Crypto Currencies Prices Tracking Microservices Using Apache OpenWhisk

Department of Computer Science and Engineering
Frankfurt University of Applied Sciences
Cloud Computing

Team 10: Lam Phuoc Huy 1104785
Marcel Sahillioglu 1367742
Saifullah Saifullah 1339916

Fachbereich 2 Informatik und Ingenieurwissenschaften

FRANKFURT UNIVERSITY OF APPLIED SCIENCES

Outline

- Introduction
- Apache OpenWhisk and Serverless Computing
- IBM Cloud Functions
- Crypto Currencies Prices Tracking Microservices
- Live Demonstration
- Conclusion & Future Ideas

FRANKFURT UNIVERSITY OF APPLIED SCIENCES

Introduction

- There are multiple platforms available that provide Function-as-a-Service (FaaS) like AWS Lamda, Google Cloud Function, Microsoft Azure Functions...
- In this project, we decided to use IBM Cloud Functions platform.

FRANKFURT UNIVERSITY OF APPLIED SCIENCES

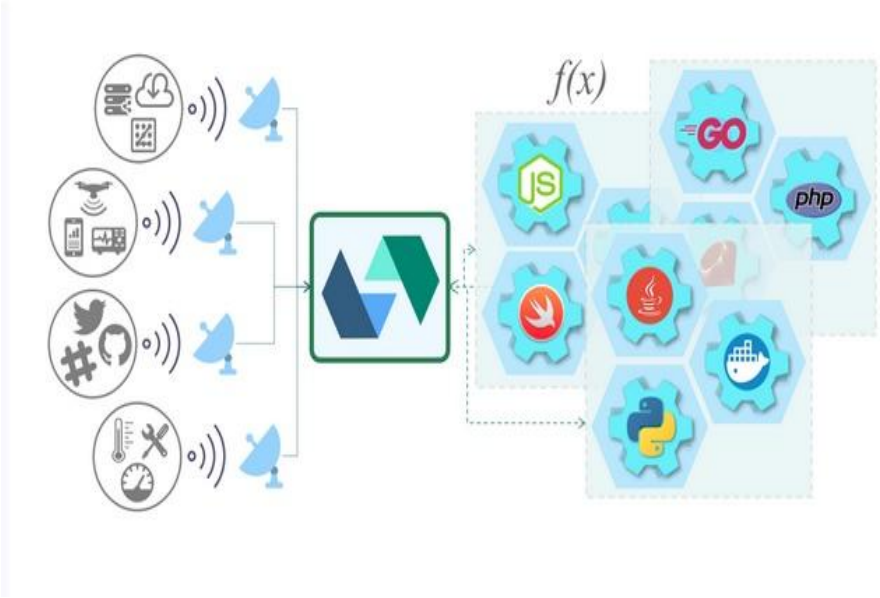
Project Goals

- Created a Crypto Currencies Prices Tracker Microservices using Apache OpenWhisk Functions and deploy it to IBM Cloud Functions so anyone can access it.

Apache OpenWhisk

- Open-source and server-less platform.
- Execute functions as Actions.
- Uses docker to management.

.



FRANKFURT UNIVERSITY OF APPLIED SCIENCES

Main Features of Apache OpenWhisk

- Flexibility in deployment.
- Supports multiple programming languages.
- Support for integration.
- Combines Functions of different programming platforms.

Traditional Computing

Figure 01: Three Tier Architecture

Serverless Computing

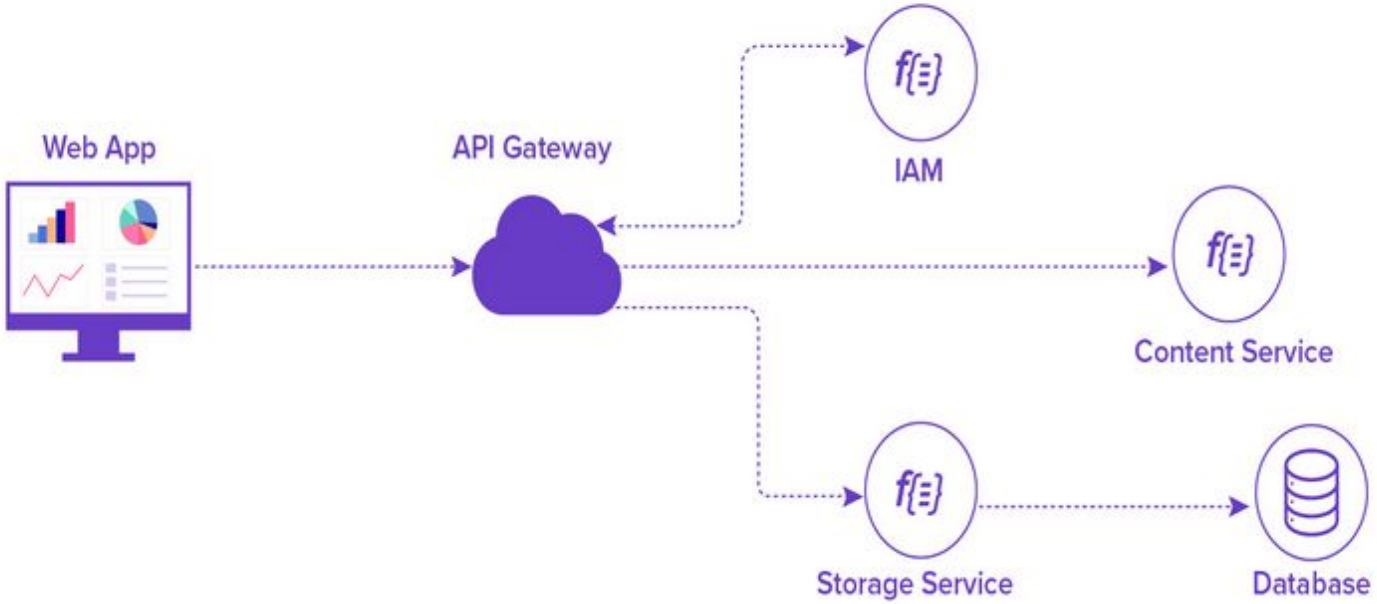


Figure 02: Serverless Computing

FRANKFURT UNIVERSITY OF APPLIED SCIENCES

Main Benefits of Serverless Computing

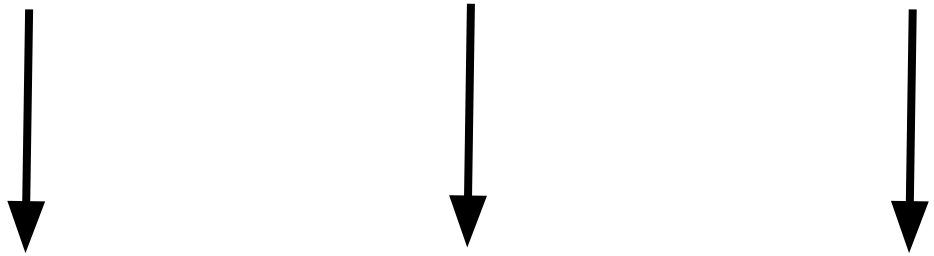
- No Servers/Operating Systems
- Easy and Efficient Scaling
- High Availability
- No Idle Capacity

IBM Cloud Introduction

- cloud platform by IBM
- former known as IBM Bluemix
- provides multiple cloud computing service
  - “170 products and services covering data, containers, AI, IoT, and blockchain.”
  - Kubernetes, Cloud Foundry, OpenShift, VMware, etc...
- Live Demonstration
- Function-as-a-Service → IBM Cloud Functions
- Apache OpenWhisk ⟷ IBM Cloud Functions

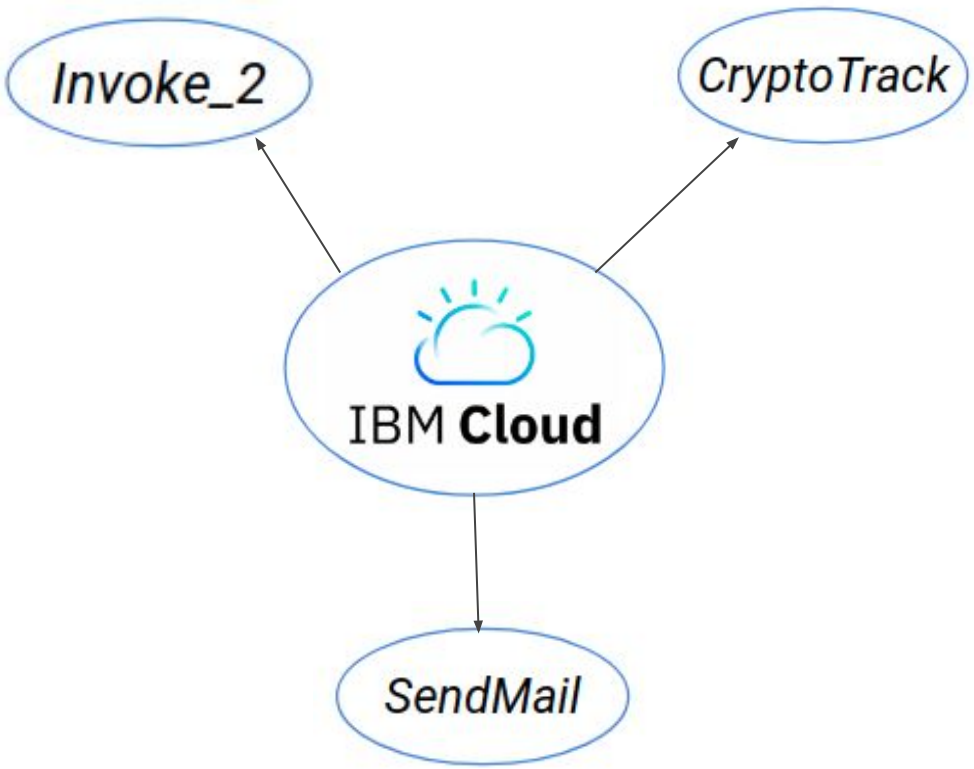
FRANKFURT UNIVERSITY OF APPLIED SCIENCES

Application Goal



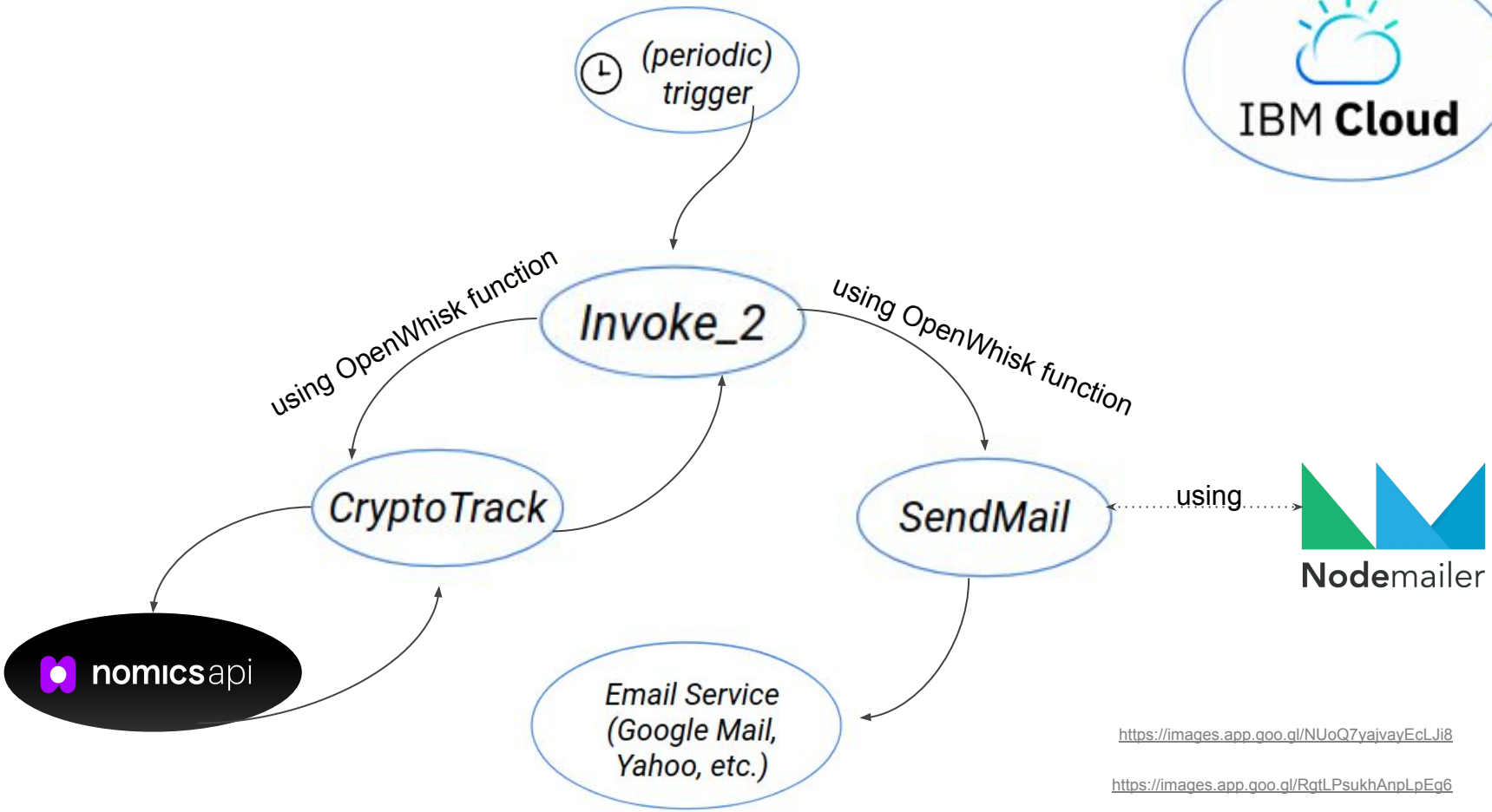
Get exchange rates of 5 crypto currencies periodically via email

Methodology



https://images.app.goo.gl/NUoQ7yajvayEcLJi8

Methodology



https://images.app.goo.gl/NUoQ7yajvayEcLJi8

https://images.app.goo.gl/RgtLPsukhAnpLpEg6

https://images.app.goo.gl/aJ54MzsY4K1eYfBz9

https://images.app.goo.gl/6cnqvcpRKyhMTWAk6

FRANKFURT UNIVERSITY OF APPLIED SCIENCES

Live Demonstration

FRANKFURT UNIVERSITY OF APPLIED SCIENCES

Conclusion & Future Ideas

- Through this project, our team members learn about the Apache OpenWhisk platform and its commercial product IBM Cloud Functions.

- Things we want to improve: Create a web app that uses parameters to decide if you want the exchange rates in euro or in USD. Use different SendMail API to avoid the need to change the credential in Google mail account.

FRANKFURT UNIVERSITY OF APPLIED SCIENCES

References

- https://images.app.goo.gl/NUoQ7yajvayEcLJi8
- https://images.app.goo.gl/RgtLPsukhAnpLpEg6
- https://images.app.goo.gl/aJ54MzsY4K1eYfBz9
- https://images.app.goo.gl/6cnqvcpRKyhMTWAk6
- https://openwhisk.apache.org/
- https://www.site24x7.com/blog/what-is-serverless-computing