Building a NEWS Application
A Literature Review

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Abstract

Conventional method of news delivery even in today's modern world is newspaper or TV channels. The main reason of such trend is lack of common platform which displays news from different media, old or broken UI. Other reasons include extremely annoying pop up and banner ads and fake advertisements. Designing a new model of news delivery to users, with modern UI and minimal ads with a subscription-based model and providing diversity in channels is crucial.

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Managing User Data:

Any online platform that handles user identities, private information or communications must be secured with the use of strong cryptography. User communications must be encrypted in transit and storage. User secrets such as passwords must also be protected using strong, collision-resistant hashing algorithms with increasing work factors, in order to greatly mitigate the risks of exposed credentials as well as proper integrity control.

To protect data in transit, developers must use and adhere to **TLS/SSL** best practices such as verified certificates, adequately protected **private keys, usage of strong ciphers only, informative and clear warnings to users, as well as sufficient key lengths**. Private data must be encrypted in storage using keys with sufficient lengths and under strict access conditions, both technical and procedural. User credentials must be hashed regardless of whether or not they are encrypted in storage.

HTTP Strict Transport Security (HSTS) is an HTTP header set by the server indicating to the user agent that only secure (HTTPS) connections are accepted, prompting the user agent to change all insecure HTTP links to HTTPS, and forcing the compliant user agent to fail-safe by refusing any TLS/SSL connection that is not trusted by the user.HSTS has average support on popular user agents, such as Mozilla Firefox and Google Chrome. Nevertheless, it remains very useful for users who are in consistent fear of spying and Man in the Middle Attacks.If it is impractical to force HSTS on all users, web developers should at least give users the choice to enable it if they wish to make use of it.

Other security Precautions:

Certificate Pinning is the practice of hardcoding or storing a predefined set of information (usually hashes) for digital certificates/public keys in the user agent (be it web browser, mobile app or browser plugin) such that only the predefined certificates/public keys are used for secure communication, and all others will fail, even if the user trusted (implicitly or explicitly) the other certificates/public keys.

In case user equipment is lost, stolen or confiscated, or under suspicion of cookie theft; it might be very beneficial for users to able to see view their current online sessions and disconnect/invalidate any suspicious lingering sessions, especially ones that belong to stolen or confiscated devices. **Remote session invalidation** can also helps if a user suspects that their **session details were stolen in a Man-in-the-Middle attack**.

Anonymity networks, such as the Tor Project, give users in tumultuous regions around the world a golden chance to escape surveillance, access information or break censorship barriers. More often than not, activists in troubled regions use such networks to report injustice or send uncensored information to the rest of the world, especially mediums such as social networks, media streaming websites and email providers. Web developers and network administrators must pursue every avenue to **enable users to access services from behind such network**s, and any policy made against such anonymity networks need to be carefully re-evaluated with respect to impact on people around the world.

Preventing leakage of user IP addresses is of great significance when user protection is in scope. Any application that hosts external third-party content, such as avatars, signatures or photo attachments; must take into account the benefits of allowing users to block third-party content from being loaded in the application page. If it was possible to **embed 3rd-party, external domain images**, for example, in a user's feed or timeline; an adversary might use it to discover a victim's real IP address by **hosting it on his domain and watch for HTTP requests** for that image.

MySQL stats for monitoring and health check:

The MySQL Performance Schema is a feature for monitoring MySQL Server execution at a low level. The Performance Schema has these characteristics:The Performance Schema provides a way to inspect internal execution of the server at runtime. It is implemented using the PERFORMANCE_SCHEMA storage engine and the performance_schema database. The Performance Schema focuses primarily on performance data. This differs from INFORMATION_SCHEMA, which serves for inspection of metadata.

The Performance Schema monitors server events. An “event” is anything the server does that takes time and has been instrumented so that timing information can be collected. In general, an event could be a function call, a wait for the operating system, a stage of an SQL statement execution such as parsing or sorting, or an entire statement or group of statements. Event collection provides access to information about synchronization calls (such as for mutexes) file and table I/O, table locks, and so forth for the server and for several storage engines.

Performance Schema events are distinct from events written to the server's binary log (which describe data modifications) and Event Scheduler events (which are a type of stored program).Performance Schema

events are specific to a given instance of the MySQL Server. Performance Schema tables are considered local to the server, and changes to them are not replicated or written to the binary log.

Load balancing:

Load balancing refers to efficiently distributing incoming network traffic across a group of backend servers, also known as a server farm or server pool. Modern high-traffic websites must serve hundreds of thousands, if not millions, of concurrent requests from users or clients and return the correct text, images, video, or application data, all in a fast and reliable manner. To cost-effectively scale to meet these high volumes, modern computing best practice generally requires adding more servers.

A load balancer acts as the **"traffic cop"** sitting in front of your servers and routing client requests across all servers capable of fulfilling those requests in **a manner that maximizes speed and capacity utilization** and ensures that no one server is overworked, which could degrade performance. If a single server goes down, the load balancer redirects traffic to the remaining online servers. When a new server is added to the server group, the load balancer automatically starts to send requests to it.

Layer 4 load balancing uses information defined at the **networking transport layer** (Layer 4) as the basis for deciding how to distribute client requests across a group of servers. For Internet traffic specifically, a Layer 4 load balancer bases the load-balancing decision on the source and destination **IP addresses and ports** recorded in the packet header, without considering the contents of the packet.

Layer 7 load balancing operates at the high-level application layer, which deals with the actual content of each message. HTTP is the predominant Layer 7 protocol for website traffic on the Internet. Layer 7 load balancers route network traffic in a much more sophisticated way than Layer 4 load balancers, particularly applicable to TCP-based traffic such as HTTP. A Layer 7 load balancer terminates the network traffic and reads the message within. It can make a load-balancing decision **based on the content of the message (the URL or cookie**, for example).

Caching:

Caching data can improve query performance by storing the data locally instead of accessing the data directly from the data source.

Cache tables

You use cache tables to store data that you access frequently but that does not change often.

Creating sample cache tables

You can use a sample to set up distributed caching**.**

Modern design for customer Retention:

The interface of a well-designed application manages to anticipate the user's needs accurately and serve them accordingly. Simplicity is key when designing an interface that will keep customers engaged and ultimately, retain them.

A designers' mindset should be based on human-centered design (HCD), which understands that human behavior is variable and platforms should step up to meet those behaviors. Instead of approaching issues as 'system errors' or 'coding problems,' approach them as user problems - what is it that the user finds difficult about it and why? Where and how will the user potentially drop off and how do we avoid this from a design and usability perspective?

UX researchers understand the difference between what users say versus what they actually do, but stakeholders and developers may not. By learning why users may want a particular feature, designers are well-equipped to deal with the core issue in the best way possible. Learn to dig deeper into UX research to discover the real wants and needs of users.

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