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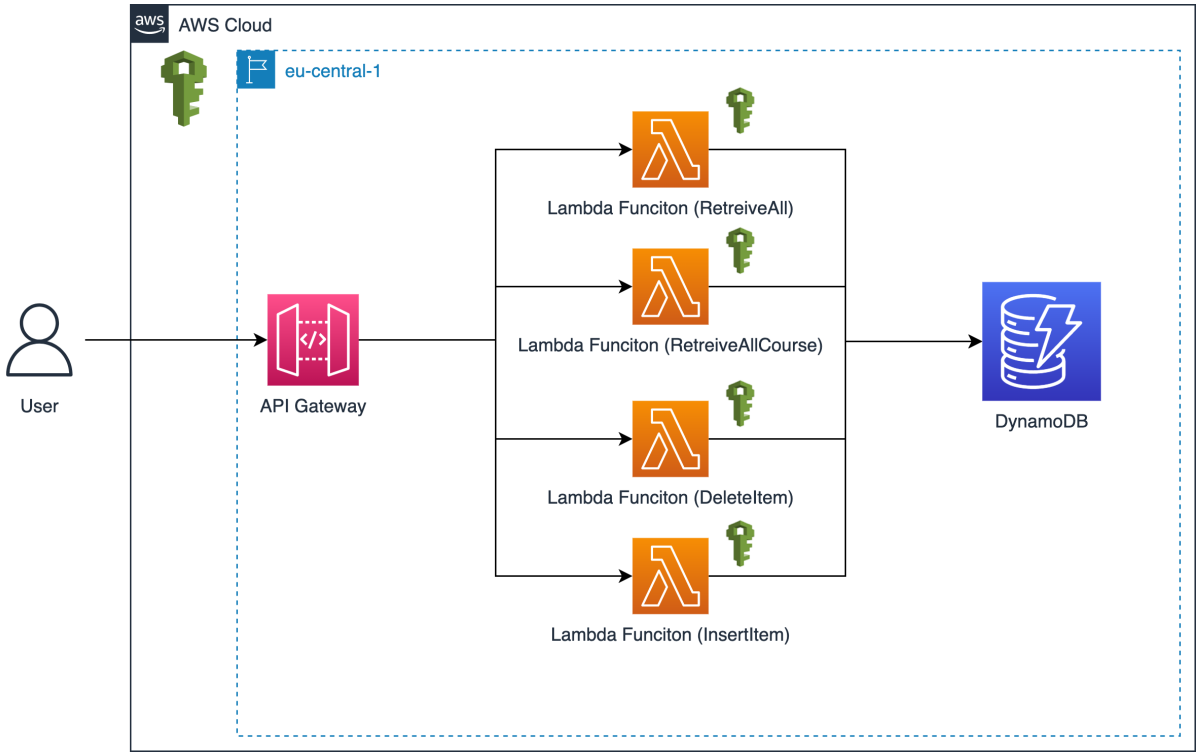
Cloud Solutions Architecture

Individual assignment 2

1. Architecture diagram represented in draw.io



2. Explanation of the main components and technical decisions

- **AWS Cloud:** this will be a helpful solution for IE's problems since the on-demand delivery of IT resources provides several benefits for IE's case study. For IE's case study, going with a server less architecture eliminates the need for managing the infrastructure, as well as providing scaling and cost-effective capabilities.

- **IAM:** In this assignment, IAM will be used used to manage authentication and authorisation for the AWS resources. More specifically, IAM roles and policies have been created to grant the Lambda Functions the permissions

needed to access other AWS resources, in this case the DynamoDB (everything sticking to the least privilege principle).

- **API Gateway:** To create the API, we use API Gateway, that acts as an entry point for the REST API. Its purpose is to receive incoming requests and forward them to the corresponding Lambda Function. It also allows the creation of the endpoints.
- **Lambda Functions:** Lambda Functions might be the most important aspect of this serverless architecture. Their purpose is to handle the logic behind the processing of incoming requests. One Lambda Function is created to handle the different endpoints that are required: retrieving all knowledge items, retrieving items by course, inserting new items, and deleting items. These Lambda Functions are triggered by the API Gateway when it receives a request.
- **DynamoDB:** And last but not least, the DynamoDB is a NoSQL database service provided by AWS that provides fast and scalable performance, just what we are looking for in this assignment. I chose this database due to its flexibility and scalability, as well as providing easy storing and retrieval of JSON-like documents such as the Knowledge Catalog. The database is used to store the Knowledge Catalog items, storing a table with the attributes for Course, title, and description.

3. Monthly cost estimation (with justified assumptions). You have to consider the costs outside of the AWS Free Tier.

	Monthly Cost	Yearly Cost	Assumptions
Amazon DynamoDB	$26,14	$313,68	Standard DynamoDB
API Gateway	$19,1	$145,2	1 million request per month
AWS Lambda	0		1 million requests per month for free
Total	**$45,24**	**$542,88**	

4. Instructions to test the assignment

I. RetrieveAll URL: https://ont5qncdz6.execute-api.eu-west-1.amazonaws.com/prod/retrieveall

a) No input needed -> should return a json with all the elements in the table

II. RetrieveAllCourse URL: https://ont5qncdz6.execute-api.eu-west-1.amazonaws.com/prod/retrievecourse

a) Input: {“Course”: “XXXX”} -> Should return all the elements in the table with the selected Course

III. InsertItem URL: https://ont5qncdz6.execute-api.eu-west-1.amazonaws.com/prod/insertitem

a) Input: {“Title”: “XXXX”, “Course”: “XXXX”, “Description”: “XXXX”} -> Input needs to be in this format

IV. DeleteItem URL: https://ont5qncdz6.execute-api.eu-west-1.amazonaws.com/prod/deleteitem

a) Input: {“Title”: “XXXX”, “Course”: “XXXX”} -> Deletes the item with the selected title.