Lect 1 : Introduction to system Design

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What is LLD ?

→ We know that, DSA is used to solve a specific problem jaise ki Searching in array

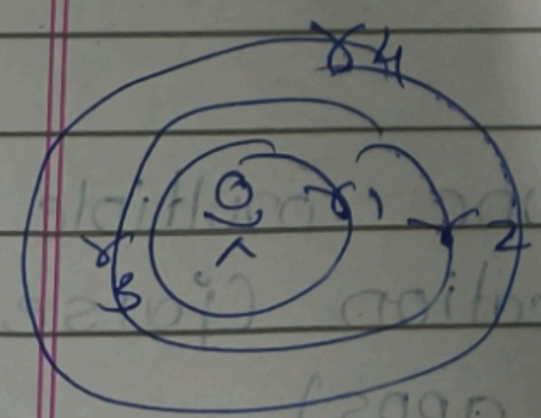
- Waise hi LLD is a ~~application~~ matlab :
  ↳ Internal structure of system/application jab hum ek isolated problem ke around build karege using one or multiple DSA patterns.

Abhi Detail mein smjhte why LLD ?

Suppose you are making ride booking applicatio
You and your friend has assigned task to submit their idea.

Your friend : Sirf DSA aata hai
- Wob 2 hi implementation approach sochega directly
  1. Path kaise find kare ?
     ↳ Using DSA algorithms like Dijkstra

  2. Rider kaise assign kare ?
     ↳ Priority queue jiski implementation (Heap) ke saath hui hai (minHeap use krege)
     ↳ Pehla wala nearest rider hoga
     ↳ And we will map them



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Aditya & Rohit Bhaiya ke wajah se

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You : Par tumhe LLD ke baare mein pata hai

Toh tum sirf DSA implementation nhi toh pura design of internal architecture doge usmein objects jaise -

- → Objects / Entities : User, rider, location
- → unmein relations
- → Data Security : ride complete hone ke baad hiding of numbers
- → Notifications
- → Payment
- → Million of user

↳ Ab tumhara promotion pakka (^^)

Three pillars of LLD

1) Scalability : Humara code kitna sustain kar paata hai agar load / users ka count bad jaaye.

2) Maintainability :
→ New feature implement krna easy ho... aisa na ho ki humne ek feature daal 4 purane fat gaye
→ Easily debuggable

3) Reusability : (plug & play model)
→ Reuse block of code or func multiple times even if its in different application (jaise notification → available in all apps)

→ Apka code tightly coupled na ho... (yaane application specific)

What is Not LLD or What is HLD ?

- Tech stack of Application
- Database selection (SQL / NoSQL)
- Server Scaling
- Cost Optimization

Conclusion

HLD → System Architeture
LLD → Blueprint / Internal Logic
DSA → Core problem solution.

"if DSA is the brain of Application then LLD is the skeleton"