Word Cities and Places - A Microservices Application

Abstract goes here

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Final Year Project

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About this project

Abstract   A brief description of what the project is, in about two-hundred and fifty words.

Authors   Explain here who the authors are.

Contents

Chapter 1

Introduction

The introduction should be about three to five pages long. Make sure you use references [1]

Chapter 2

Context

- Provide a context for your project.

- Set out the objectives of the project

- Briefly list each chapter / section and provide a 1-2 line description of what each section contains.

- List the resource URL (GitHub address) for the project and provide a brief list of the main elements at the URL.

2.1 Filler

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Chapter 3

Methodology

About one to two pages. Describe the way you went about your project:

- Agile / incremental and iterative approach to development. Planning, meetings.

- What about validation and testing? Junit or some other framework.

- If team based, did you use GitHub during the development process.

- Selection criteria for algorithms, languages, platforms and technologies.

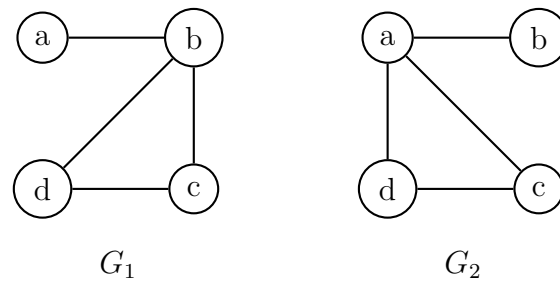Check out the nice graphs in Figure 3.2, and the nice diagram in Figure **??**.

G_1 G_2

Figure 3.1: Nice pictures

Figure 3.2: Nice pictures

Chapter 4

Technology Review

About seven to ten pages.

- Describe each of the technologies you used at a conceptual level. Standards, Database Model (e.g. MongoDB, CouchDB), XMl, WSDL, JSON, JAXP.

- Use references (IEEE format, e.g. [1]), Books, Papers, URLs (timestamp) – sources should be authoritative.

4.1 XML

Here's some nicely formatted XML:

```xml
<this>
  <looks lookswhat="good">
    Good
  </looks>
</this>
```

Chapter 5

System Design

As many pages as needed.

- Architecture, UML etc. An overview of the different components of the system. Diagrams etc... Screen shots etc.

Column 1	Column 2
Rows 2.1	Row 2.2

Table 5.1: A table.

Chapter 6

System Evaluation

As many pages as needed.

- Prove that your software is robust. How? Testing etc.

- Use performance benchmarks (space and time) if algorithmic.

- Measure the outcomes / outputs of your system / software against the objectives from the Introduction.

- Highlight any limitations or opportuni-ties in your approach or technologies used.

Chapter 7

Conclusion

About three pages.

- Briefly summarise your context and ob-jectives (a few lines).

- Highlight your findings from the evalua-tion section / chapter and any opportuni-ties identified.

Bibliography

[1] A. Einstein, "Zur Elektrodynamik bewegter Körper. (German) [On the electrodynamics of moving bodies]," *Annalen der Physik*, vol. 322, no. 10, pp. 891–921, 1905.

Appendices

Appendix A

Docker

A.1 Install Docker in Ubuntu Using Command Line

A.1.1 Setup repository

- Update packages

  ```
  $ sudo apt-get update
  ```

- Install packages to allow apt to use a repository over HTTPS:

  ```
  $ sudo apt-get install \
          apt-transport-https \
          ca-certificates \
          curl \
          gnupg-agent \
          software-properties-common
  ```

- Add Docker's official GPG key:

  ```
  $ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add
  software-properties-common
  ```

- Verify that you now have the key with the fingerprint 9DC8 5822 9FC7 DD38 854A E2D8 8D81 803C 0EBF CD88, by searching for the last 8 characters of the fingerprint.

  ```
  $ sudo apt-key fingerprint 0EBFCD88
  ```

- set up the stable repository:

```
$ sudo add-apt-repository \
        "deb [arch=amd64] https://download.docker.com/linux/ubuntu \
        $(lsb_release -cs) \
        stable"
```

A.1.2 Install Docker Community

- Install the latest version of Docker Engine - Community and container, or go to the next step to install a specific version:

```
$ sudo apt-get install docker-ce docker-ce-cli containerd.io
```

- Verify that Docker Engine - Community is installed correctly by running the hello-world image.

```
$ sudo docker run hello-world
```

A.2 Run Image Using Docker Hub

- Create repository in Docker Hub.

  https://docs.docker.com/docker-hub/repos/

- Build Image (Local machine):

```
$ sudo docker image build -t docker-hub-user-name/image-name:version-tag .
```

  Example:

```
$ sudo docker image build -t joseretamal/hash-service:1.0 .
```

- Push Image (Local machine):

```
$ sudo docker push docker-hub-user-name/image-name:version-tag
```

  Example:

```
$ sudo docker push  joseretamal/hash-service:1.0
```

- Pull Image (Remote machine):

```
$ sudo docker pull docker-hub-user-name/image-name:version-tag
```

Example:

```
$ sudo docker pull joseretamal/hash-service:1.0
```

- Run image (Remote machine):

    Opening a port and restart on crash or reboot:

```
$ sudo docker run -d -p internal-port:open-port --restart always --name inst
```

Example:

```
$ sudo docker run -d -p 5151:5151 --restart always --name hash-service jose
```

    Allowing instance to full network acess (allows acess to local host):

```
$ sudo docker run -d -p  --network="host" --restart always --name instance-r
```

Example:

```
$ sudo docker run -d -p  --network="host" --restart always --name hash-serv
```

- Stop instance: (Remote machine):

```
$ sudo docker rm --force instance-name
```

Example:

```
$ sudo docker rm --force hash-service
```

- Check logs: (Remote machine):

```
$ sudo docker logs instance-name
```

Example:

```
$ sudo docker logs hash-service
```

- Bash into the container: (Remote machine):

```
$ sudo docker exec -it instance-name bash
```

Example:

```
$ sudo docker exec -it hash-service bash
```

Appendix B

Some Appendix

The contents...