Cloud Native Project - Cloud Application Development – Summer Term 2020

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Project

Individual project parallel to the lecture to realize a cloud native application:

- Each team (max. 3 members) specifies, designs, realises and validates a cloud application.
- Continuous work on the project is advised.
- The project is developed iteratively:
  - Elaborate and define requirements
  - Design, implement, deploy and test application in multiple iterations.

Deadlines:

Kickoff: 11.05.2020
Specification: 25.05.2020
Implementation: 13.07.2020
Presentation: 13.07.2020
Documentation: 20.07.2020

Technicial Requirements for the Application

- The application runs on standard cloud platform (preferably kubenetes)
- The application implements a multi-user, multi-tenant Software-as-a-Service (SaaS)
- The application implements the five essential characteristics of a cloud service:
  - On-demand self service
  - Broad network access
  - resource pooling
  - rapid elasticity
  - measured service
- The application architecture is cloud native and supports the 12 factors

Process Requirements

- The application supports DevOps, especially
  - continuous delivery
  - telemetry

Commercial Requirements

- There is a cost calculation for the running costs of the application
- There is a commercial model for the services provided by the cloud

Documentation

Provide Documentation as a single PDF or provide a markdown file in the git repo. As a guideline for the size of the documentation, you should provide the equivalent of 5-10 pages text/graphic per team member. As a rule of thumb, if you spent significant time to implement a certain feature or to solve a certain problem, then it might well be worth to describe this in more detail in the documentation.

Content

- Short Description of Functionality
  - Describe shortly the main functionality of the application as use cases.
  - If your application has a Wow-Factor, a feature or design element most other applications most probably do not have, here would be a good point to highlight it.
- Application Architecture & Design

  - Describe the components and interfaces of the application
  - Describe how the most important use cases are implemented (dynamic view)
  - Describe which resources of the cloud provider you are using, and justify the usage, and discuss alternatives.
  - Describe why your application has the five essential characteristics of a cloud service. How do you provide elasticity?
  - Describe how multi-tenancy is implemented.
  - Describe why your application is cloud native, does it implement the 12F?
- Operations
  - Describe how a new tenant is added.
  - Describe how to install your application on the cloud provide
  - Describe your DevOps approach
  - Describe the security model of your application
  - Describe the telemetry data you collect for your application and how it can be used to monitor the health and/or success of the application.
- Cost Calculation & Business Model
  - Document in a cost model the running costs of the application.
  - Define a possible charging model for your application and justify it.