INTERVIEW READY

Ever wondered how WhatsApp is designed?

PRIORITISED REQUIREMENTS

- Implement one-to-one chat
- Show users what stage the message is (Sent, Delivered and Read Receipts)
- Group messaging
- Sharing image, audio and video files
- Show status of users (Lastseen/Online)
- Chat will be temporary

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ONE TO ONE MESSAGING AND READ RECEIPTS

Components Required

- Gateway Service
- Session Service
- Database

Trade-offs

- Storing the mapping in gateway service instead of storing it in session service
- As we don't need to constantly send requests to server, using XMPP will be more efficient

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LAST SEEN TIMESTAMPS OF USERS

To implement this we can store a table that contains the userID and the timestamps. Whenever any user makes an activity that request is sent to the server. The time at which the request is sent we update the key value pair. We must also consider the requests sent by the application and not by the user.

Components Required

- Last seen service
- Database

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GROUP MESSAGING

While sending messages in a group we must take care of three things:

- Retries: Message queue takes care of that
- Idempotency: Can be achieved this by sending messages to queue at least once but each message will have an unique ID.
- Ordering of Messages: Must be ordered by their timestamps in a group.

Components Required

- Group Messaging Service
- Message Parser Service
- Message queue

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SENDING IMAGE, AUDIO AND VIDEO FILES

Can be achieved by using a distributed file service to store the files as they are much more efficient and cost effective.

Components Required

- **Distributed File System**

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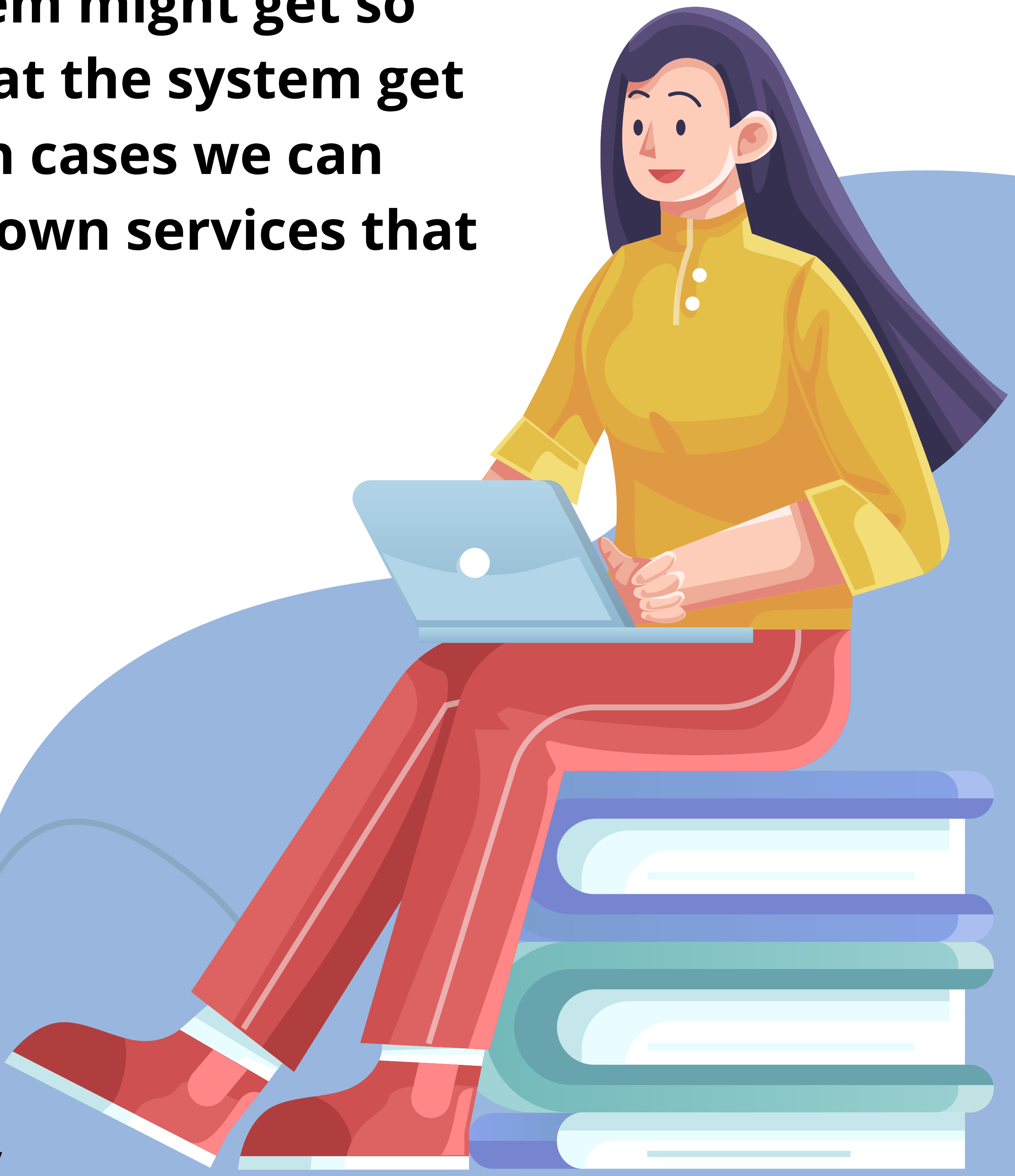
SOME OPTIMIZATIONS

Graceful Degradations: On some occasions the system might get so many messages that the system get overloaded. In such cases we can temporarily shut down services that are not critical.



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