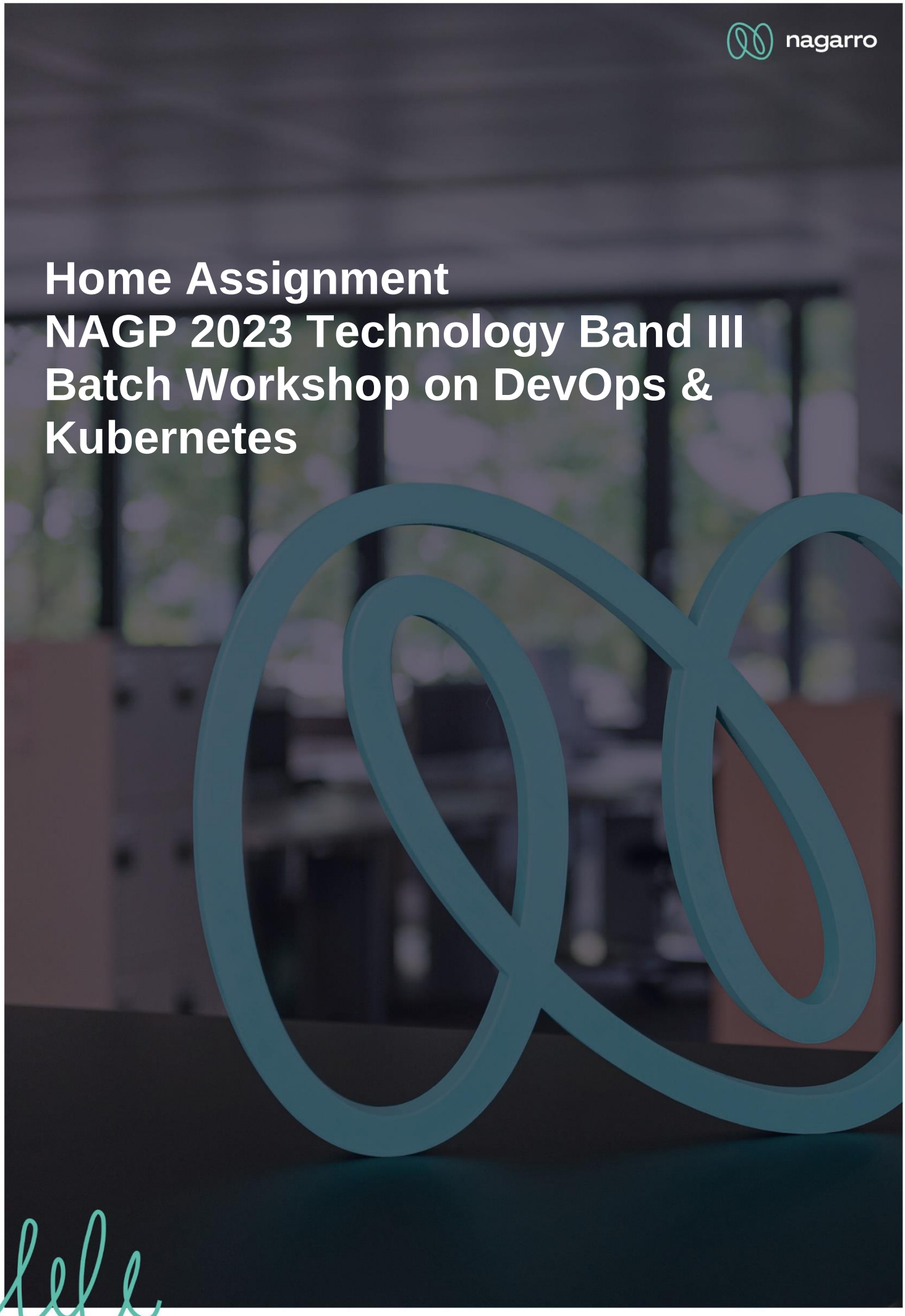
nagarro

Home Assignment
NAGP 2023 Technology Band III Batch Workshop on DevOps & Kubernetes



Problem Statement

You need to develop and deploy a multi-tier architecture on Kubernetes which involves one microservices and a database.

Each tier is explained below with their respective functionality.

Database Tier

The database will have one table and some (5-10) records within that table.

Service API Tier

This tier will expose a web API and when this API is invoked, it will communicate with Database and fetch the records from the table. You can use any strategy to connect to database which are popular in programming language of your choice.

Kubernetes Requirements

Requirement	Service API Tier	Database
Connectivity from outside of the Kubernetes cluster	Yes	No
No of pods	4	1
Rolling Updates Support	Yes	No
Persist Storage	No	Yes

Other Requirements

- The database configuration to be provided in Service API tier should be configurable from outside the pod definition file and application code (use Kubernetes ConfigMap).
- The database connection password should not be clearly visible in any Kubernetes YAML files (use Kubernetes Secrets).
- Database data should not be lost if the pod for database is re-deployed.
- Pod IPs should not be used for communication between tiers.

Deliverables

- Source Code for the project. Provide repository URL, don’t upload whole source code.
    - Make sure it includes all Kubernetes YAML files used in the assignment.
    - Dockerfile should be present as well.
    - Repository can be GitHub or Gitlab. **DO NOT use your project source code.**
- Also include a README file in code which has:
    - Link for the code repository.
    - Docker hub URL for docker images.
    - URL for Service API tier to view the records from backend tier.
    - Screen recording video showing all the objects deployed in Kubernetes cluster.
        - Show all objects deployed and running.
        - Show an API call retrieving records from database.
        - Kill API microservice pod and show it regenerates.
        - Kill database pod and show it regenerates and keeps old data.