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DISC Roll no → 9

Adv Develops Assignment - 1

05/05/22

Date _____
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Q.1

Use S3 bucket and Video streaming through hosting.

- i) To host video, we will first create a react project. Also select which video should be hosted.
- ii) We will start by login into AWS personal account then in services we will select S3.
- iii) We will click on create bucket and start creating the bucket by naming it properly, selecting AWS region, object ownership should be disabled. Blocking all public access thus creating S3 bucket.
- iv) Now we will upload our video on the S3 bucket.
- v) Now we will select on Cloud Front services and create new distribution we will keep the origin access control settings and create control setting. Later add name and tick on sign requests, select origin type as S3. Thus create new distribution, in addition settings, now we will add the created control setting. Later in Viewer section we will add Redirect HTTP to HTTPS and select on cache policy and origin request will cache optimizing. In settings select on Use only North America and Europe. Now select on create distribution.
- vi) So now it's important to change policy of S3 bucket, we will click on edit policy and copy paste the policy provided in the yellow alert (to change policy message).
- vii) Now we will copy the name of the created distribution in the distributed domain name, also the key of the video uploaded in the S3 bucket for that click on the blue link

under the name of video file uploaded.

viii) In the chrome browser we will paste the domain name of the distribution then `"/keyname"`.

`<domain name>/<keyname>` hit enter and you will see the video. Now copy the https URL of this page. In react project add a video tag with all the required settings such as height, width, muted, etc. then add a source tag to it and paste the copied URL in `src = "..."`.

x] ~~Through~~ this we can see the video streaming on our ~~react~~ project.

Q.2] Discuss BMW and Hotstar case studies using AWS.

• BMW: Cloud-Enabled Digital Transformation with AWS

BMW, a global automotive leader, leveraged Amazon Web Services (AWS) to enhance its digital transformation and accelerate innovation. BMW aimed to redefine the automotive experience by incorporating advanced features like personalized in-car services and predictive maintenance. AWS played a pivotal role by providing scalable infrastructure and advanced analytics.

BMW utilized AWS's cloud computing services to collect, store and process vast amounts of data from its connected vehicles, which included performance data, sensor inputs and user preferences. With AWS's suite of tools, BMW implemented machine learning algorithms to analyze this data in real-time, offering predictive insights and enabling remote diagnostics. AWS enabled BMW to build a serverless architecture, minimizing infrastructure management overhead while maximizing scalability.

• Hotstar: Scaling for massive user demand with AWS

Hotstar, India's leading video streaming platform, uses AWS to handle massive spikes in traffic, particularly during high profile events like the Indian Premier League (IPL). AWS allowed Hotstar to scale on-demand, ensuring that the platform could support millions of concurrent users without experiencing downtime or performance

degradation.

Additionally, Hotstar utilized Amazon S3 for cost effective, highly available content storage. This setup allowed for fast content delivery. Hotstar employed AWS Elastic Load Balancing, Auto Scaling and Amazon CloudFront to distribute content efficiently and provide a smooth streaming experience. This allowed Hotstar to scale horizontally and balance traffic loads across servers reducing latency for users globally.

Conclusion: Both BMW and Hotstar showcase how AWS can enable businesses to scale efficiently, enhance performance, ensure security and drive innovation in their respective industries.

Q.3] Why Kubernetes and advantages and disadvantages of Kubernetes. Explain how adidas uses Kubernetes.

• Kubernetes is an open source container orchestration platform that automates the deployment, scaling and management of containerized applications. It helps developers efficiently manage and operate microservices architecture, allowing for scalable and resilient application deployment.

• Advantages of Kubernetes

- 1] Scalability → Kubernetes can automatically scale applications based on demand using horizontal pod autoscaling. This ensures efficient resource usage during peak times.
- 2] Portability → Kubernetes supports multi-cloud or hybrid cloud strategies. It enables seamless migration between environments, from on-premises to cloud or between different cloud providers.
- 3] Efficient Resource Utilization → Kubernetes optimizes resource usage across containers and replaces helping organizations run applications efficiently and reduce infrastructure cost.
- 4] Self-healing → Kubernetes monitors the health of containers and replaces failed or unresponsive ones automatically, ensuring that applications remain available.

• Disadvantages of Kubernetes

- 1) Complexity → Kubernetes is complex to set up and manage, especially for organizations new to container orchestration. It requires expertise to configure properly and ~~to~~ troubleshoot issues.
- 2) Resource Intensive → Running a Kubernetes cluster can consume significant infrastructure resources, especially in small-scale environments. Proper resource allocation & management are crucial.
- 3) Security risks → Misconfiguration of Kubernetes clusters can lead to security vulnerabilities. Securing containers, managing access controls, and monitoring traffic are critical to minimizing risks.

• How Adidas uses Kubernetes

Adidas, a global sportswear giant, uses Kubernetes to modernize and streamline its IT infrastructure, enabling a faster and more reliable digital experience for customers.

Key use cases of Kubernetes at Adidas

- 1) Cost Efficiency → By utilizing Kubernetes, Adidas optimized resource allocation, reducing infrastructure costs.
- 2) Global Availability → Adidas has a global customer base, and Kubernetes helps ensure that their services remain available across different regions.

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

• Nagios

Nagios are open source monitoring tool used to monitor systems, networks and infrastructure. It provides comprehensive monitoring and alerting for servers, applications, services and network devices. Nagios can detect potential issues before they affect critical business processes and ensure high availability and performance of IT infrastructure. Nagios monitors system performance metrics such as CPU usage, memory utilization, disk usage and network traffic.

• How Nagios is used in E-services

In the context of E-services, which refer to digital services provided over the internet such as e-commerce, e-banking, e-learning.

1) Monitoring Service Availability → Nagios can monitor the uptime of essential services like web servers, application servers and data databases that are part of e-services. For instance, in an e-commerce platform, Nagios ensures that services such as payment gateways, product search and checkout remain operational.

2) Network Monitoring → E-services rely on network infrastructure to deliver content and services to users. Navigating Nagios monitors network devices such as routers, switches, firewalls and load balancers to ensure smooth traffic flow.

- 3) Resource Utilization and Capacity Planning → Nagios monitors the system resources such as CPU, memory, disk space and bandwidth. This is crucial in e-services when a sudden spike in web traffic could overload the system. Nagios helps ensure that resources are sufficient to handle traffic surges and can alert administrators when scaling or fixing is needed.