Cloud Computing

Final Project

CS6343.001 – Cloud Computing

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# Introduction

Randeep: Mainly for completeness, elaborate the project objectives and high level tasks

# Team Info

Team Lead: Christopher Michael Scott

Team Meetings: T/Th 4:00pm – 6:00pm CST

Meetings with Professor: F 4:00pm – 4:30pm CST

# Approach

## Workflow

Workflow 1: Grocery store Point of Sale + recognition

* Component 1: Self-checkout scale activation (simulated)
  + When an item it detected on the scale, activate the rest of the workflow
  + non-bulk items would skip the obj recognition
* Component 2: Object recognition - recognize item(s) on the scale
  + Feature set: type (celery, watermelon, potatoes, onions, etc.)
  + Other features: timestamp
* Component 3: Database
  + Database entry for item, including the image, recognition result, timestamp
  + Cassandra
* Component 4: Analysis
  + Identify the correlation between the purchased items, time of day, and day of week
  + Time-series analysis to predict demand at specific days in the year
* Component 5: Restocking
  + Check if items go out of stock, and do simulated supply orders
  + Scan the database periodically
  + (optional) take a rolling average of velocity of items and order more as demand changes

Workflow 2: Delivery Pizza with Online Orders

* Component 1: Order collection and rule checking
  + Collect online orders (as json objects)
  + Verify that the orders are legit and paid for
* Component 2: Database (See WkF Component 3)
* Component 3: Analysis component
  + Estimate delivery time
  + Track drivers to determine their speed/efficiency
* Component 4: Restock (See WkF Component 5)

## Docker Swarm Install

Chris: did the install

## Docker Images

WF2, C1:

* GitHub Link: <https://github.com/CPVazquez/CS6343/tree/master/Workflows/WF2/Components/C1>
* Image Size: 92.5MB
* Code Size: 40KB
* Code Description:

Pulled python:alpine3.11 certified image as base. Created a webserver using python flask with a single endpoint, order, through which orders to the pizza shop are received. Conducted tests using python unittest. Specified accepted json format using python jsonschema.

## Problems Encountered

Swarm install: problem, Chris

# Comments

N/A

# Experiments and Results

N/A

# Operation Manual

N/A

# Workload Distribution

## Carla

* Arranged team meeting times
* Created Project Report Outline
* Created GitHub repository for the project
* Installed Git on the cluster
* Containerized workflow 2, component 1

## Chris

* Installed Docker Single Node on the Cluster
* Installed Docker Swarm on the Cluster
* Changed password for generic user on the cluster

## Daniel

* Thing

## Randeep

* Thing