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Assignment no :- 1

Q.1 use S3 bucket and host video streaming

Ans 1. create an S3 bucket
- go to AWS console → open S3
- click on create bucket
- Enter a unique name and select your region
- uncheck "Block all public access" (so the video can be accessed by anyone)
- Click create bucket

2. upload your video files
- Inside your newly created bucket, click on upload
- select the video file you want to stream
- After uploading, make sure to set the file to public by clicking the video → Action → make public

3. Get the video URL
- After the video is uploaded click on the file in S3 get the object URL
- Example : https://your-bucket-name.s3.amazonaws.com/your-video.mp4

4. Create a simple HTML page to stream the video
- create a basic HTML file (like index.html) using code

```
<video width="600" controls>
<source src="https://your-bucket.s3/yourvideo.mp4">
your browser does not support the video tag
</video> </body> </html>
```

5. open the HTML file
- you can now open this HTML file in your browser, and the video will stream from your S3 bucket

Q.2 Discuss BMW and Hotstar case studies using Aws

Ans BMW uses Aws to power its connected car platform which supports milions of vechicles globally the platform collects, process and onayzes data from car in real-time vechicle diagnostics, predictive maintenance and navigation enhanc by BMW include:-

- Amazon EC2 for scalable compute to handle the larger volume of vechicle data
- Amazon S3 for storing massive amounts of structured and unstructured data
- Aws Lambda to process real-time data stream

Aws help Bms achive high scalability allowing it to connect milions of car seamlessly, crucial for service

Hotstar case study with Aws

Hotstar, one of India's largest streaming platform, utilizes Aws to handle massive traffic surge during live events such as (IPL) where it sees milions of concurrent viewers

- Amazon cloudfront for fast content delivery via edge location ensuring smooth streaming experiences even high-demand event
- Amazon Auto Scaling to dynamically scale infrastructure in real time, automatically handling the increase in user load
- Amazon S3 for cost-effective and durable storage of on-demand video content
- Amazon RDS to manage their database needs with minimal manual intervention

Q.3 why kubernetes and advantages and disadvantage of kubernets Explain How addidas use kubernetes

Ans Kubernetes is an open-source platform used for automating the deployment scaling, and management of containerized application It provide a framework to run distributed system resiiently, handling the complexities of infrastructure so developer can focous on writing code

Advantages of kubernetes

1- Automated operations:
- kubernetes automates deployment, scaling, and updates, reducing manual effort and operational burden

2. Scalability:
- Automatically scales application up or down on traffic or usage

3. High Availability
- Ensures fault tolerance and self-healing capabilities by restarting containers when they fail and distributing them accross multiple nodes better

4. ~~Por~~ Portability
- since kubernetes is cloud-agonstic it can run on any prombiem- on premises, private, public cloud or hybrid enviroment

Disadvantages of kubernetes

1. Complex setup and learning curve
   - kubernetes has a steep learning curve and can be challenging to set up, configure and manage without a strong understanding of containerized enviroments and orchestration

2. overhead in small deployment
   - For small-scale application, kubernetes can introduce unnessary complexity, overhed, and costs

3. Resource intensive
   - kubernetes consume significant system resource which might be overkill for simple application or small-scale workloads

How Adidas uses kubernetes

Adidas, a global sportwear brand, embraced kubernetes to enhance the scalability and resilion of its application kubernetes enable Adidas to met the growing demand for its e-commerence service while ensuring smooth operation across its digital platform

1. microservice Architecture
   - Adidas adopted a microservices architecture which is efficienty managed by kubernetes each microservice can be deployed in a container and kubernetes handle their scaling and health check

3. Faster Deployment cycle
• Kubernetes allow Adidas' development teams to deploy new features or updates more frequently and reliably this agility helps them stay competitive fast moving retail industry

4. Cost efficiency
• By dynamically allocating resource and efficiently managing workloads, Kubernetes help adidas optimizing costs related to infrastructure this particularly useful during varying demand cycles

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Q.4 What are Nagios and explain how Nagios are used in E-services

Ans Nagios is an open-sources monitoring tool used for continous monitoring of IT infrastructure applicatoh and services it help organization detect, diagonse, and resolve issues, ensuring that critical system and process are always operational

1. service uptime monitoring
• Nagios checks the availability of essential service (web server, database / APIs) to ensure they are operational, if a service goes down it immediately triggers alerts

2. Performance metrics Tracking
• monitors key performance indicators like cpu usage memory consumption, network traffic and di

disk space to avoid overloading system and prevent potential service disruption

3. Real-time Alerts
- sends instant alerts via email, SMS, other channels to system administrators or IT teams when critical services fail or predefined thresholds are breached, allowing quick response to issues

4. security Monitoring
- Tracks logs and identifies security breaches, unusal activities or vulnerabilities, ensuring the e-services platform remains secure from cyberattacks

5. Reporting and SLA compliance:
- Generates detailed reports on system uptime performance and failures helping businesses maintain service level agreements and improve service quality