}, {"role": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbum Quantity\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\n JOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\n ORDER BY TotalAlbumQuantity DESC\nLIMIT 1"}, {"role": "user", "content": "Fi nd the customer with the most invoices "}, {"role": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceId) AS Number OfInvoices\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId \nGROUP BY c.CustomerId\nORDER BY NumberOfInvoices DESC\nLIMIT 1"}, {"role": "user", "content": "\n For the question what are the top 5 countries that customers come from?, \n the generated SQL statement SELECT Bil lingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCoun try\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS Custom erCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DES C\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT(\*) AS Cu stomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY CustomerCount DESC\nLIMIT 5': no such column: BillingCountry .\n Please fix the err or and re-generate the SQL\n "}, {"role": "assistant", "content": "SE LECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM customers\nGR OUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "co ntent": " Get the average invoice total for each customer:"}, {"role": "assi stant", "content": " SELECT CustomerId, AVG(Total) AS AverageInvoiceTotal\nF

ROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "Find the t otal number of invoices per country"}, {"role": "assistant", "content": " SE LECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY Bill ingCountry"}, {"role": "user", "content": "Get the total number of invoices for each customer"}, {"role": "assistant", "content": " SELECT CustomerId, C OUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId"}, {"role": "us er", "content": "Find all invoices since 2010 and the total amount invoice d:"}, {"role": "assistant", "content": "SELECT InvoiceId, CustomerId, Invoic eDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": "List all invoices with a total exceeding \$10"}, {"role": "assistant", "content": " SELECT \* FROM invoices WHERE Total > 10"}, {"rol e": "user", "content": "which table stores customer's orders"}, {"role": "as sistant", "content": "SELECT DISTINCT InvoiceId, CustomerId, InvoiceDate, Bi llingAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "user", "content": "\n For the quest ion \n Find the top 5 customers who spent the most money overall, \n Hint: order total can be found on invoices table, calculation usi ng invoice items detail table is unnecessary \n , \n the generated SQL statement None results in the following exception [ERROR-SQL] Failed to generate SQL for prompt: \n Find the top 5 customers who spent the most money overall, \n Hint: order total can be found on invoices t able, calculation using invoice items detail table is unnecessary \n h the following exception: \nan unknown error was encountered while running the model .\n Please fix the error and re-generate the SQL\n "}]

Number of requested results 10 is greater than number of elements in index 2, updating n results = 2

[ERROR-SQL] Failed to generate SQL for prompt:
 For the question
 Find the top 5 customers who spent the most money overall,
 Hint: order total can be found on invoices table, calculation using invoice\_items detail table is unnecessary
 the generated SQL statement None results in the following exception [ERROR-SQL] Failed to generate SQL for prompt:
 Find the top 5 customers who spent the most money overall,
 Hint: order total can be found on invoices table, calculation using

with the following exception:

invoice items detail table is unnecessary

an unknown error was encountered while running the model .

Please fix the error and re-generate the SQL

with the following exception:

an unknown error was encountered while running the model
\*\*\* RETRY 2 \*\*\*

## [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "invoices"\r\n(\r\n InvoiceId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL.\r\n BillingAddress NVARCHAR(70),\r\n illingCity NVARCHAR(40),\r\n BillingState NVARCHAR(40),\r\n BillingCou BillingPostalCode NVARCHAR(10),\r\n ntry NVARCHAR(40),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES "customers" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE InvoiceLineId INTEGER PRIMARY KEY AUTOINCR TABLE "invoice items"\r\n(\r\n EMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER UnitPrice NUMERIC(10,2) NOT NULL,\r\n NOT NULL,\r\n Quantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES "invoices" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC TION\r\n)\n\nCREATE TABLE "customers"\r\n(\r\n CustomerId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n untry NVARCHAR(40),\r\n Phone NVARCHAR(2 4),\r\n Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n portRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE EmployeeId INTEGER PRIMARY KEY AUTOINCREMENT N TABLE "employees"\r\n(\r\n OT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVARCHAR(2 0) NOT NULL,\r\n Title NVARCHAR(30),\r\n ReportsTo INTEGER,\r\n Address NVARCHAR(70),\r\n rthDate DATETIME,\r\n HireDate DATETIME,\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r\n Country NVARCHAR(40),\r Phone NVARCHAR(24),\r\n PostalCode NVARCHAR(10),\r\n Fax NVARCHA FOREIGN KEY (ReportsTo) REFERENCES Email NVARCHAR(60),\r\n "employees" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r \n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON "invoice items" (InvoiceId) \n\nCREATE INDEX IFK InvoiceCustomerId ON "invoices" (CustomerId)\n\nCREATE TABLE "artists"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT N Name NVARCHAR(120) $\r\n)\n\n$ CREATE TABLE "albums" $\r\n(\r\n$ umId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160)

NOT NULL.\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) R EFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTI ON\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON "invoice items" (TrackId) \n\nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREM Name NVARCHAR(200) NOT NULL,\r\n ENT NOT NULL,\r\n AlbumId INTEGER,\r MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r\n Composer Milliseconds INTEGER NOT NULL,\r\n  $NVARCHAR(220).\r\n$ UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) RE FERENCES "albums" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTIO FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n\t\tON DEL ETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeId) REFERENC ES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTI ON\r\n)\n\n===Additional Context \n\nIn the chinook database invoice means In the \'customers\' table, address column names do not have \'Billing\' prefix, \n e.g. country column name is \'country\', not \'Bil \n\n===Response Guidelines \n1. If the provided context i lingCountry\'\n s sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an in termediate SQL query to find the distinct strings in that column. Prepend th e query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can\'t be generated. \n4. Please use the most relevant table(s). \n5. 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{'role': 'assistant', 'content': ' SELECT c.CustomerId, c.FirstN ame, c.LastName, COUNT(i.InvoiceId) AS NumberOfInvoices\nFROM customers c\nJ OIN invoices i ON c.CustomerId = i.CustomerId\nGROUP BY c.CustomerId\nORDER BY NumberOfInvoices DESC\nLIMIT 1'}, {'role': 'user', 'content': 'Find the t otal number of invoices per country'}, {'role': 'assistant', 'content': ' SE LECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY Bill ingCountry'}, {'role': 'user', 'content': "which table stores customer's ord ers"}, {'role': 'assistant', 'content': 'SELECT DISTINCT InvoiceId, Customer Id, InvoiceDate, BillingAddress, BillingCity, BillingState, BillingCountry, BillingPostalCode, Total\nFROM invoices'}, {'role': 'user', 'content': 'Get the total number of invoices for each customer'}, {'role': 'assistant', 'con tent': ' SELECT CustomerId, COUNT(\*) AS TotalInvoices\nFROM invoices\nGROUP BY CustomerId'}, {'role': 'user', 'content': 'Find all invoices since 2010 a nd the total 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calculation using invoice items detail table is unnecessary with the following exception: \nan unknown error was encountered whil e running the model .\n Please fix the error and re-generate the SQL the generated SQL statement None results in the follow ing exception [ERROR-SQL] Failed to generate SQL for prompt: \n Find the top 5 customers who spent the most money o he question \n Hint: order total can be found on invoices table, calcul verall, \n ation using invoice items detail table is unnecessary \n generated SQL statement None results in the following exception [ERROR-SQL] Failed to generate SQL for prompt: \n Find the top 5 customers who spent the most money overall, \n Hint: order total can be found on invoices table, calculation using invoice items detail table is unnecessary with the following exception: \nan unknown error was encountered whil e running the model .\n Please fix the error and re-generate the SQL with the following exception: \nan unknown error was encountered while running the model .\n Please fix the error and re-generate the '}] SQL\n

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

[( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"invoices\"\r\n(\r\n InvoiceId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n CustomerId INTEGER NOT NULL,\r\n InvoiceDate DATETIME NOT NULL,\r\n BillingAddress NVARCHAR(70),\r\n BillingState NVARCHAR(40),\r\n illingCity NVARCHAR(40),\r\n BillingCou BillingPostalCode NVARCHAR(10),\r\n ntry NVARCHAR(40),\r\n Total NUMER IC(10,2) NOT NULL,\r\n FOREIGN KEY (CustomerId) REFERENCES \"customers\" (CustomerId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"invoice items\"\r\n(\r\n InvoiceLineId INTEGER PRIMARY KEY AUTOIN CREMENT NOT NULL,\r\n InvoiceId INTEGER NOT NULL,\r\n TrackId INTEGER

UnitPrice NUMERIC(10,2) NOT NULL,\r\n NOT NULL,\r\n Ouantity INTEGER NOT NULL,\r\n FOREIGN KEY (InvoiceId) REFERENCES \"invoices\" (InvoiceId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (TrackI d) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"customers\"\r\n(\r\n CustomerId INTEGER PRI MARY KEY AUTOINCREMENT NOT NULL,\r\n FirstName NVARCHAR(40) NOT NULL.\r LastName NVARCHAR(20) NOT NULL,\r\n Company NVARCHAR(80),\r\n ddress NVARCHAR(70),\r\n City NVARCHAR(40),\r\n State NVARCHAR(40),\r Country NVARCHAR(40),\r\n PostalCode NVARCHAR(10),\r\n Phone NVA  $RCHAR(24), \r\n$ Fax NVARCHAR(24),\r\n Email NVARCHAR(60) NOT NULL,\r\n SupportRepId INTEGER,\r\n FOREIGN KEY (SupportRepId) REFERENCES \"employe es\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCR EATE TABLE \"employees\"\r\n(\r\n EmployeeId INTEGER PRIMARY KEY AUTOINCR EMENT NOT NULL,\r\n LastName NVARCHAR(20) NOT NULL,\r\n FirstName NVA Title NVARCHAR(30),\r\n RCHAR(20) NOT NULL,\r\n ReportsTo INTEGER,\r BirthDate DATETIME,\r\n HireDate DATETIME,\r\n Address NVARCHAR City NVARCHAR(40),\r\n  $(70), \r\n$ State NVARCHAR(40),\r\n Country NV  $ARCHAR(40), \r\n$ PostalCode NVARCHAR(10),\r\n Phone NVARCHAR(24),\r\n Fax NVARCHAR(24),\r\n Email NVARCHAR(60),\r\n FOREIGN KEY (ReportsTo) REFERENCES \"employees\" (EmployeeId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineInvoiceId ON \"invoice items\" (InvoiceId)\n\nCREATE INDEX IFK InvoiceCustomerId ON \"invoices\" (CustomerI d)\n\nCREATE TABLE \"artists\"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTO Name  $NVARCHAR(120)\r\n)\nCREATE TABLE \"albums"$ INCREMENT NOT NULL,\r\n \"\r\n(\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n tle NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREI GN KEY (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\t0N DELETE NO ACT ION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK InvoiceLineTrackId ON \"inv oice items\" (TrackId)\n\nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGE R PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r MediaTypeId INTEGER NOT NULL,\r\n AlbumId INTEGER.\r\n INTEGER.\r\n Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NUL Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n REIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\t0N DELETE NO ACT ION ON UPDATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n Y (MediaTypeId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\tON DELETE N O ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chin ook database invoice means order\n\n\n In the 'customers' table, address e.g. country column name is column names do not have 'Billing' prefix, \n 'country', not 'BillingCountry'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a valid SQL query without an y explanations for the question. \n2. If the provided context is almost suff icient but requires knowledge of a specific string in a particular column, p lease generate an intermediate SQL query to find the distinct strings in tha t column. Prepend the query with a comment saying intermediate sql \n3. If t he provided context is insufficient, please explain why it can't be generate d. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer exactly as it was given before. \n"}, {"role": "user", "content": " \n Find the top 5 cu stomers who bought the most albums in total quantity (across all invoice Hint: album quantity is found in invoice items, \n s):\n e": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM customers c\nJ0IN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.InvoiceId = ii.Invoi ceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQuantity DESC\nLIMIT 5"},

{"role": "user", "content": "\n For the question what are the top 5 c ountries that customers come from?, \n the generated SQL statement S ELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY Bi llingCountry\nORDER BY CustomerCount DESC\nLIMIT 5 results in the following exception [ERROR-DB] Failed to execute SQL: SELECT BillingCountry, COUNT(\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY Customer Count DESC\nLIMIT 5\n Execution failed on sql ' SELECT BillingCountry, COUNT (\*) AS CustomerCount\nFROM customers\nGROUP BY BillingCountry\nORDER BY Cust omerCount DESC\nLIMIT 5': no such column: BillingCountry .\n ix the error and re-generate the SQL\n "}, {"role": "assistant", "con tent": "SELECT country AS Top5Countries, COUNT(\*) AS CustomerCount\nFROM cus tomers\nGROUP BY country\nORDER BY CustomerCount DESC\nLIMIT 5"}, {"role": "user", "content": "Find the customer who bought the most albums in total qu antity (across all invoices):"}, {"role": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantit y\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN in voice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER B Y TotalAlbumQuantity DESC\nLIMIT 1"}, {"role": "user", "content": "Find the customer with the most invoices "}, {"role": "assistant", "content": " SELEC T c.CustomerId, c.FirstName, c.LastName, COUNT(i.InvoiceId) AS NumberOfInvoi ces\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nGROUP BY c.CustomerId\nORDER BY NumberOfInvoices DESC\nLIMIT 1"}, {"role": "user", "content": "Find the total number of invoices per country"}, {"role": "assis tant", "content": " SELECT BillingCountry, COUNT(\*) AS TotalInvoices\nFROM i nvoices\nGROUP BY BillingCountry"}, {"role": "user", "content": "which table stores customer's orders"}, {"role": "assistant", "content": "SELECT DISTINC T InvoiceId, CustomerId, InvoiceDate, BillingAddress, BillingCity, BillingSt ate, BillingCountry, BillingPostalCode, Total\nFROM invoices"}, {"role": "us er", "content": "Get the total number of invoices for each customer"}, {"rol e": "assistant", "content": " SELECT CustomerId, COUNT(\*) AS TotalInvoices\n FROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "Find all invoices since 2010 and the total amount invoiced:"}, {"role": "assistant", "content": "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices \nWHERE InvoiceDate >= '2010-01-01'"}, {"role": "user", "content": " Get the average invoice total for each customer:"}, {"role": "assistant", "content": " SELECT CustomerId, AVG(Total) AS AverageInvoiceTotal\nFROM invoices\nGROUP BY CustomerId"}, {"role": "user", "content": "List all invoices with a total exceeding \$10"}, {"role": "assistant", "content": " SELECT \* FROM invoices W HERE Total > 10"}, {"role": "user", "content": "\n For the question For the question \n Find the top 5 customers who spent t he most money overall, \n Hint: order total can be found on invoice s table, calculation using invoice items detail table is unnecessary \n the generated SQL statement None results in the following exceptio n [ERROR-SQL] Failed to generate SQL for prompt: \n Find the top 5 customers who spent the most money overall, \n Hint: order total ca n be found on invoices table, calculation using invoice items detail table i with the following exception: \nan unknown error was en s unnecessary \n countered while running the model .\n Please fix the error and re-ge , \n the generated SQL statement None results nerate the SQL\n in the following exception [ERROR-SQL] Failed to generate SQL for prompt: \n For the question Find the top 5 customers who spent the most mo \n ney overall, \n Hint: order total can be found on invoices table, c alculation using invoice items detail table is unnecessary \n the generated SQL statement None results in the following exception [ERROR-S QL] Failed to generate SQL for prompt: \n Find the top 5 customers who spent the most money overall, \n Hint: order total can be found

on invoices table, calculation using invoice\_items detail table is unnecessary \n with the following exception: \nan unknown error was encountered while running the model .\n Please fix the error and re-generate the SQL\n with the following exception: \nan unknown error was encounter ed while running the model .\n Please fix the error and re-generate the SQL\n "}

Number of requested results 10 is greater than number of elements in index 2, updating n results = 2

```
[ERROR-SQL] Failed to generate SQL for prompt:
 For the question
 For the question
 Find the top 5 customers who spent the most money overall,
 Hint: order total can be found on invoices table, calculation using
invoice items detail table is unnecessary
 the generated SQL statement None results in the following exception
[ERROR-SQL] Failed to generate SQL for prompt:
 Find the top 5 customers who spent the most money overall,
 Hint: order total can be found on invoices table, calculation using
invoice items detail table is unnecessary
 with the following exception:
an unknown error was encountered while running the model .
 Please fix the error and re-generate the SQL
 the generated SQL statement None results in the following exception
[ERROR-SQL] Failed to generate SQL for prompt:
 For the question
 Find the top 5 customers who spent the most money overall,
 Hint: order total can be found on invoices table, calculation using
invoice items detail table is unnecessary
 the generated SQL statement None results in the following exception
[ERROR-SQL] Failed to generate SQL for prompt:
 Find the top 5 customers who spent the most money overall,
 Hint: order total can be found on invoices table, calculation using
invoice items detail table is unnecessary
 with the following exception:
an unknown error was encountered while running the model .
 Please fix the error and re-generate the SOL
 with the following exception:
an unknown error was encountered while running the model .
 Please fix the error and re-generate the SQL
 with the following exception:
an unknown error was encountered while running the model
QUESTION - 24: Get all playlists containing at least 10 tracks and the to
tal duration of those tracks:

[(SQL Prompt)]
[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene
rate a SQL query to answer the question. Your response should ONLY be based
on the given context and follow the response guidelines and format instructi
ons. \n===Tables \nCREATE INDEX IFK PlaylistTrackTrackId ON "playlist track"
(TrackId)\n\nCREATE TABLE "playlists"\r\n(\r\n PlaylistId INTEGER PRIMARY
KEY AUTOINCREMENT NOT NULL,\r\n
 Name NVARCHAR(120)\r\n)\n\cREATE TABLE
"playlist track"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n
TEGER NOT NULL,\r\n CONSTRAINT PK_PlaylistTrack PRIMARY KEY (PlaylistI
d, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES "playlists" (Playlis
```

tid) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (Tr

ackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE N 0 ACTION\r\n)\n\nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY K EY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n Id INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r Milliseconds INTEGER NOT NULL,\r\n \n Composer NVARCHAR(220),\r\n Bvtes INTEGER.\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDAT E NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeI d) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)\n \nCREATE INDEX IFK TrackAlbumId ON "tracks" (AlbumId)\n\nCREATE INDEX IFK Tr ackMediaTypeId ON "tracks" (MediaTypeId)\n\nCREATE INDEX IFK AlbumArtistId O N "albums" (ArtistId)\n\nCREATE TABLE "albums"\r\n(\r\n AlbumId INTEGER P RIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) REFERENCES "artist s" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE "genres"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUTOINCREMENT NOT NUL Name  $NVARCHAR(120)\r\n)\n\n===Additional Context \n\nIn the chin$ ook database invoice means order\n\n\n In the \'customers\' table, addres s column names do not have \'Billing\' prefix, \n e.g. country column nam e is \'country\', not \'BillingCountry\'\n \n\n===Response Guidelines \n 1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is a lmost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strin gs in that column. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can\'t b e generated. \n4. Please use the most relevant table(s). \n5. If the questio n has been asked and answered before, please repeat the answer exactly as it was given before. \n'}, {'role': 'user', 'content': ' \n Can you find the top 10 most popular artists based on the number of tracks?\n t: There are 3 tables - artists, albums and tracks, \n where albums a nd artists are linked by ArtistId, albums and tracks are linked by AlbumI '}, {'role': 'assistant', 'content': ' SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTracks\nFROM artists a\nJOIN albums al ON a.ArtistId = al.ArtistId\nJOIN tracks t ON al.AlbumId = t.AlbumId\nGRO UP BY a.ArtistId\nORDER BY NumberOfTracks DESC\nLIMIT 10'}, {'role': 'user', 'content': 'List all genres and the number of tracks in each genre:'}, {'rol e': 'assistant', 'content': ' \nSELECT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks\nFROM genres g\nLEFT JOIN tracks t ON g.GenreId = t.GenreI d\nGROUP BY g.GenreId'}, {'role': 'user', 'content': 'Find all tracks with a name containing "What" (case-insensitive) '}, {'role': 'assistant', 'conten t': " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%what%'"}, {'role': 'use r', 'content': 'Find the top 5 most expensive tracks (based on unit pric e):'}, {'role': 'assistant', 'content': ' SELECT Name, UnitPrice\nFROM track s\nORDER BY UnitPrice DESC\nLIMIT 5'}, {'role': 'user', 'content': ' Find the top 5 customers who bought the most albums in total quantity (acros s all invoices):\n Hint: album quantity is found in invoice items, \n '}, {'role': 'assistant', 'content': ' SELECT c.CustomerId, c.FirstName, c. LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM customers c\nJOIN inv oices i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQuantity DESC\nLIM IT 5'}, {'role': 'user', 'content': 'Find the customer who bought the most a lbums in total quantity (across all invoices):'}, {'role': 'assistant', 'con SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS

TotalAlbumQuantity\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.Cu stomerId\nJOIN invoice\_items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.Cu stomerId\nORDER BY TotalAlbumQuantity DESC\nLIMIT 1'}, {'role': 'user', 'con tent': 'List all albums and their corresponding artist names '}, {'role': 'assistant', 'content': 'SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName \nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'content': 'Find all invoices since 2010 and the total amount invoice d:'}, {'role': 'assistant', 'content': "SELECT InvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate >= '2010-01-01'"}, {'role': 'user', 'content': 'List all invoices with a total exceeding \$10'}, {'role': 'assistant', 'content': 'SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'content': 'Can you list all tables in the SQLite database catal og?'}, {'role': 'assistant', 'content': "SELECT name FROM sqlite\_master WHERE type='table'"}, {'role': 'user', 'content': 'Get all playlists containing at least 10 tracks and the total duration of those tracks:'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

## [( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE INDEX IFK PlaylistTrackTrackId ON \"playlist track \" (TrackId)\n\nCREATE TABLE \"playlists\"\r\n(\r\n PlaylistId INTEGER PR IMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n)\n\n$ CREATE T ABLE \"playlist track\"\r\n(\r\n PlaylistId INTEGER NOT NULL,\r\n ckId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY (Pla ylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n KEY (TrackId) REFERENCES \"tracks\" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n AlbumId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGE Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bvtes INTEGER.\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPD FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) ATE NO ACTION,\r\n \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTv peId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\tON DELETE NO ACTION O N UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackGenreId ON \"tracks\" (Genr eId)\n\nCREATE INDEX IFK TrackAlbumId ON \"tracks\" (AlbumId)\n\nCREATE INDE X IFK TrackMediaTypeId ON \"tracks\" (MediaTypeId)\n\nCREATE INDEX IFK Album ArtistId ON \"albums\" (ArtistId)\n\nCREATE TABLE \"albums\"\r\n(\r\n umId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) R EFERENCES \"artists\" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO AC TION\r\n)\n\nCREATE TABLE \"genres\"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120)\r\n)\n\n===Additional Co ntext \n\nIn the chinook database invoice means order\n\n In the 'custo mers' table, address column names do not have 'Billing' prefix, \n ountry column name is 'country', not 'BillingCountry'\n  $\n\$   $\n\$ uidelines \n1. If the provided context is sufficient, please generate a vali d SQL query without any explanations for the question. \n2. If the provided

context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the d istinct strings in that column. Prepend the query with a comment saying inte rmediate sql \n3. If the provided context is insufficient, please explain wh y it can't be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer ex actly as it was given before. \n"}, {"role": "user", "content": " \n Can you find the top 10 most popular artists based on the number of tracks? Hint: There are 3 tables - artists, albums and tracks, \n here albums and artists are linked by ArtistId, albums and tracks are linked by AlbumId,\n "}, {"role": "assistant", "content": " SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTracks\nFROM artists a\nJO IN albums al ON a.ArtistId = al.ArtistId\nJOIN tracks t ON al.AlbumId = t.Al bumId\nGROUP BY a.ArtistId\nORDER BY NumberOfTracks DESC\nLIMIT 10"}, {"rol e": "user", "content": "List all genres and the number of tracks in each gen re:"}, {"role": "assistant", "content": " \nSELECT g.Name AS GenreName, COUN T(t.TrackId) AS NumberOfTracks\nFROM genres g\nLEFT JOIN tracks t ON g.Genre Id = t.GenreId\nGROUP BY g.GenreId"}, {"role": "user", "content": "Find all tracks with a name containing \"What\" (case-insensitive) "}, {"role": "assi stant", "content": " SELECT \* FROM tracks\nWHERE LOWER(Name) LIKE '%wha t%'"}, {"role": "user", "content": "Find the top 5 most expensive tracks (ba sed on unit price):"}, {"role": "assistant", "content": " SELECT Name, UnitP rice\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5"}, {"role": "user", "con Find the top 5 customers who bought the most albums in total quantity (across all invoices):\n Hint: album quantity is fo "}, {"role": "assistant", "content": " SELECT und in invoice items, \n c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantit y\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN in voice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER B Y TotalAlbumQuantity DESC\nLIMIT 5"}, {"role": "user", "content": "Find the customer who bought the most albums in total quantity (across all invoice s):"}, {"role": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM customers c\nJOIN i nvoices i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.Invoice Id = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQuantity DESC\n LIMIT 1"}, {"role": "user", "content": "List all albums and their correspond ing artist names "}, {"role": "assistant", "content": "SELECT a.Title AS Al bumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistI d = ar.ArtistId"}, {"role": "user", "content": "Find all invoices since 2010 and the total amount invoiced:"}, {"role": "assistant", "content": "SELECT I nvoiceId, CustomerId, InvoiceDate, Total\nFROM invoices\nWHERE InvoiceDate > = '2010-01-01'"}, {"role": "user", "content": "List all invoices with a tota l exceeding \$10"}, {"role": "assistant", "content": " SELECT \* FROM invoices WHERE Total > 10"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assistant", "content": "SELECT nam e FROM sqlite master WHERE type='table'"}, {"role": "user", "content": "Get all playlists containing at least 10 tracks and the total duration of those tracks:"}]

## [( Ollama Response )]

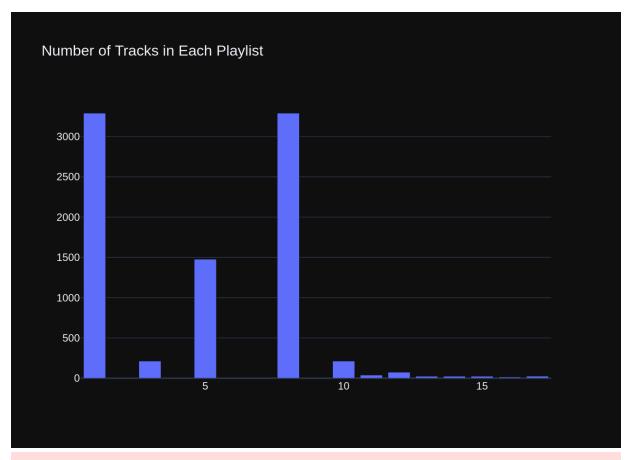
{'model': 'deepseek-coder-v2:latest', 'created\_at': '2024-10-12T17:36:56.962 141986Z', 'message': {'role': 'assistant', 'content': 'INTERMEDIATE\_SQL\n-First, find all playlists that have a count of tracks greater than or equal to 10.\nSELECT p.PlaylistId, COUNT(pt.TrackId) AS TrackCount\nFROM playlists p\nJOIN playlist\_track pt ON p.PlaylistId = pt.PlaylistId\nGROUP BY p.PlaylistId\nHAVING TrackCount >= 10;\n\n-- Now, calculate the total duration of tr

```
acks in those playlists.\nSELECT p.PlaylistId, SUM(t.Milliseconds) AS TotalD
uration\nFROM playlists p\nJOIN playlist track pt ON p.PlaylistId = pt.Playl
istId\nJOIN tracks t ON pt.TrackId = t.TrackId\nWHERE p.PlaylistId IN (\n
SELECT DISTINCT PlaylistId\n
 FROM (\n
 SELECT p.PlaylistId, COUNT(p
t.TrackId) AS TrackCount\n
 FROM playlists p\n
 JOIN playlist tr
ack pt ON p.PlaylistId = pt.PlaylistId\n
 GROUP BY p.PlaylistId\n
HAVING TrackCount >= 10\n
)\n)\nGROUP BY p.PlaylistId;'}, 'done reason':
'stop', 'done': True, 'total duration': 67435804502, 'load duration': 594147
4512, 'prompt eval count': 1513, 'prompt eval duration': 40038345000, 'eval
count': 237, 'eval duration': 20109660000}
[(LLM Response)]
 INTERMEDIATE SQL
-- First, find all playlists that have a count of tracks greater than or equ
al to 10.
SELECT p.PlaylistId, COUNT(pt.TrackId) AS TrackCount
FROM playlists p
JOIN playlist track pt ON p.PlaylistId = pt.PlaylistId
GROUP BY p.PlaylistId
HAVING TrackCount >= 10;
-- Now, calculate the total duration of tracks in those playlists.
SELECT p.PlaylistId, SUM(t.Milliseconds) AS TotalDuration
FROM playlists p
JOIN playlist track pt ON p.PlaylistId = pt.PlaylistId
JOIN tracks t ON pt.TrackId = t.TrackId
WHERE p.PlaylistId IN (
 SELECT DISTINCT PlaylistId
 FROM (
 SELECT p.PlaylistId, COUNT(pt.TrackId) AS TrackCount
 FROM playlists p
 JOIN playlist track pt ON p.PlaylistId = pt.PlaylistId
 GROUP BY p.PlaylistId
 HAVING TrackCount >= 10
)
GROUP BY p.PlaylistId;
[(Output from LLM)]
 INTERMEDIATE SQL
-- First, find all playlists that have a count of tracks greater than or equ
SELECT p.PlaylistId, COUNT(pt.TrackId) AS TrackCount
FROM playlists p
JOIN playlist track pt ON p.PlaylistId = pt.PlaylistId
GROUP BY p.PlaylistId
HAVING TrackCount >= 10;
-- Now, calculate the total duration of tracks in those playlists.
SELECT p.PlaylistId, SUM(t.Milliseconds) AS TotalDuration
FROM playlists p
JOIN playlist track pt ON p.PlaylistId = pt.PlaylistId
JOIN tracks t ON pt.TrackId = t.TrackId
WHERE p.PlaylistId IN (
 SELECT DISTINCT PlaylistId
 FROM (
```

```
SELECT p.PlaylistId, COUNT(pt.TrackId) AS TrackCount
 FROM playlists p
 JOIN playlist track pt ON p.PlaylistId = pt.PlaylistId
 GROUP BY p.PlaylistId
 HAVING TrackCount >= 10
)
)
 GROUP BY p.PlaylistId;
 [(Extracted SQL)]
 SELECT p.PlaylistId, COUNT(pt.TrackId) AS TrackCount
 FROM playlists p
 JOIN playlist track pt ON p.PlaylistId = pt.PlaylistId
 GROUP BY p.PlaylistId
 HAVING TrackCount >= 10
SELECT p.PlaylistId, COUNT(pt.TrackId) AS TrackCount
FROM playlists p
JOIN playlist_track pt ON p.PlaylistId = pt.PlaylistId
GROUP BY p.PlaylistId
HAVING TrackCount >= 10
```

	PlaylistId	TrackCount
0	1	3290
1	3	213
2	5	1477
3	8	3290
4	10	213
5	11	39
6	12	75
7	13	25
8	14	25
9	15	25
10	16	15
11	17	26

```
[Ollama parameters]
model=deepseek-coder-v2:latest,
 options={},
 keep alive=None
 [(Prompt Content)]
 [{"role": "system", "content": "The following is a pandas DataFrame that con
 tains the results of the query that answers the question the user asked: 'Ge
 t all playlists containing at least 10 tracks and the total duration of thos
e tracks: '\n\nThe DataFrame was produced using this query: SELECT p.Playlist
 Id, COUNT(pt.TrackId) AS TrackCount\nFROM playlists p\nJOIN playlist track p
 t ON p.PlaylistId = pt.PlaylistId\nGROUP BY p.PlaylistId\nHAVING TrackCount
>= 10\n\nThe following is information about the resulting pandas DataFrame
 'df': \nRunning df.dtypes gives:\n PlaylistId
 int64\nTrackCount
 \ndtype: object"}, {"role": "user", "content": "Can you generate the Python
 plotly code to chart the results of the dataframe? Assume the data is in a p
 andas dataframe called 'df'. If there is only one value in the dataframe, us
 e an Indicator. Respond with only Python code. Do not answer with any explan
 ations -- just the code."}]
 [(Ollama Response)]
 {'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:37:10.709
 160494Z', 'message': {'role': 'assistant', 'content': ' ```python\nimport pl
 otly.graph objects as go\n\nfig = go.Figure()\n\nif df[\'TrackCount\'].nuniq
 fig.add trace(go.Indicator(\n
 mode="number",\n
 ue() == 1:\n
 title={"text": "Total Track Coun
 value=df[\'TrackCount\'].iloc[0],\n
))\nelse:\n
 fig.add bar(x=df[\'PlaylistId\'], y=df[\'TrackCount
\'], name=\'Track Count\')\n\nfig.update layout(title="Number of Tracks in E
 ach Playlist")\nfig.show()\n```'}, 'done_reason': 'stop', 'done': True, 'tot
 al_duration': 13721176866, 'load_duration': 48490803, 'prompt_eval_count': 2
 13, 'prompt eval duration': 4272928000, 'eval count': 137, 'eval duration':
 9349388000}
import plotly.graph objects as go
fig = go.Figure()
if df['TrackCount'].nunique() == 1:
 fig.add trace(go.Indicator(
 mode="number",
 value=df['TrackCount'].iloc[0],
 title={"text": "Total Track Count"}
))
else:
 fig.add_bar(x=df['PlaylistId'], y=df['TrackCount'], name='Track Count')
fig.update_layout(title="Number of Tracks in Each Playlist")
```



Number of requested results 10 is greater than number of elements in index 2, updating  $n_results = 2$ 

\_\_\_\_\_\_

====

# QUESTION - 25: Identify artists who have albums with tracks appearing in multiple genres:

\_\_\_\_\_\_

====

## [( SQL Prompt )]

[{'role': 'system', 'content': 'You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE "tracks"\r\n(\r\n TrackId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n mId INTEGER,\r\n MediaTypeId INTEGER NOT NULL,\r\n GenreId INTEGER,\r Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n Bytes INTEGER,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n (AlbumId) REFERENCES "albums" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPDAT FOREIGN KEY (GenreId) REFERENCES "genres" (GenreId) \r\n E NO ACTION,\r\n \t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTypeI d) REFERENCES "media types" (MediaTypeId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION\r\n)\n\nCREATE INDEX IFK AlbumArtistId ON "albums" (ArtistId) \n\nCREATE INDEX IFK TrackGenreId ON "tracks" (GenreId)\n\nCREATE INDEX IFK TrackAlbumId ON "tracks" (AlbumId)\n\nCREATE TABLE "albums"\r\n(\r\n mId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NVARCHAR(160) ArtistId INTEGER NOT NULL,\r\n FOREIGN KEY (ArtistId) R EFERENCES "artists" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTI ON\r\n)\n\nCREATE INDEX IFK TrackMediaTypeId ON "tracks" (MediaTypeId)\n\nCR EATE TABLE "genres"\r\n(\r\n GenreId INTEGER PRIMARY KEY AUTOINCREMENT NO T NULL,\r\n Name NVARCHAR(120)\r\n)\n\nCREATE INDEX IFK PlaylistTrackTrac kId ON "playlist track" (TrackId)\n\nCREATE TABLE "artists"\r\n(\r\n stId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120)\r \n)\n\nCREATE TABLE "playlist track"\r\n(\r\n PlaylistId INTEGER NOT NUL TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIM  $L,\r\n$ ARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (PlaylistId) REFERENCES "playlists" (PlaylistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r FOREIGN KEY (TrackId) REFERENCES "tracks" (TrackId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chi nook database invoice means order\n\n
In the \'customers\' table, addre ss column names do not have \'Billing\' prefix, \n e.g. country column na me is \'country\', not \'BillingCountry\'\n \n\n===Response Guidelines \n 1. If the provided context is sufficient, please generate a valid SQL query without any explanations for the question. \n2. If the provided context is a lmost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the distinct strin gs in that column. Prepend the query with a comment saying intermediate sql \n3. If the provided context is insufficient, please explain why it can\'t b e generated. \n4. Please use the most relevant table(s). \n5. If the questio n has been asked and answered before, please repeat the answer exactly as it Can you find was given before. \n'}, {'role': 'user', 'content': ' \n the top 10 most popular artists based on the number of tracks?\n Hin t: There are 3 tables - artists, albums and tracks, \n where albums a nd artists are linked by ArtistId, albums and tracks are linked by AlbumI '}, {'role': 'assistant', 'content': ' SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTracks\nFROM artists a\nJOIN albums al ON a.ArtistId = al.ArtistId\nJOIN tracks t ON al.AlbumId = t.AlbumId\nGRO UP BY a.ArtistId\nORDER BY NumberOfTracks DESC\nLIMIT 10'}, {'role': 'user', 'content': 'List all albums and their corresponding artist names '}, {'rol e': 'assistant', 'content': 'SELECT a.Title AS AlbumTitle, ar.Name AS Artist Name\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId'}, {'role': 'user', 'content': 'List all genres and the number of tracks in each genr e:'}, {'role': 'assistant', 'content': ' \nSELECT g.Name AS GenreName, COUNT (t.TrackId) AS NumberOfTracks\nFROM genres g\nLEFT JOIN tracks t ON g.GenreI d = t.GenreId\nGROUP BY g.GenreId'}, {'role': 'user', 'content': 'Get all pl aylists containing at least 10 tracks and the total duration of those track s:'}, {'role': 'assistant', 'content': 'SELECT p.PlaylistId, COUNT(pt.TrackI d) AS TrackCount\nFROM playlists p\nJOIN playlist track pt ON p.PlaylistId = pt.PlaylistId\nGROUP BY p.PlaylistId\nHAVING TrackCount >= 10'}, {'role': 'u ser', 'content': ' Find the top 5 customers who bought the mo \n st albums in total quantity (across all invoices):\n Hint: album quan '}, {'role': 'assistant', 'content': ' tity is found in invoice items, \n SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbum Quantity\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\n JOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\n ORDER BY TotalAlbumQuantity DESC\nLIMIT 5'}, {'role': 'user', 'content': 'Fi nd the customer who bought the most albums in total quantity (across all inv oices):'}, {'role': 'assistant', 'content': ' SELECT c.CustomerId, c.FirstN ame, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM customers c\nJ OIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice items ii ON i.In voiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQuantity D ESC\nLIMIT 1'}, {'role': 'user', 'content': 'Find the top 5 most expensive t racks (based on unit price):'}, {'role': 'assistant', 'content': ' SELECT Na me, UnitPrice\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5'}, {'role': 'us er', 'content': 'Find all tracks with a name containing "What" (case-insensi tive) '}, {'role': 'assistant', 'content': " SELECT \* FROM tracks\nWHERE LOW ER(Name) LIKE '%what%'"}, {'role': 'user', 'content': 'Can you list all tabl es in the SQLite database catalog?'}, {'role': 'assistant', 'content': "SELE CT name FROM sqlite master WHERE type='table'"}, {'role': 'user', 'content': 'List all invoices with a total exceeding \$10'}, {'role': 'assistant', 'cont ent': ' SELECT \* FROM invoices WHERE Total > 10'}, {'role': 'user', 'conten t': 'Identify artists who have albums with tracks appearing in multiple genr es:'}]

[Ollama parameters]
model=deepseek-coder-v2:latest,
options={},
keep alive=None

## [( Prompt Content )]

[{"role": "system", "content": "You are a SQLite expert. Please help to gene rate a SQL query to answer the question. Your response should ONLY be based on the given context and follow the response guidelines and format instructi ons. \n===Tables \nCREATE TABLE \"tracks\"\r\n(\r\n TrackId INTEGER PRIMA RY KEY AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(200) NOT NULL,\r\n MediaTypeId INTEGER NOT NULL,\r\n lbumId INTEGER,\r\n GenreId INTEGE Composer NVARCHAR(220),\r\n Milliseconds INTEGER NOT NULL,\r\n UnitPrice NUMERIC(10,2) NOT NULL,\r\n Bytes INTEGER,\r\n FOREIGN KEY (AlbumId) REFERENCES \"albums\" (AlbumId) \r\n\t\tON DELETE NO ACTION ON UPD ATE NO ACTION,\r\n FOREIGN KEY (GenreId) REFERENCES \"genres\" (GenreId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION,\r\n FOREIGN KEY (MediaTy peId) REFERENCES \"media types\" (MediaTypeId) \r\n\t\t0N DELETE NO ACTION 0 N UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK AlbumArtistId ON \"albums\" (Art

istId)\n\nCREATE INDEX IFK TrackGenreId ON \"tracks\" (GenreId)\n\nCREATE IN DEX IFK TrackAlbumId ON \"tracks\" (AlbumId)\n\nCREATE TABLE \"albums\"\r\n AlbumId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Title NV FOREIGN KEY ARCHAR(160) NOT NULL,\r\n ArtistId INTEGER NOT NULL,\r\n (ArtistId) REFERENCES \"artists\" (ArtistId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\nCREATE INDEX IFK TrackMediaTypeId ON \"tracks\" (Me diaTypeId)\n\nCREATE TABLE \"genres\"\r\n(\r\n GenreId INTEGER PRIMARY KE Y AUTOINCREMENT NOT NULL,\r\n Name NVARCHAR(120) $\r\n)\n\n$ CREATE INDEX IFK PlaylistTrackTrackId ON \"playlist track\" (TrackId)\n\nCREATE TABLE \"arti sts\"\r\n(\r\n ArtistId INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,\r\n Name  $NVARCHAR(120)\r\n)\n\nCREATE TABLE \"playlist track\"\r\n(\r\n$ istId INTEGER NOT NULL,\r\n TrackId INTEGER NOT NULL,\r\n CONSTRAINT PK PlaylistTrack PRIMARY KEY (PlaylistId, TrackId),\r\n FOREIGN KEY (Pla ylistId) REFERENCES \"playlists\" (PlaylistId) \r\n\t\tON DELETE NO ACTION O N UPDATE NO ACTION,\r\n FOREIGN KEY (TrackId) REFERENCES \"tracks\" (Trac kId) \r\n\t\tON DELETE NO ACTION ON UPDATE NO ACTION\r\n)\n\n===Additional Context \n\nIn the chinook database invoice means order\n\n\n tomers' table, address column names do not have 'Billing' prefix, \n e.g. country column name is 'country', not 'BillingCountry'\n \n\n===Response Guidelines \n1. If the provided context is sufficient, please generate a val id SQL query without any explanations for the question. \n2. If the provided context is almost sufficient but requires knowledge of a specific string in a particular column, please generate an intermediate SQL query to find the d istinct strings in that column. Prepend the query with a comment saying inte rmediate sql \n3. If the provided context is insufficient, please explain wh y it can't be generated. \n4. Please use the most relevant table(s). \n5. If the question has been asked and answered before, please repeat the answer ex actly as it was given before. \n"}, {"role": "user", "content": " \n Can you find the top 10 most popular artists based on the number of tracks? Hint: There are 3 tables - artists, albums and tracks, \n here albums and artists are linked by ArtistId, albums and tracks are linked "}, {"role": "assistant", "content": " SELECT a.ArtistId, a.Name AS ArtistName, COUNT(t.TrackId) AS NumberOfTracks\nFROM artists a\nJO IN albums al ON a.ArtistId = al.ArtistId\nJOIN tracks t ON al.AlbumId = t.Al bumId\nGROUP BY a.ArtistId\nORDER BY NumberOfTracks DESC\nLIMIT 10"}, {"rol e": "user", "content": "List all albums and their corresponding artist names "}, {"role": "assistant", "content": "SELECT a.Title AS AlbumTitle, ar.Name AS ArtistName\nFROM albums a\nJOIN artists ar ON a.ArtistId = ar.ArtistId"}, {"role": "user", "content": "List all genres and the number of tracks in eac h genre:"}, {"role": "assistant", "content": " \nSELECT g.Name AS GenreName, COUNT(t.TrackId) AS NumberOfTracks\nFROM genres g\nLEFT JOIN tracks t ON g.G enreId = t.GenreId\nGROUP BY g.GenreId"}, {"role": "user", "content": "Get a ll playlists containing at least 10 tracks and the total duration of those t racks:"}, {"role": "assistant", "content": "SELECT p.PlaylistId, COUNT(pt.Tr ackId) AS TrackCount\nFROM playlists p\nJOIN playlist track pt ON p.Playlist Id = pt.PlaylistId\nGROUP BY p.PlaylistId\nHAVING TrackCount >= 10"}, {"rol e": "user", "content": " \n Find the top 5 customers who bought the most albums in total quantity (across all invoices):\n m quantity is found in invoice items, \n "}, {"role": "assistant", "conte nt": " SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS To talAlbumQuantity\nFROM customers c\nJOIN invoices i ON c.CustomerId = i.Cust omerId\nJOIN invoice items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.Cust omerId\nORDER BY TotalAlbumQuantity DESC\nLIMIT 5"}, {"role": "user", "conte nt": "Find the customer who bought the most albums in total quantity (across all invoices):"}, {"role": "assistant", "content": " SELECT c.CustomerId, c.FirstName, c.LastName, SUM(ii.Quantity) AS TotalAlbumQuantity\nFROM custom

ers c\nJOIN invoices i ON c.CustomerId = i.CustomerId\nJOIN invoice\_items ii ON i.InvoiceId = ii.InvoiceId\nGROUP BY c.CustomerId\nORDER BY TotalAlbumQua ntity DESC\nLIMIT 1"}, {"role": "user", "content": "Find the top 5 most expe nsive tracks (based on unit price):"}, {"role": "assistant", "content": " SE LECT Name, UnitPrice\nFROM tracks\nORDER BY UnitPrice DESC\nLIMIT 5"}, {"role": "user", "content": "Find all tracks with a name containing \"What\" (cas e-insensitive) "}, {"role": "assistant", "content": " SELECT \* FROM tracks\n WHERE LOWER(Name) LIKE '%what%'"}, {"role": "user", "content": "Can you list all tables in the SQLite database catalog?"}, {"role": "assistant", "content": "SELECT name FROM sqlite\_master WHERE type='table'"}, {"role": "user", "content": "List all invoices with a total exceeding \$10"}, {"role": "assist ant", "content": "SELECT \* FROM invoices WHERE Total > 10"}, {"role": "use r", "content": "Identify artists who have albums with tracks appearing in mu ltiple genres:"}]

## [( Ollama Response )]

{'model': 'deepseek-coder-v2:latest', 'created at': '2024-10-12T17:38:25.420 653201Z', 'message': {'role': 'assistant', 'content': " To identify artists who have albums with tracks appearing in multiple genres, we can follow thes e steps:\n\n1. Join the `artists`, `albums`, and `tracks` tables to get a li st of all track details along with their album and artist information.\n2. J oin this result with the `genres` table to add genre information to each tra ck.\n3. Group by the artist's name (or any identifier that uniquely identifi es an artist) and check if there are multiple genres associated with the alb ums of these artists.\n4. Select distinct artists who have albums with track s in more than one genre.\n\nHere is a SQL query that accomplishes this:\n\n ```sql\nSELECT DISTINCT ar.Name AS ArtistName\nFROM artists ar\nJOIN albums al ON ar.ArtistId = al.ArtistId\nJOIN tracks t ON al.AlbumId = t.AlbumId\nJO IN genres g ON t.GenreId = g.GenreId\nGROUP BY ar.ArtistId, g.GenreId\nHAVIN G COUNT(DISTINCT g.GenreId)  $> 1; \n```\n\n$ This query does the following:\n- J oins the `artists`, `albums`, and `tracks` tables to get track details along with album and artist information.\n- Further joins this result with the `ge nres` table to include genre information for each track.\n- Groups the resul ts by the artist's unique identifier (`ArtistId`) and the genre (`GenreId`), ensuring we group by both to ensure we only consider genres associated with albums by a single artist.\n- Uses the `HAVING` clause to filter out artists whose albums are in more than one genre, as indicated by having more than on e distinct genre for their albums when grouped by artist."}, 'done reason': 'stop', 'done': True, 'total duration': 74603368251, 'load duration': 761483 1, 'prompt eval count': 1529, 'prompt eval duration': 41585723000, 'eval cou nt': 368, 'eval duration': 31567888000}

## [( LLM Response )]

To identify artists who have albums with tracks appearing in multiple genre s, we can follow these steps:

- 1. Join the `artists`, `albums`, and `tracks` tables to get a list of all track details along with their album and artist information.
- 2. Join this result with the `genres` table to add genre information to each track.
- 3. Group by the artist's name (or any identifier that uniquely identifies an artist) and check if there are multiple genres associated with the albums of these artists.
- 4. Select distinct artists who have albums with tracks in more than one genr e.

Here is a SQL query that accomplishes this:

```
```sql
SELECT DISTINCT ar.Name AS ArtistName
FROM artists ar
JOIN albums al ON ar.ArtistId = al.ArtistId
JOIN tracks t ON al.AlbumId = t.AlbumId
JOIN genres g ON t.GenreId = g.GenreId
GROUP BY ar.ArtistId, g.GenreId
HAVING COUNT(DISTINCT g.GenreId) > 1;
```

This query does the following:

- Joins the `artists`, `albums`, and `tracks` tables to get track details al ong with album and artist information.
- Further joins this result with the `genres` table to include genre information for each track.
- Groups the results by the artist's unique identifier (`ArtistId`) and the genre (`GenreId`), ensuring we group by both to ensure we only consider genr es associated with albums by a single artist.
- Uses the `HAVING` clause to filter out artists whose albums are in more th an one genre, as indicated by having more than one distinct genre for their albums when grouped by artist.

```
[( Output from LLM )]
```

To identify artists who have albums with tracks appearing in multiple genr es, we can follow these steps:

- 1. Join the `artists`, `albums`, and `tracks` tables to get a list of all tr ack details along with their album and artist information.
- 2. Join this result with the `genres` table to add genre information to each track.
- 3. Group by the artist's name (or any identifier that uniquely identifies an artist) and check if there are multiple genres associated with the albums of these artists.
- 4. Select distinct artists who have albums with tracks in more than one genr e.

Here is a SQL query that accomplishes this:

```
```sql
SELECT DISTINCT ar.Name AS ArtistName
FROM artists ar
JOIN albums al ON ar.ArtistId = al.ArtistId
JOIN tracks t ON al.AlbumId = t.AlbumId
JOIN genres g ON t.GenreId = g.GenreId
GROUP BY ar.ArtistId, g.GenreId
HAVING COUNT(DISTINCT g.GenreId) > 1;
```

This guery does the following:

- Joins the `artists`, `albums`, and `tracks` tables to get track details al ong with album and artist information.
- Further joins this result with the `genres` table to include genre information for each track.
- Groups the results by the artist's unique identifier (`ArtistId`) and the

```
genre (`GenreId`), ensuring we group by both to ensure we only consider genr
 es associated with albums by a single artist.
 - Uses the `HAVING` clause to filter out artists whose albums are in more th
 an one genre, as indicated by having more than one distinct genre for their
 albums when grouped by artist.
 [(Extracted SOL)]
 SELECT DISTINCT ar.Name AS ArtistName
 FROM artists ar
 JOIN albums al ON ar.ArtistId = al.ArtistId
JOIN tracks t ON al.AlbumId = t.AlbumId
JOIN genres g ON t.GenreId = g.GenreId
GROUP BY ar.ArtistId, q.GenreId
HAVING COUNT(DISTINCT q.GenreId) > 1
SELECT DISTINCT ar.Name AS ArtistName
FROM artists ar
JOIN albums al ON ar. ArtistId = al. ArtistId
JOIN tracks t ON al. Albumid = t. Albumid
JOIN genres g ON t.Genreld = g.Genreld
GROUP BY ar.Artistld, g.Genreld
HAVING COUNT(DISTINCT g.Genreld) > 1
 ArtistName
```

# Check completion time

```
In [16]: ts_stop = time()
 elapsed_time = ts_stop - ts_start
 str_elapsed_sec = f"{elapsed_time:.0f}"
 ts = datetime.now().strftime("%Y%m%d-%H%M%S")
 print(f"Completed testing:\n=======\n LLM model '{model_name}' \n t

 Completed testing:
 ============

 LLM model 'deepseek-coder-v2'
 took 1650 sec
 run on 'ducklover1'
 at 20241012-133825

In [17]: file_csv = f"training_data-{model_name}-{str_elapsed_sec}s-{hostname}-{ts}.c
 file_csv

Out[17]: 'training_data-deepseek-coder-v2-1650s-ducklover1-20241012-133825.csv'
```

# Save training data

```
In [18]: # show training data
 df_training_data = vn.get_training_data()
 df_training_data
```

Out[18]:

	id	question	content	training_data_type
0	1d7747b2-4595- 50e7-aba6- e9977afc4481-sql	List all genres and the number of tracks in ea	\nSELECT g.Name AS GenreName, COUNT(t.TrackId	sql
1	1fab2c67-0737- 56ab-b3f1- 33202750520a- sql	Find the top 5 most expensive tracks (based on	SELECT Name, UnitPrice\nFROM tracks\nORDER BY	sql
2	2057af51-0925- 581d-aad4- e1c8fa6b02de- sql	Find the customer who bought the most albums i	SELECT c.CustomerId, c.FirstName, c.LastName	sql
3	2e2c32b7-40e9- 5f31-975e- f70304ca85be- sql	\n Can you find the top 10 most popula	SELECT a.ArtistId, a.Name AS ArtistName, COUN	sql
4	30dadc3c-1c94- 52c5-a81e- 4970d8d4c0cd- sql	Get all playlists containing at least 10 track	SELECT p.PlaylistId, COUNT(pt.TrackId) AS Trac	sql
5	36d67a5d-4f89- 5592-a61a- d8a768bcf02c-sql	Get the average invoice total for each customer:	SELECT CustomerId, AVG(Total) AS AverageInvoi	sql
6	3c42c397-fe40- 5629-ba95- 4c8764b87790- sql	Find all tracks with a name containing "What"	SELECT * FROM tracks\nWHERE LOWER(Name) LIKE	sql
7	5610475a-bbee- 5f6a-bb08- 7987a50220a7- sql	List all albums and their corresponding artist	SELECT a.Title AS AlbumTitle, ar.Name AS Artis	sql
8	59ee3f97-0080- 5db6-b709- b94fb9308167- sql	Find the total number of invoices per country	SELECT BillingCountry, COUNT(*) AS TotalInvoi	sql
9	5f93b5e8-549d- 5c06-bf3f- 22f32f65b1c5-sql	\n For the question what are the top 5	SELECT country AS Top5Countries, COUNT(*) AS C	sql
10	6cc1928a-0b0d- 50fc-ba2a- dde846107b62- sql	List all customers from Canada and their email	SELECT Email, Country\nFROM customers\nWHERE	sql
11	775fdf5b-53e2- 5745-84bc- 63630da0a97f- sql	\n Find the top 5 customers who b	SELECT c.CustomerId, c.FirstName, c.LastName	sql
12	93714b9a-4334- 59c0-98f7- 72176ee7e8de- sql	List all invoices with a total exceeding \$10	SELECT * FROM invoices WHERE Total > 10	sql
13	9d3783c1-033a- 5da3-883a- ec56055dc429- sql	Find all invoices since 2010 and the total amo	SELECT InvoiceId, CustomerId, InvoiceDate, Tot	sql

	id	question	content	training_data_type
14	a6c6b2ef-cd65- 5043-a9f4- 7e650a0c1d9a- sql	Get the total number of invoices for each cust	SELECT CustomerId, COUNT(*) AS TotalInvoices\	sql
15	bd7cc9b7-821c- 5148-a945- 76b1d324c36e- sql	List all employees and their reporting manager	SELECT e.FirstName, e.LastName, m.FirstName AS	sql
16	d5b91961-7241- 5060-8059- 5f7132d57713- sql	which table stores customer's orders	SELECT DISTINCT InvoiceId, CustomerId, Invoice	sql
17	d8a2f948-dffa- 5524-a5f9- 174cc1a8da73- sql	Can you list all tables in the SQLite database	SELECT name FROM sqlite_master WHERE type='table'	sql
18	dd3c468c-cac8- 5845-9cb9- d3b8aeeede8e- sql	Find the customer with the most invoices	SELECT c.CustomerId, c.FirstName, c.LastName,	sql
19	e69b6701-d7ee- 5d3e-add6- eb8bd4aaa8b7- sql	How many customers are there	SELECT COUNT(*) AS NumberOfCustomers FROM cust	sql
0	039f9d54-59f7- 5f29-8c04- 14dbc3e95671- ddl	None	CREATE TABLE "artists"\r\n(\r\n ArtistId IN	ddl
1	0db84e3d-ef41- 563c-803e- 21c1b985dc19- ddl	None	CREATE TABLE "invoices"\r\n(\r\n InvoiceId	ddl
2	10cba811-ddba- 5042-9e90- d764dfcd1629- ddl	None	CREATE INDEX IFK_InvoiceCustomerId ON "invoice	ddl
3	2c711317-b93d- 5f60-a728- cb1c6fcbc040-ddl	None	CREATE INDEX IFK_CustomerSupportRepId ON "cust	ddl
4	37319c81-65f7- 50ee-956b- 795de244bee5- ddl	None	CREATE TABLE sqlite_stat1(tbl,idx,stat)	ddl
5	40bd77cd-e1de- 5872-8693- 624117ff413c-ddl	None	CREATE INDEX IFK_InvoiceLineInvoiceId ON "invo	ddl
6	41130543-7164- 562a-90a7- 0fd0a409c154- ddl	None	CREATE TABLE "albums"\r\n(\r\n AlbumId INTE	ddl

	id	question	content	training_data_type
7	458debc8-8082- 5450-a17a- 66028bd55ace- ddl	None	CREATE TABLE "playlists"\r\n(\r\n PlaylistI	ddl
8	4815f3fd-925b- 53ce-9dfa- 0e4285d5abd3- ddl	None	CREATE TABLE "invoice_items"\r\n(\r\n Invoi	ddl
9	48d484e9-984c- 58ff-b391- 75521c69d486- ddl	None	CREATE INDEX IFK_PlaylistTrackTrackId ON "play	ddl
10	551e1120-a6ee- 554f-8b8a- ccf4f22d3636-ddl	None	CREATE INDEX IFK_AlbumArtistId ON "albums" (Ar	ddl
11	5ff4911e-45c1- 5a59-9566- 243a9b6a3320- ddl	None	CREATE TABLE "employees"\r\n(\r\n EmployeeI	ddl
12	65df0648-bf05- 5f75-9365- c21f54b2302d- ddl	None	CREATE TABLE "media_types"\r\n(\r\n MediaTy	ddl
13	6b585176-e66d- 5b23-8d86- ca8a80e3af3d- ddl	None	CREATE INDEX IFK_EmployeeReportsTo ON "employe	ddl
14	868758b8-e018- 55e7-8cc3- 75c0e6d211c8- ddl	None	CREATE INDEX IFK_TrackAlbumId ON "tracks" (Alb	ddl
15	9ea4613d-c1be- 5a77-ada9- c54ee3f0cab7- ddl	None	CREATE INDEX IFK_TrackMediaTypeId ON "tracks"	ddl
16	a9c9a852-608d- 5ef2-aede- 26ba098d83d1- ddl	None	CREATE INDEX IFK_TrackGenreId ON "tracks" (Gen	ddl
17	b42cc9e1-9219- 5a42-9a06- de906f76239e- ddl	None	CREATE TABLE "tracks"\r\n(\r\n TrackId INTE	ddl
18	c387b9d2-5ff4- 5a07-8364- f5dab45bb2a9- ddl	None	CREATE TABLE "genres"\r\n(\r\n GenreId INTE	ddl
19	d654f328-dc36- 549e-84c3- 06ee0db7e0f7- ddl	None	CREATE TABLE "playlist_track"\r\n(\r\n Play	ddl

	id	question	content	training_data_type
20	d93f0d68-023d- 5afb-8121- ba346699d318- ddl	None	CREATE TABLE "customers"\r\n(\r\n Customerl	ddl
21	e5879308-329e- 543f-a693- 0c14e2f9972e- ddl	None	CREATE INDEX IFK_InvoiceLineTrackId ON "invoic	ddl
22	ea84418b-1a28- 59b4-a1f4- 2fb674208adc- ddl	None	CREATE TABLE sqlite_sequence(name,seq)	ddl
0	2b4dda0a-a6ac- 5e34-8f76- e41c0734d55e- doc	None	In the chinook database invoice means order	documentation
1	ece10d36-9223- 5045-9ac8- 4b5bc090acb5- doc	None	\n In the 'customers' table, address column	documentation

In [19]: df\_training\_data.to\_csv(file\_csv, index=False)

!cat training\_data-deepseek-coder-v2-38054s-ducklover1-20241012-115724.csv

In [ ]: