Task 2

System Design – Stay Fast Under Heavy Load

Internet
→ listens on :80, handles HTTPS
Nginx – TLS termination, load balancing

This will be connected to three API's
→ each = Spring Boot JAR (stateless)
API|API|API   Handles /pickSpot POST requests   (Add more if traffic ↑)
these three will be then connected to **YardMap Cache (HashMap)**

Traffic Handling:

In Normal it will have 100RPS- it works= 3APIs-smooth

In Peak Hour it will have 500RPS-Spin up 2 more APIs → Nginx handles routing

How It Stays Fast

Stateless: Every request sends full JSON (container + yardMap)

In-memory cache: Yard map in HashMap, O(1) lookup

No DB in hot path: Avoids real-time DB queries → faster

Lightweight Spring Boot jars: Fast startup, easy scaling

Failure Scenarios

Failure

One API crashes-Nginx reroutes to others → traffic handled

Cache refresh fails-Use last good map → logs warning, still works