Greenhouse Project

Data Analysis and Visualization

Data Handling and Visualization

A table with numbers and a number of values

Description automatically generated with medium confidence

**Action:**

Problems:Answer the given question using the data provided. Draw graphs to support your answers.

1. What is the relationship between temperature and yield?
2. What is the relationship between humidity and yield?
3. How does the cost vary with temperature?
4. How does the cost vary with humidity?
5. What are the optimal values for temperature and humidity to maximize the profit (minimum cost and maximum yield)?
6. The plant height increases with the increase of temperature up to 24% where it peaks. After that, the plant height slightly decreases.
7. The plant height increases with the increase of humidity up to 75%-85% where it peaks. After this it slowly decreases, meaning too much humidity is not too good for the yields.
8. The higher the temperature, the higher the cost for a yield.
9. The higher the humidity, the higher the cost for a yield. The cost increases by 500 euros with every 10% of humidity.
10. The optimal temperature for plant height is 24 degrees, where the plant height reaches its peak at 401 cm. The cost at 24 degrees is 7359 euros which is comparatively low than higher temperatures. The optimal humidity for plant height is 75%-85% where the plant reaches its peak at 401 cm. The cost at this range is around 7000 euros. I believe this is the best combination of optimal values for maximum profit and minimum costs.

**Reflection:** I used Excel to rewrite the tables and then let it create the charts for me with the given information. I found the rewriting of the tables very inefficient and annoying. However, I was satisfied with seeing the desired results.

**Decision:** My goal is to find a way how to create tables faster instead of entering every value manually.

Analyzing temperature and humidity data from multiple sensors

**Action:**

**Problem:** Analyze data from multiple sensors at multiple locations over an extended period of time and answer the following questions

*(Averages)*

1. What is the average temperature over all sensors and time for the whole dataset provided?

*A diagram of a football field

Description automatically generated*

**Reflection after trying to figure out what I must do here:** I am not sure if I have to read the dataset on the website provided in the document from Botero 2022, since the information there is basically kind of impossible to analyze. There is a table which consists of 700 000+ rows. There is no Excel file provided anywhere in the Greenhouse document as it was stated, so I am left confused with what exactly is expected of me to do here. I will look for feedback on this next week. What the hell.

Network design for the greenhouse

**Action:**

Problems:

1. How does the greenhouse network connect to the internet?
2. Where is the data stored (locally or remotely)?
3. Is there a separate network for PC/laptops owned by administrative staff?
4. Is there a central server on-site to visualize data for management and monitoring? What are the addresses or IP address ranges for each device?

Network diagram:

A diagram of a computer network

Description automatically generated

1. The greenhouse network is connected to the internet via glasfiber
2. The data is stored locally and remotely thanks to the central server for local storage and the cloud storage for remote storage
3. There is a separate network for PC/laptops owned by administrative staff
4. There is a central server on-site to visualize data for management and monitoring. The IP addresses range from 192.168.3.3 to 192.168.3.14

Reflection: I had trouble understanding how cloud storage works and to which component I should connect it to in the diagram. At first, I made only local storage, but I thought how this won’t be good for the efficiency of the monitoring and the managing of the greenhouse, so I added a remote storage too – cloud storage. After using the internet, I found the solutions to the problems of how to display the cloud storage in the diagram. I am happy with the result.

Decision: My goal is to learn more about remote control in computer networking and data transferring.