345 Republic Road, Darrenwood, 2194 | PO Box 5101, Cresta, 2118 | Tel: +27 11 022 6812 | Email: info@praesignis.com | Web: www.praesignis.com

AWS re/Start Portfolio Project

Project Section 1:

Each group will prepare an AWS Services Presentation. Groups are to decide their group name. The presentation will be towards a fictional or an actual cafe that:

1. Has not migrated to the Cloud
2. Is using the hybrid model – i.e. On premises and Cloud Infrastructure
3. Utilizing another Cloud Platform

Learners are then present to a panel of their choice, about the services, pricing, and benefits of moving to AWS.

Project Section 2:

Learners are required to create a static Amazon S3 website of the above café of their choosing. Website must include:

- Café name
- Minimum of 5 items on the menu
- Description of the business
- Contact information

Groups:

Group 1:	Group 2:	Group 3:	Group 4:	Group 5:

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Problem Statement for FreshlyGround Cafe's Cloud Migration

FreshlyGround, a beloved local cafe, faces operational challenges due to outdated on-premises systems. The lack of a robust online presence hinders its ability to attract and retain customers in today's digital landscape.

Objective: To overcome these challenges, FreshlyGround aims to migrate its IT infrastructure to the cloud. The primary goals are to enhance operational efficiency, improve customer engagement, and provide a seamless experience for patrons.

Proposed Solution:

4. **Cloud Infrastructure Migration:**
    - FreshlyGround plans to migrate its IT systems to a reliable cloud service provider, specifically Amazon Web Services (AWS).
5. **Online Presence Enhancement:**
    - The cafe will develop a cloud-hosted website to bolster its online presence. This website will allow customers to view the menu and prices conveniently.

Key Services:

- **Amazon S3 (Simple Storage Service):**
    - **Benefits:**
        - Highly Scalable: Amazon S3 can handle varying data volumes, from gigabytes to petabytes, without compromising performance.
        - Reliable: Designed for 99.999999999% durability and 99.99% availability, ensuring data safety and accessibility.
        - Secure: Robust security features, including encryption at rest and in transit, access control policies, and integration with AWS Identity and Access Management (IAM).
    - **Features:**
        - Easy Integration: Seamlessly integrates with other AWS services.
        - Cost-Effective: Provides cost savings compared to traditional hosting.
        - Custom Domain Support: Allows custom domain names for branding.
- **Static Website Hosting:**
    - Freshly Ground can directly host static websites from an S3 bucket. This cost-effective approach serves static content (HTML, CSS, JavaScript, and images) without requiring a separate web server.

Certainly! Let's design an AWS architecture for Freshly Ground Cafe's cloud migration. I'll create a high-level architecture that incorporates the specified services:

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FreshlyGround Cafe's AWS Cloud Architecture

1. Compute Services

Amazon EC2 (Elastic Compute Cloud)

- **Purpose**:
  - Host Freshly Ground's applications, web servers, and databases.
  - Provide scalable compute capacity.
- **Implementation**:
  - Create EC2 instances for different application components (e.g., menu management, order processing).
  - Use Auto Scaling to handle varying workloads.

AWS Lambda

- **Purpose**:
  - Execute serverless functions in response to events (e.g., new orders, website visits).
- **Implementation**:
  - Refactor monolithic code into Lambda functions.
  - Trigger functions based on events (e.g., S3 uploads, API Gateway requests).

2. Storage Services

Amazon S3 (Simple Storage Service)

- **Purpose**:
  - Store static content (HTML, CSS, images) for the cafe's website.
  - Host the website directly from S3 buckets.
- **Implementation**:
  - Create S3 buckets for website assets.
  - Enable static website hosting.

Amazon EBS (Elastic Block Store)

- **Purpose**:
  - Provide block-level storage volumes for EC2 instances.
  - Store data persistently.

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- **Implementation**:
  - Attach EBS volumes to EC2 instances (e.g., for database storage).
  - Migrate existing databases by attaching EBS volumes to RDS instances.

3. Database Services

Amazon RDS (Relational Database Service)

- **Purpose**:
  - Host relational databases (e.g., menu items, customer orders).
- **Implementation**:
  - Migrate on-premises databases to RDS instances.
  - Use Multi-AZ for high availability.

Amazon DynamoDB

- **Purpose**:
  - Store NoSQL data (e.g., customer profiles, preferences).
- **Implementation**:
  - Refactor applications to use DynamoDB.
  - Migrate existing NoSQL databases to DynamoDB.

4. Security Services

AWS IAM (Identity and Access Management)

- **Purpose**:
  - Control access to AWS resources.
  - Set up roles and policies for EC2 instances and Lambda functions.

Amazon Cognito

- **Purpose**:
  - Provide user authentication and management.
- **Implementation**:
  - Integrate Cognito to secure user authentication.
  - Migrate user data to Cognito user pools.

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5. Migration Services

AWS Database Migration Service (DMS)

- **Purpose**:
  - Replicate data from on-premises databases to RDS or DynamoDB.
  - Perform schema conversion if needed.

AWS Server Migration Service (SMS)

- **Purpose**:
  - Migrate VMs from on-premises to EC2 instances.
  - Replicate and launch VMs in AWS.

Remember that this is a high-level architecture. Detailed implementation will depend on FreshlyGround's specific requirements, workload, and security considerations. Feel free to customize and expand upon this architecture as needed! 😊

Certainly! Let's estimate the cost for FreshlyGround Cafe's AWS architecture based on the services we've discussed. Keep in mind that actual costs may vary based on usage, region, and specific configurations. I recommend using the **AWS Pricing Calculator** to get a more accurate estimate tailored to your specific needs.

Here's a high-level breakdown of the estimated costs for each service:

6. **Compute Services**:
   - **Amazon EC2 (Elastic Compute Cloud)**:
     - Costs depend on the instance type (e.g., t2.micro, m5.large) and usage hours.
     - Consider using reserved instances for cost savings.
   - **AWS Lambda**:
     - Billed based on the number of requests and execution time (duration).
     - Typically cost-effective for event-driven workloads.
7. **Storage Services**:
   - **Amazon S3 (Simple Storage Service)**:
     - Costs depend on storage size, data transfer, and request rates.
     - S3 Standard storage is suitable for static content hosting.
   - **Amazon EBS (Elastic Block Store)**:
     - Costs vary based on volume type (SSD, HDD) and storage size.
     - Snapshots incur additional charges.

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8. **Database Services**:
    - **Amazon RDS (Relational Database Service)**:
        - Charged based on the database instance type, storage, and data transfer.
        - Includes on-demand and reserved instances.
    - **Amazon DynamoDB**:
        - Costs based on provisioned read/write capacity and storage.
9. **Security Services**:
    - **AWS IAM (Identity and Access Management)**:
        - No direct cost; included with AWS account.
    - **Amazon Cognito**:
        - Costs depend on monthly active users (MAUs) and data storage.
10. **Migration Services**:
    - **AWS Database Migration Service (DMS)**:
        - No additional cost for DMS itself, but consider EC2 instance costs for replication.
    - **AWS Server Migration Service (SMS)**:
        - No direct cost for SMS; consider EC2 instance costs for migrated VMs.

Remember to configure the details (e.g., instance types, storage sizes, usage patterns) in the **AWS Pricing Calculator** to get a precise estimate. Feel free to explore different scenarios and adjust parameters as needed. 😊