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| Exp.No | 01 | | Year/Sem | II/IV |
|--------|-----|--------------------------------------|----------|--------|
| **Date** | | **Cloud Account Setup and Services Overview** | **Branch** | BE CSE |

**Aim:**

To create an AWS cloud account and explore its various services.

**Procedure:**

Account Creation

1. Open your web browser and go to the official AWS website: https://aws.amazon.com/.

2. Click on the "Create an AWS Account" button on the top-right corner.

3. Enter a valid email address and choose an AWS account name.

4. Create a strong password that meets AWS security requirements.

5. Fill in your contact information (name, phone number, country/region).

6. Provide payment details (credit/debit card) for verification.

7. Enter your billing address and confirm the details.

8. AWS will send a One-Time Password (OTP) to your email or phone.

9. Enter the OTP in the verification field to confirm your identity.

10. Choose the Basic (Free) Plan to access AWS Free Tier services.

11. Accept the terms and conditions and click "Continue".

12. After account creation, you will receive a confirmation email.

13. Go to the AWS Management Console login page.

14. Enter your email address and password to log in.

Exploring AWS Management Console

1.      After logging in, access the AWS Management Console dashboard.

2.      Use the navigation pane to explore AWS services like EC2, S3, and Lambda.

3.      Use the search bar at the top to quickly find AWS services.

4.      Click on any service to view its features and functionalities.

5.      Customize your dashboard layout to prioritize frequently used services.

6.      Visit the Billing Dashboard via the account menu to monitor usage.

7.      Set up billing alerts to notify you of high usage.

8.      Track AWS Free Tier usage to avoid unexpected charges.

9.      Access AWS documentation and tutorials for guidance.

10.     Experiment with different services using the Free Tier.

**AWS:**

Amazon Web Services (AWS) is a cloud service provider that offers computing services over the internet. It provides a platform for businesses to access IT resources like servers, storage, and databases.It is the world's most comprehensive and broadly adopted cloud platform, offering over 200 services including compute, storage, and databases.

**Services in AWS:**

**Compute**

EC2
Lightsail
Lambda
Batch
Elastic Beanstalk
Serverless Application Repository
AWS Outposts
EC2 Image Builder
AWS App Runner
AWS SimSpace Weaver
EC2 Global View
Parallel Computing Service

**Containers**

Elastic Container Service
Elastic Kubernetes Service
Red Hat OpenShift Service on AWS
Elastic Container Registry

**Storage**

S3
EFS
FSx
S3 Glacier
Storage Gateway
AWS Backup
AWS Elastic Disaster Recovery

**Database**

Aurora and RDS
ElastiCache
Neptune
Amazon QLDB
Amazon DocumentDB
Amazon Keyspaces
Amazon Timestream
DynamoDB
Amazon MemoryDB
Amazon Aurora DSQL
Oracle Database@AWS

**Migration & Transfer**

AWS Migration Hub
AWS Application Migration Service
Application Discovery Service
Database Migration Service
AWS Transfer Family
AWS Snow Family
DataSync
AWS Mainframe Modernization
Amazon Elastic VMware Service (Preview)

**Networking & Content Delivery**

VPC
CloudFront
API Gateway
Direct Connect
AWS App Mesh
Global Accelerator
AWS Cloud Map
Amazon Application Recovery Controller
AWS Private 5G
Route 53
AWS Data Transfer Terminal

**Developer Tools**

CodeCommit
CodeBuild
CodeDeploy
CodePipeline
Cloud9
CloudShell
X-Ray
AWS FIS
CodeArtifact
Amazon CodeCatalyst
AWS AppConfig
Amazon Q Developer (Including Amazon CodeWhisperer)
Infrastructure Composer
AWS App Studio

**Customer Enablement**

AWS IQ
Managed Services
Activate for Startups
Support
AWS re:Post Private

**Robotics**

AWS RoboMaker

**Blockchain**

Amazon Managed Blockchain

**Satellite**

Ground Station

**Quantum Technologies**

Amazon Braket

**Management & Governance**

AWS Organizations
CloudWatch
AWS Auto Scaling
CloudFormation
AWS Config
OpsWorks
Service Catalog
Systems Manager
Trusted Advisor
Control Tower
AWS Well-Architected Tool
Amazon Q Developer in chat applications (previously AWS Chatbot)
Launch Wizard
AWS Compute Optimizer
Resource Groups & Tag Editor
Amazon Grafana
Amazon Prometheus
AWS Resilience Hub
Incident Manager
AWS License Manager
Service Quotas
AWS Proton
CloudTrail
AWS Resource Explorer
AWS User Notifications
AWS Health Dashboard
AWS Telco Network Builder

**Media Services**

Kinesis Video Streams
MediaConvert
MediaLive
MediaPackage
MediaStore
MediaTailor
Elemental Appliances & Software
Elastic Transcoder
MediaConnect
Amazon Interactive Video Service
AWS Deadline Cloud

**Machine Learning**

Amazon SageMaker AI
Amazon Augmented AI
Amazon CodeGuru
Amazon DevOps Guru
Amazon Comprehend
Amazon Forecast
Amazon Fraud Detector
Amazon Kendra
Amazon Personalize
Amazon Polly
Amazon Rekognition
Amazon Textract
Amazon Transcribe
Amazon Translate
AWS DeepComposer
AWS DeepRacer
AWS Panorama
Amazon Monitron
AWS HealthLake
Amazon Lookout for Vision
Amazon Lookout for Equipment
Amazon Lookout for Metrics
Amazon Lex
Amazon Comprehend Medical
AWS HealthOmics
Amazon Bedrock
AWS HealthImaging
Amazon Q
Amazon Q Business

**Analytics**

Athena
Amazon Redshift
CloudSearch
Amazon OpenSearch Service
Kinesis
QuickSight
AWS Data Exchange
AWS Lake Formation
MSK
AWS Glue DataBrew
Amazon FinSpace
AWS Glue
Amazon Data Firehose
EMR
AWS Clean Rooms
Amazon SageMaker
AWS Entity Resolution
Managed Apache Flink
Amazon DataZone

**Security, Identity, & Compliance**

Resource Access Manager
Cognito
Secrets Manager
GuardDuty
Amazon Inspector
Amazon Macie
IAM Identity Center
Certificate Manager
Key Management Service
CloudHSM
Directory Service
AWS Firewall Manager
AWS Artifact
Detective
AWS Signer
AWS Private Certificate Authority
Security Hub
AWS Audit Manager
Security Lake
WAF & Shield
Amazon Verified Permissions
AWS Payment Cryptography
AWS Security Incident Response
IAM

**Cloud Financial Management**

AWS Marketplace
AWS Billing Conductor
Billing and Cost Management

**Front-end Web & Mobile**

AWS Amplify
AWS AppSync
Device Farm
Amazon Location Service

**Application Integration**

Step Functions
Amazon AppFlow
Amazon MQ
Simple Notification Service
Simple Queue Service
SWF
Managed Apache Airflow
Amazon EventBridge
AWS B2B Data Interchange

**Business Applications**

Amazon Connect
Amazon Chime
Amazon Simple Email Service
Amazon WorkDocs
Amazon WorkMail
AWS Supply Chain
AWS AppFabric
AWS Wickr
Amazon Chime SDK
Amazon One Enterprise
Amazon Pinpoint
AWS End User Messaging

**End User Computing**

WorkSpaces
AppStream 2.0
WorkSpaces Secure Browser
WorkSpaces Thin Client

**Internet of Things**

IoT Analytics
IoT Device Defender
IoT Device Management
IoT Greengrass
IoT SiteWise
IoT Core
IoT Events
AWS IoT FleetWise
IoT TwinMaker

**Game Development**

Amazon GameLift Servers
Amazon GameLift Streams

## i) Compute Service ;

Compute services are a set of cloud-based services that provide computing power for building, deploying, and managing applications. They are also known as Infrastructure-as-a-Service (IaaS).

● Amazon EC2 - Amazon EC2 stands for Amazon Elastic Compute Cloud. Provides virtual machines (VMs) with storage, memory, central processing units (CPUs), and networking capabilities.

● Amazon Lambda -A cloud computing service that allows developers to run code without managing servers.Allows users to run code without managing or provisioning servers.

● Amazon Lightsail - A cloud service offered by Amazon Web Services (AWS) that provides a simplified way to launch and manage virtual private servers (VPS).A virtual private server (VPS) that allows users to build websites and applications.Allows users to deploy web app tech stacks like Node.js, LAMP, Nginx, and MEAN.

● Amazon Elastic Kubernetes Service - A service that allows users to run Kubernetes in AWS and on-premises data centers. It automates the management of Kubernetes clusters. Allows users to manage and run their infrastructure in a Kubernetes environment.Kubernetes is an open-source tool that helps users automate, scale, deploy, and operate containerized applications

## ii) Storage Services :

Cloud-based services that provide storage for data. These services are designed to be reliable, scalable, and secure.

● Amazon S3 - Amazon Simple Storage Service (S3) is a cloud storage service that lets users store and access data online.

● Amazon Elastic Block Store (EBS) - Amazon Elastic Block Store (EBS) is a cloud-based storage service that allows users to create and manage storage volumes for Amazon EC2 instances. These volumes can be used to store files, install applications, and more.

● Amazon Glacier - Amazon Glacier is a cloud storage service that is used to archive and back up data that is not used frequently

● Amazon Elastic File System (EFS) - Amazon Elastic File System (EFS) is a cloud-based file storage service offered by Amazon Web Services (AWS) that allows users to create and access shared file systems that can be easily scaled up or down based on their needs, without the need to manage underlying storage infrastructure

## iii) Database:

AWS offers a variety of cloud database services, including relational databases, key-value databases, and graph databases. These databases are designed to be secure, reliable, and high-performing.

●      Amazon Relational Database Service (RDS) - A managed service that includes options like PostgreSQL, MySQL, and Aurora

●      Amazon Aurora - A fully managed relational database built for the cloud.

●      Amazon DynamoDB - A purpose-built NoSQL database

## iv) Deployment & Management:

Amazon Web Services (AWS) offers a variety of deployment and management tools, including services for code management, application delivery, and infrastructure management.

Deployment Tools -

●      Amazon Elastic Container Service:

●      AWS Elastic Beanstalk

●      AWS CodeDeploy. Management Tools -

●      AWS CodePipeline

●      AWS CodeCommit

●      AWS Management Console

## v) Analytics & AI in AWS:

A comprehensive set of capabilities for every analytics workload, optimized for price performance and scale

●      AWS Glue – ETL (Extract, Transform, Load) Service - AWS Glue is a serverless data integration service used for data extraction, transformation, and loading (ETL).It automates data preparation for analytics and machine learning.

●      Amazon Kinesis – Real-time Data Streaming - Amazon Kinesis allows businesses to collect, process, and analyze real-time data streams.It is commonly used for log analytics, IoT data processing, and live video streaming.

●      Amazon QuickSight – Business Intelligence & Visualization -Amazon QuickSight is a cloud-powered BI tool for creating interactive dashboards and reports.It helps organizations visualize data and uncover insights.

**vi) Mobile & Application Services in AWS:**

AWS offers a suite of tools to help developers build, deploy, and manage mobile and web applications efficiently. These services provide scalability, security, and seamless integration with other AWS services.

**Applications of AWS:**

Amazon Web Services (AWS) provides a robust cloud platform that supports a wide range of applications across various industries.

**1. Web Hosting and Content Delivery:**

● Static Websites: AWS S3 can host static websites, serving HTML, CSS, and JavaScript files directly from the cloud.

● Dynamic Websites: AWS EC2 can run web applications using various frameworks (e.g., Node.js, Django, Ruby on Rails).

● Content Delivery: Amazon CloudFront, a content delivery network (CDN), caches content at edge locations to reduce latency and improve load times for users globally.

**2. Data Storage and Backup:**

● Backup Solutions: AWS Backup automates backup processes across AWS services, ensuring data durability and compliance.

● Archiving: Amazon S3 Glacier provides low-cost storage for data archiving and long-term backup.

● Data Lakes: AWS S3 can be used to create data lakes for storing vast amounts of structured and unstructured data, enabling analytics and machine learning.

**3. Big Data and Analytics:**

● Data Warehousing: Amazon Redshift is a fully managed data warehouse service that allows for complex queries and analytics on large datasets.

● Real-Time Analytics: Amazon Kinesis enables real-time data streaming and analytics, allowing businesses to process and analyze data as it arrives.

● Data Processing: AWS Glue is a fully managed ETL (Extract, Transform, Load) service that prepares data for analytics.

## 4. Machine Learning and Artificial Intelligence:

● Pre-trained AI Services: AWS offers various AI services like Amazon Rekognition (image and video analysis), Amazon Comprehend (natural language processing), and Amazon Polly (text-to-speech).

● Data Labeling: Amazon SageMaker Ground Truth helps in building highly accurate training datasets for machine learning.

● Model Training and Deployment: Amazon SageMaker provides tools to build, train, and deploy machine learning models at scale.

## 5. DevOps and Continuous Integration/Continuous Deployment (CI/CD):

Infrastructure as Code: AWS CloudFormation allows users to define and provision AWS infrastructure using code, enabling version control and automation.

● CI/CD Pipelines: AWS CodePipeline automates the build, test, and deployment phases of application development, facilitating rapid delivery.

● Monitoring and Logging: Amazon CloudWatch provides monitoring and logging services, allowing teams to track application performance and troubleshoot issues.

● Infrastructure as Code: AWS CloudFormation allows users to define and provision AWS infrastructure using code, enabling version control and automation.

## Output:
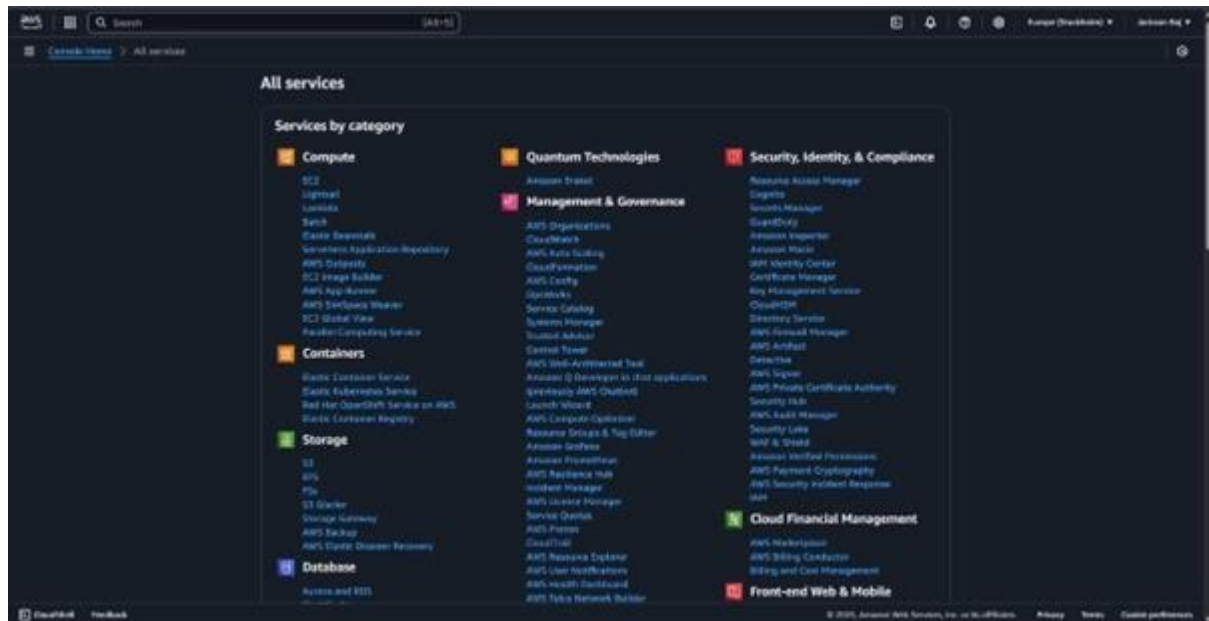


## Conclusion:

Cloud computing is a fantastic platform that offers servers, storage, and applications helpful for managing the business in a secure way from anywhere in the world. It requires a good internet connection to offer highly secure, cost-effective, and scalable resources.

## Result:

Thus, An AWS cloud account is successfully created and explored various AWS services.