

University at Buffalo

Distributed Systems (CSE 586)

Project Phase 3 (Pub Sub)

TOPIC – **Social Computer Science News**

Team Number - **80**

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Design of Application

1. Tools and Technologies Used

Frameworks: Python-Flask

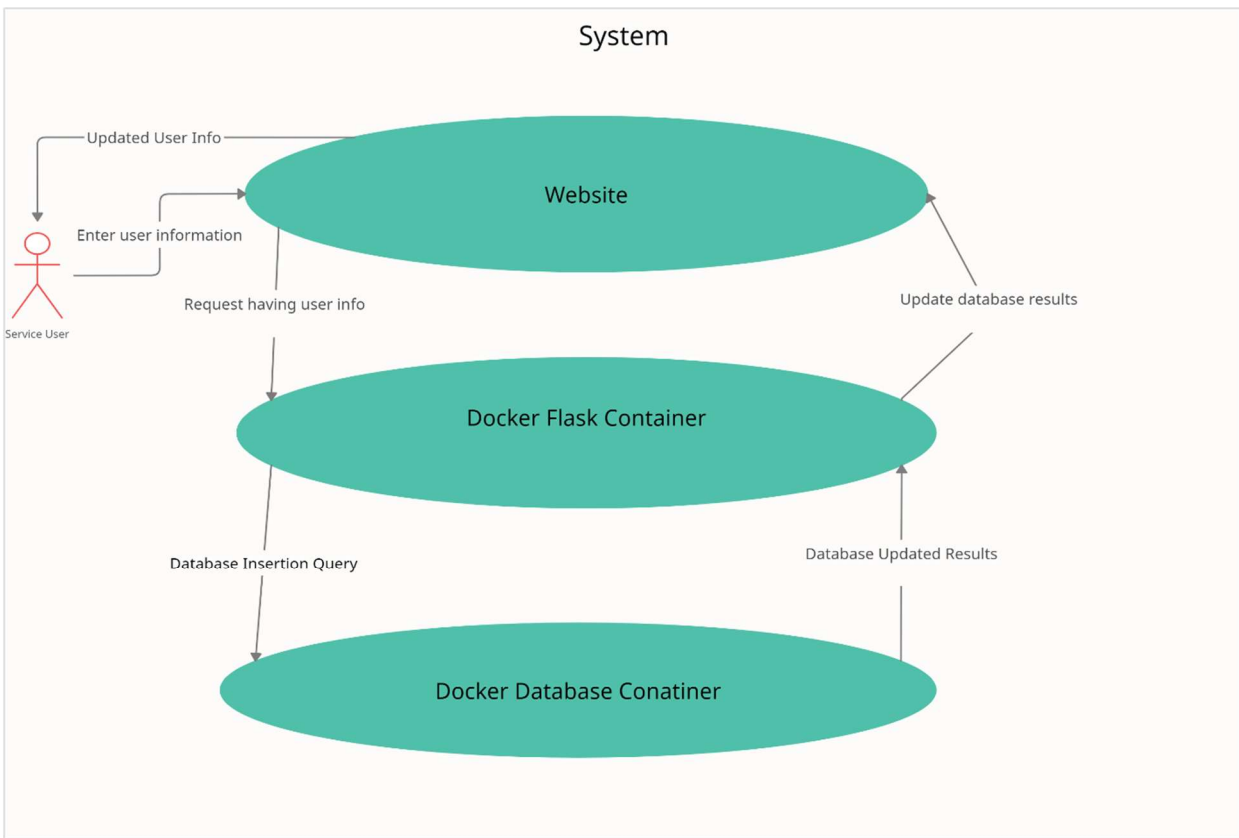
Technologies: Python, HTML, CSS, Docker, Bootstrap

Database: MySQL Relational Database

2. Short Description of Flow of the Project

- Initially, Server actively listens at port 5000.
- There a total of 3 Docker images are created: flaskimage, dataimage and mysql image.
- Publishing Handler, takes the data from apis and sends a request to store it in database.
- Client makes a request for either updating or accessing the data.
- The server, running on docker container, receives the request and executes the corresponding query on a different MySQL container. Every configuration of all the servers are specified in the Docker file while making image and the user need not do any changes while running the images.

The **Flow diagram** of the service can be defined as below:



3. Execution of the project

There is a folder shared for each image

- 1) **Flaskimage:** flask-crud-rest-app
- 2) **Mysqlimage:** MYSQL instance setup
- 3) **Dataimage:** FetchAPINews

a) Flaskimage can be created from flask-crud-rest-app in the following way:

- 1) `docker build -t flaskimage "flask-crud-rest-app\\"`
- 2) `docker run -lt -p 5000:5000 -e port=5000 flaskimage`
- 3) `docker run -lt -p 5001:5001 -e port=5001 flaskimage`

These commands will build flaskimage and run the corresponding container by using `./flask-crud-rest-app/Dockerfile`

b) Mysql

- 1) `docker build -t custom_mysql_image "MYSQL instance setup\\"`
- 2) `docker-compose --file "MYSQL instance setup\\docker-compose.yml" up`

This will make `custom_mysql_image`, will take initialization scripts from scripts folder(as mentioned in the Dockerfile).

c) Dataimage

- 1) `docker build -t fetchnewsapi "FetchAPINews\\"`
- 2) `docker run -lt fetchnewsapi`

This will make fetch news api dataimage, will take initialization scripts from scripts folder(as mentioned in the Dockerfile).

Now we can access the website from <http://system-ip:5000>, <http://system-ip:5001> and so on

Where system-ip is the localhost ip

Here any number of containers can be made without making any changes in the working code i.e. a single image will be used for compose all the container and they will be implementing rendezvous routing

Docker Images

As asked, no docker images are added for this phase.

API Handling Restrictions

We have used APIs from <https://newsapi.org/s/us-news-api>. This is a free to use API and we have used keys from the site. The keys may expire in future and can be recreated from the site.

Screenshots

Welcome sakshimo!

Asia tech shares jump; China property stocks rally on Evergrande payment - Reuters

Author	null
Description	Tech stocks climbed in Asia on Friday, following U.S. peers higher, while Chinese property stocks rallied following a ...
URL	https://www.reuters.com/business/global-markets-wrapup-2-2021-10-22/
URL to Image	https://www.reuters.com/pt/resources/images/reuters/reuters-default.png?d=53
Content	TOKYO, Oct 22 (Reuters) - Tech stocks climbed in Asia on Friday, following U.S. peers higher, while Chinese property stocks rallied following a surprise interest payment by debt-ridden property devel... [+4763 chars]

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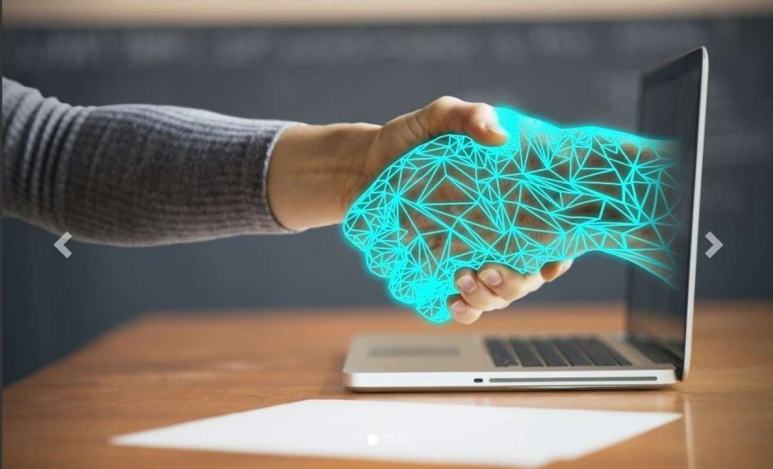
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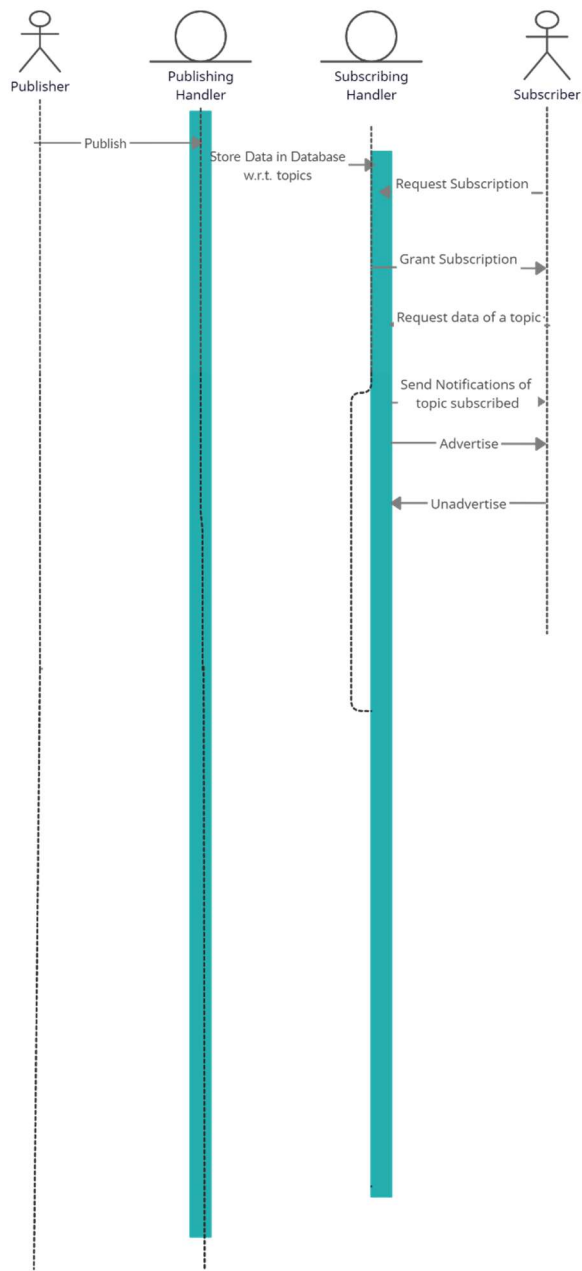
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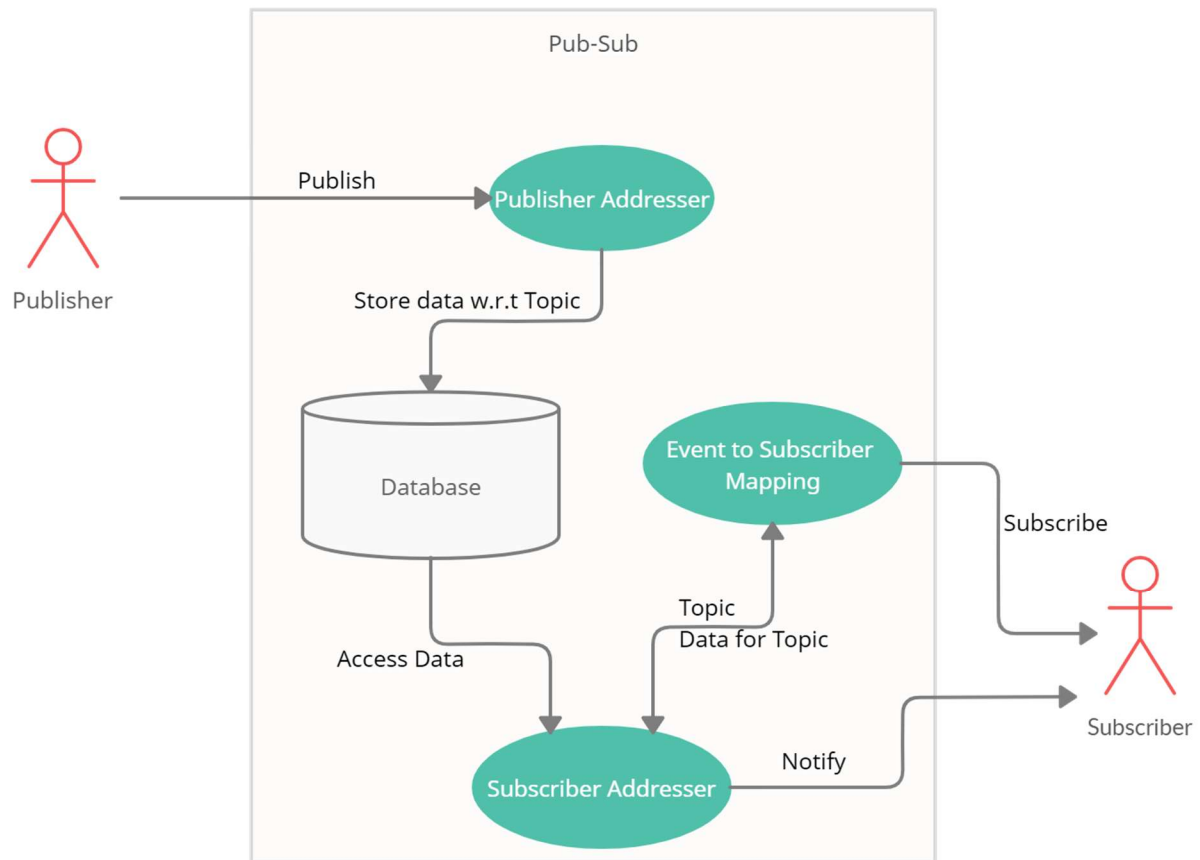
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Sequence Diagram

<<message>>



Use Case Diagram



Contribution by Team Members-

Folder FetchAPINews - Contributed by Lavish Mishra

Folder flask-crud-rest-app - Contributed by Lavish Mishra and Sakshi Modi

Folder MYSQL instance setup - Contributed by Sakshi Modi

Node Topic Mapping

There are total of 4 nodes used for demonstration but the image is made in such a way that they can be upscaled to n number of nodes to form a cluster. Currently the nodes used are Node1 to Node 4 and they have following topic(1:n mapping) within them

```
mysql> select * from NodeTopicMapping;
```

Node	Topic	Portno
Node1	TechnologyUS	5000
Node1	TechnologyIndia	5000
Node2	Apple	5001
Node3	ScienceUS	5002
Node3	ScienceIndia	5002
Node4	TechCrunch	5003

```
6 rows in set (0.00 sec)
```