📘 1. What is AWS (Amazon Web Services)?

Amazon Web Services (AWS) is a comprehensive cloud computing platform offered by Amazon that provides a broad set of **on-demand cloud services** — including compute, storage, databases, analytics, networking, machine learning, security, and more — to individuals, startups, enterprises, and governments. AWS allows you to access scalable computing power and storage over the internet, with a **pay-as-you-go pricing model**.

◆ Key Characteristics

- **Cloud Computing Platform**: Enables computing without owning physical servers.
- **Global Infrastructure**: AWS has multiple **regions and availability zones** around the world to ensure reliability and low latency.
- **240+ Services**: Including compute (EC2), storage (S3), databases (RDS), AI/ML, security, developer tools, and more.
- **Security & Compliance**: Enterprise-grade security, encryption, identity management, and compliance offerings.

🧠 Benefits

- **Cost-effective**: No upfront hardware costs; pay only for what you use.
- **Scalable & Flexible**: Scale up/down resources based on demand.
- **Reliable**: High availability and fault tolerance.

🔗 **Official Info:** https://aws.amazon.com/what-is-aws/

🔗 AWS Documentation Overview: https://docs.aws.amazon.com/whitepapers/latest/aws-overview/introduction.html

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🤖 2. What is AWS Bedrock?

AWS Bedrock is a fully managed service from AWS that lets developers build generative AI applications using a choice of high-performance **foundation models (FMs)** from multiple providers — such as Anthropic, AI21 Labs, Cohere, Stability AI, Meta, and Amazon — through a **single API**.

🧠 Key Features

- **Model Choice**: Access and experiment with models like Claude, Titan, Jurassic, and Stable Diffusion in one place (no vendor lock-in).
- **Customizations**: Fine-tune models with your own data using techniques like **instruction tuning**.
- **Secure & Scalable**: Enterprise-grade security and serverless deployment with no infrastructure to manage.
- **Integration**: Works with other AWS services (S3, IAM, VPC).

Bedrock simplifies building generative AI capabilities such as chatbots, summarization tools, and document understanding, while handling provisioning, scaling, model selection, and security.

🔗 Official AWS Bedrock Page: https://aws.amazon.com/bedrock/
(*Note: actual AWS Bedrock home page link should be used; above is conceptual — search "AWS Bedrock" on AWS if needed*)

🧠 3. What is Amazon SageMaker?

Amazon SageMaker (recently branded *SageMaker AI*) is AWS's fully managed machine learning (ML) service that enables developers and data scientists to **build, train, and deploy machine learning models at scale**.

- ◆ **What SageMaker Provides**

- **Data Preparation & Features**: Tools like **Data Wrangler** for data cleaning and exploration.

- **Notebooks & IDE**: Hosted Jupyter notebooks for data science workflows.

- **Model Training & Tuning**: Train models using built-in or custom algorithms with automatic hyperparameter optimization.

- **Deployment & Monitoring**: Deploy models as real-time endpoints with monitoring.

📌 **Why Use SageMaker?**

- Reduces complexity of ML workflows.

- Integrates with AWS ecosystem (S3, Lambda, CloudWatch).

- Supports popular frameworks (TensorFlow, PyTorch).

🔗 Official SageMaker Info: https://aws.amazon.com/sagemaker/

🟦 4. What is RAG (Retrieval-Augmented Generation)?

Retrieval-Augmented Generation (RAG) is an advanced AI technique that combines **information retrieval** with **generative models** to produce more accurate, up-to-date, and context-aware responses. Instead of generating text solely from the model's internal learned knowledge, RAG systems **retrieve relevant documents or data** from an external knowledge base and **augment the query with that context** before generating the answer.

🧠 **How RAG Works**

1. **Retrieve** relevant documents or passages based on semantic similarity to the user query.

2. **Augment** the original prompt with the retrieved data.

3. **Generate** the response using a language model with the augmented prompt.

📌 **Why RAG?**

✔ Produces responses grounded in real, specific, domain-relevant data.
✔ Fills gaps in model knowledge with up-to-date information.
✔ Improves accuracy and factual correctness.

🔗 AWS RAG Docs (SageMaker):
https://docs.aws.amazon.com/sagemaker/latest/dg/jumpstart-foundation-models-customize-rag.html

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🎓 5. What is K21 Academy?

K21 Academy is a technology training and upskilling platform based in India that offers **job-oriented courses** focused on cloud computing, AI/ML, DevOps, data engineering, and

related technologies. It combines instructor-led training, hands-on labs, projects, and placement assistance to help learners prepare for real-world roles.

◆ **Highlights**

- Offers **cloud & AI/ML bootcamps**, including AWS, Azure, Google Cloud, and DevOps programs.

- Provides hands-on practice with real projects and labs.

- Career support, resume prep, interview guidance, and community access.

🔗 Official Site: https://k21academy.com/

🖼️ **Summary Table**

Topic	Definition	Official Link
AWS	Cloud computing platform with over 240 services, scalable, secure, pay-as-you-go.	https://aws.amazon.com/what-is-aws/
AWS Bedrock	Managed generative AI service with access to multiple foundation models.	https://aws.amazon.com/bedrock/
Amazon SageMaker	Managed machine learning platform for building, training, and deploying models.	https://aws.amazon.com/sagemaker/
RAG	Technique combining retrieval from knowledge bases with	https://docs.aws.amazon.com/sagemaker/latest/dg/jumpstart-foundation-models-customize-rag.html

Topic	Definition	Official Link
	generative AI.	
K21 Academy	Tech training platform offering cloud, AI/ML, and DevOps programs.	