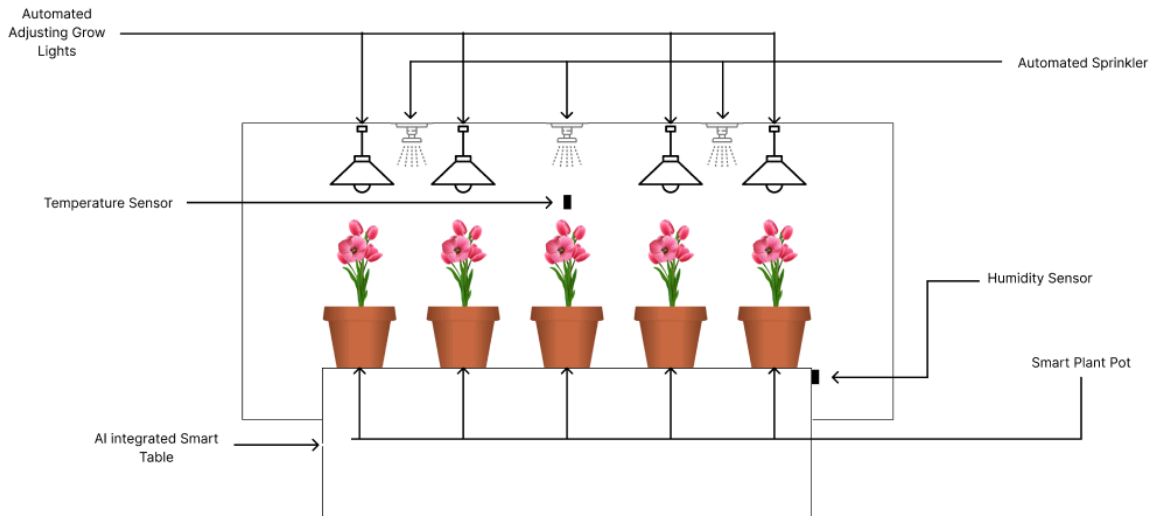
1. Draw and introduce a new hardware prototype that is not available in the market. The prototype must be labeled properly with detailed parts. Specify the purpose of each part. (20 pts.)



Automated Adjusting Grow Lights: Provides optimal light conditions for plant growth, especially in low-light environments. The light adjusts its intensity and color based on the plant's specific light requirements, which is monitored and controlled via an app.

Automated Sprinkler: Automatically waters the plant when the humidity sensor detects that the plant's soil is dry.

AI Integrated Smart Table: Integrated into the table is an AI that is able to determine if the plants nutrients levels are optimal, if not it will dispense fertilizers into the plants to raise the levels enough. This table also tracks the plant's growth and tracks the size and condition it has endured throughout its life.

Smart Plant Pot: Holds the plant and ensures that it gets the right amount of water. The base of the pot contains a water reservoir and a moisture sensor that triggers the automatic watering mechanism when needed.

Temperature Sensor and Humidity Sensor: Tracks the temperature and humidity of the plant's environment. Sends real-time data to the mobile app to alert the user if the conditions are not ideal for the plant.

2. Enumerate all the materials that you will need and use to create your prototype. (10 pts.)

Planter pots: We can use ordinary plastic pots that we will modify to meet our specification for our project

Soil Moisture Sensor: To measure the moisture level in the soil)

Temperature Sensor: To monitor the temperature around the plant)

Humidity Sensor: To measure the air humidity around the plant)

Light Sensor: To measure the light intensity and determine if the plant is getting enough light)

Fertilizer Sensor: To track the nutrient levels and trigger the fertilizer dispenser)

LED lights: With different intensities for optimal plant growth.

Customized AI Table: We will need to create our own table for our product as existing tables may not meet our needs. This table will house the fertilizers and others like water for the sprinkler.

AI plant engine: Uses real life data to analyze plant care and adjust its parameters based on data patterns of the particular plant life cycle.

Mobile App: All of the data that the sensors picked up will automatically be sent here, you can override the AI if you need to here.

3. Write the instructions on how your hardware prototype will be connected to your software prototype. (10 pts.)

1. Set up the table and other accessories needed. Put your favorite plants to grow in the smart pot.
2. Download and set up the Mobile app in your computer or cellphone, you can use an account to manage everything on multiple devices.
3. Add the plant type to the app.
4. Adjust the settings to make the plant grow optimally.
5. Let the plant grow and track everything in your phone.
6. Check notifications if the app detects something abnormal in your gardening setup.

4. Why is it important to involve your users in testing design ideas and get their feedback in the early stage of development?

The inclusion of users in the testing of design ideas and their feedback early in the development cycle is important for a number of reasons. It ensures usability by identifying the problems that the product has to deal with, thereby enabling them to provide early adjustment by designers. This saves time and costs because the mass is prevented from acquiring expensive changes; expenses and many times spent in redesign. Moreover, user feedback guarantees that the product matches their real needs, preferences, and pain points, hence increasing its effectiveness and user satisfaction. Further, early inclusion of feedback enhances

iterative improvement among designers, aiming to hone the product to fit users' expectations to its fullest extent. Ultimately, the involvement of users from the outset increases the chances of adopting the product as users feel they are contributing to it.