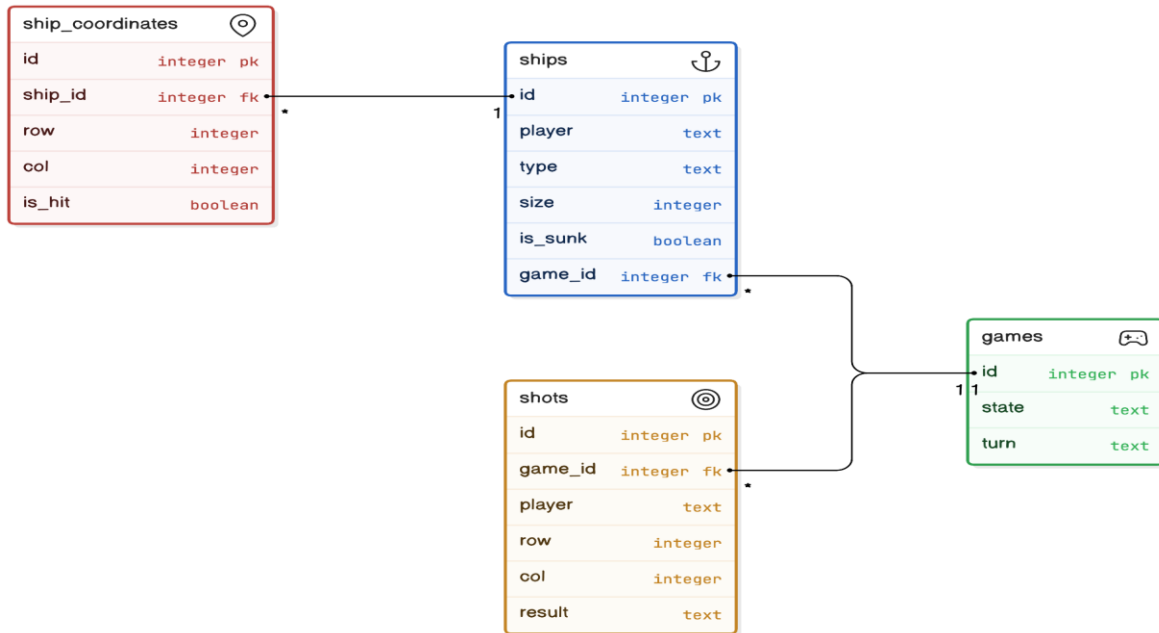1. What would be the main API endpoints you would create when building this solution? a. List them in the below table:

HTTP Method	URL	Description
POST	http://localhost:3000/api/games/start	Start the game
POST	http://localhost:3000/api/games/1/shot	Shot purpose
GET	http://localhost:3000/api/games/1/state	Get the game full status

2.

What are the data models you would create to implement this solution? a. Provide an ER Diagram or Class / Interface / DDL / Schema

Battleship Game System

ship_coordinates ⊙

id	integer pk
ship_id	integer fk
row	integer
col	integer
is_hit	boolean

ships ⚓

id	integer pk
player	text
type	text
size	integer
is_sunk	boolean
game_id	integer fk

games 🎮

id	integer pk
state	text
turn	text

shots ◎

id	integer pk
game_id	integer fk
player	text
row	integer
col	integer
result	text

```sql
CREATE TABLE IF NOT EXISTS games (
id INTEGER PRIMARY KEY AUTOINCREMENT,
state TEXT NOT NULL, -- ongoing, finished, etc.
turn TEXT NOT NULL -- 'player' or 'computer'
);
CREATE TABLE IF NOT EXISTS ships (
id INTEGER PRIMARY KEY AUTOINCREMENT,
game_id INTEGER NOT NULL,
player TEXT NOT NULL, -- 'player' or 'computer'
type TEXT NOT NULL, -- e.g., battleship, destroyer
size INTEGER NOT NULL,
is_sunk BOOLEAN NOT NULL DEFAULT 0,
FOREIGN KEY (game_id) REFERENCES games(id)
);
CREATE TABLE IF NOT EXISTS ship_coordinates (
id INTEGER PRIMARY KEY AUTOINCREMENT,
ship_id INTEGER NOT NULL,
row INTEGER NOT NULL, -- row of the ship's coordinate
col INTEGER NOT NULL, -- column of the ship's coordinate
is_hit BOOLEAN NOT NULL DEFAULT 0,
FOREIGN KEY (ship_id) REFERENCES ships(id)
);
CREATE TABLE IF NOT EXISTS shots (
id INTEGER PRIMARY KEY AUTOINCREMENT,
game_id INTEGER NOT NULL,
player TEXT NOT NULL, -- 'player' or 'computer'
row INTEGER NOT NULL, -- row of the shot
col INTEGER NOT NULL, -- column of the shot
result TEXT NOT NULL, -- 'hit' or 'miss'
```

```
FOREIGN KEY (game_id) REFERENCES games(id)
);
```

3.

What are the frameworks / libraries you would use to build this solution? a. List them in the below table:

Name of the package	What would you accomplish using that?
ExpressJS	Web Application Framework
SQLite	Database

4.

What are the main programs and tools you would use to build this solution? a. List them in the below table:

Name of the program	What would you accomplish using that?
Visual Studio Code	IDE
Postman	API testing
Draw.io	ER diagram and flow diagram
github	Source code publish