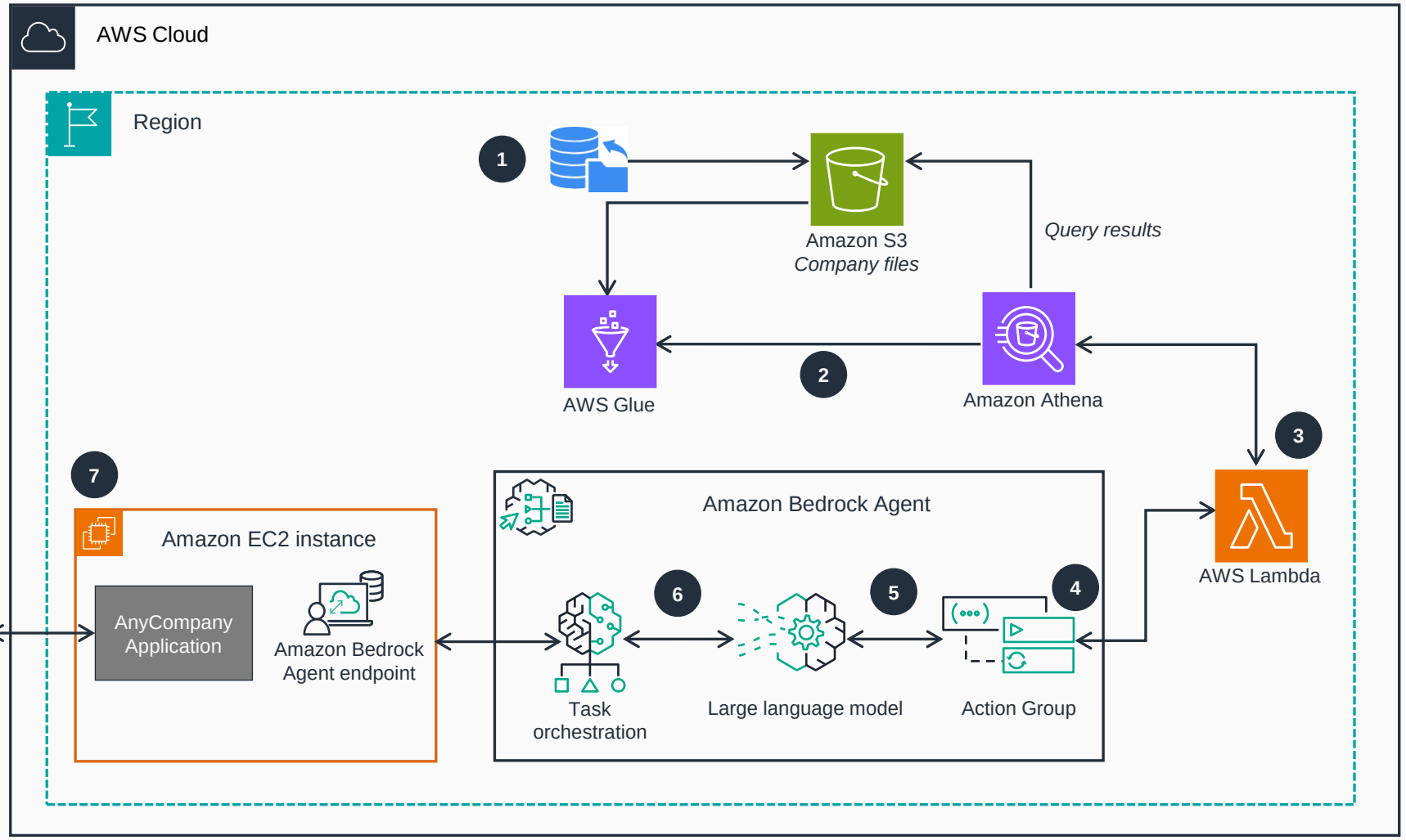
Guidance for Retrieving Data Using Natural Language Queries on AWS

This architecture diagram illustrates how to convert natural language inputs into SQL queries to fetch data.



1. Company data is loaded into **Amazon Simple Storage Service** (Amazon S3), which serves as the data source for **AWS Glue**.

2. **Amazon Athena** is a serverless query service that analyzes **Amazon S3** data using standard SQL with **AWS Glue** managing the data catalog. **AWS Glue** reads unstructured data from **Amazon S3**, creates queryable tables for **Athena**, and stores query results back in **Amazon S3**. This integration, supported by crawlers and the **AWS Glue** Data Catalog, streamlines data management and analysis.

3. The **AWS Lambda** function acts as the execution engine, processing the SQL query and interfacing with **Athena**. Proper configuration of resource policies and permissions is critical for secure and efficient operations, maintaining the integrity of the serverless compute environment.

4. The main purpose of an action group in an **Amazon Bedrock** agent is to provide a structured way to perform multiple actions in response to a user's input or request. This allows the agent to take a series of coordinated steps to address the user's needs, rather than just performing a single action. This action group includes an OpenAPI schema. The schema is needed so that the **Amazon Bedrock** agent knows the format structure and parameters for the action group to interact with the compute layer. In this case, the compute layer is a **Lambda** function.

5. An instruction prompt is provided to the **Amazon Bedrock** agent to help with orchestration. The **Amazon Bedrock** agent orchestrates the tasks by interpreting the input prompt and delegating specific actions to the LLM.

6. Collaboration with the task orchestrator in the previous step enables the LLM to process complex queries and generate outputs that align with the user's objectives. The chain of thought mechanism ensures that each step in the process is logically connected, leading to precise action execution. The model processes the user's natural language input, translating it into actionable SQL queries, which are then used to interact with data services.

7. The **Amazon Bedrock** agent endpoint serves as the bridge between the user's application that runs on an **Amazon Elastic Compute Cloud** (Amazon EC2) instance on AWS and the **Amazon Bedrock** agent, facilitating the transfer of input data in real-time. This setup is essential for capturing inputs that trigger the agent driven process. Natural language is used to query data and return the response back to the user through the user interface. The results from the **Athena** query are returned to the user from the **Lambda** function through the **Amazon Bedrock** agent endpoint.

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AWS Reference Architecture