Technische Berufsschule Zürich TBZ
Höhere Fachschule

Semesterarbeit Einreichungsformular / Klasse ITCNE23

Im Folgenden beschreibt der Studierende das geplante Thema seiner Zertifikatsarbeit. Der Studierende orientiert sich dabei an dem Bewertungsraster. Der begleitende Dozent entscheidet, ob es sich dabei um ein geeignetes Thema handelt und fügt seine Kommentare und Überlegungen hinzu.

Name und Vorname des Studierenden

Fabio Beti

Titel der Semesterarbeit

Automating Infrastructure Deployment with AWS Lambda and SQS

Zu behandelnde Themenfelder / Module (bitte ankreuzen)

	Pkt.	Themenfeld / Modul	
1.		Projektmanagement	Pflicht
2.		Netzwerktechnik / Netzwerkarchitektur	☐
3.		Infrastructure as Code (Ansible, CI/CD Pipelines)	☐
4.		Geschäftsprozesse / BPMN / Workflow	☐
5.		IT Service Management (SLA, Service Katalog)	☐
6.		FAAS – Functions as a Service (Python, FAAS in der Cloud)	☒
7.			☐
8.			☐
9.			☐

Kurzbeschreibung des Themas der Semesterarbeit (1 bis max. 2 Seiten)

Problemstellung

The problem addressed by my semester project pertains to the labor-intensive and time-consuming manual procedures involved in provisioning AWS EC2 instances and resource management. I am addressing this challenge by implementing an automated system using AWS Lambda and SQS. I am streamlining and optimizing the deployment and administration of EC2 instances, providing a more efficient, time-saving, and scalable approach to resource management within the AWS environment. By automating these processes, I am developing an effective solution that significantly reduces the overhead associated with manual provisioning and resource management, ultimately enhancing operational efficiency and scalability.

Ziele

1. Establish an Amazon Simple Queue Service (SQS) infrastructure to effectively manage and handle incoming messages. **Measure** the performance by monitoring the queue's throughput and response times
2. Engineer a Lambda function to automate the provisioning of Amazon Elastic Compute Cloud (EC2) instances, enhancing operational efficiency. **Measure** the time and cost savings achieved through automated EC2 provisioning
    a. ***Create*** *and* ***terminate*** *EC2 instances as needed.* **Measure** the number of instances created and terminated automatically
3. Design a robust communication interface to facilitate seamless integration between the Camunda workflow automation platform and Amazon SQS, in collaboration with Yves Wetter, ensuring a reliable and scalable workflow orchestration solution. **Ensure** that the communication interface facilitates reliable and scalable workflow orchestration

Terminplan

Task	Von	Bis
Einreichungsformular	30.10.2023	06.11.2023
1. Sprint		27.11.2023
2. Sprint		18.12.2023
Präsentation vorbereiten	01.01.2023	31.01.2024
3. Sprint		31.01.2024

Sachmittel

GitHub / Projects
AWS Learn Lab
Camunda / Camunda Modeler

Vorgaben, Methoden und Werkzeuge

In this semester project, a diverse array of software tools is employed to meticulously guarantee and efficiently manage the project's successful execution. A Kanban board is meticulously crafted using

GitHub Projects to orchestrate the prioritized handling of tasks. Moreover, the time-honored Waterfall project management methodology is judiciously embraced. The technical components are methodically realized through the utilization of VS Code. The comprehensive progression of the semester project is assiduously recorded on GitHub, driven by a keen personal interest in maintaining a thorough record.

Risiken

Risk	Probability	Prevention
Restrictions from AWS Academy Learn Lab	Low	In the face of significant obstacles hindering the attainment of my goals, I am prepared to transition to Cloud Guru, a renowned platform for cloud technology expertise. This decision reflects my commitment to achieving project objectives with professionalism and efficacy.
Knowledge gaps	Medium	Invest enough time to build up the knowledge.
Define the lambda function with FAAS standard	Low	I aim to craft the Lambda function in compliance with FaaS standards and industry best practices, emphasizing professionalism and effectiveness.

Entscheid des begleitenden Dozenten

Bitte ankreuzen

- ☐ Genehmigt ☐
- ☐ Zu verbessern ☐
- ☐ Abgelehnt ☐

Begleitender Dozent

Ort und Datum: _____

Name & Unterschrift: _____

Bewertungsraster für Beurteilung des Antrages

Kriterium	Kommentare	Erfüllt
Anforderungen an die Form (Strukturierung) der Semesterarbeit		
Problemstellung		☐
Ziele (mindestens drei!)		☐
Risiken bezogen auf Zertifikatsarbeit		☐
Themenfelder (mindestens zwei!)		☐
Anforderungen an Qualität der Semesterarbeit		
Machbar		☐
Praxisnah		☐
Herausfordernd		☐
Lehrgangsbezug		☐

Damit die Semesterarbeit angenommen wird, müssen alle Kriterien erfüllt sein.