PROJECT PLANNING DOCUMENT QUARTER 2

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Project title:

U.B.E.T (Understanding Botanical Essentials for Thriving)

Problem statement:

If people do not know the proper care requirements of different plant groups, then their plants are more likely to become unhealthy or die.

Project Objective:

The objective of this project is to develop a structured and accessible digital reference on major plant groups using python. The project aims to present important information such as characteristics, functions, and basic care requirements in a clear organized format that students and teachers can easily navigate. This project aims to:
- Improve people's understanding of different plant groups through accurate and organized information.
- Offer a reliable source for anyone conducting research or seeking to learn more about plant biology.
- Allow beginners and students to explore plant groups and learn fundamental plant care through an interactive python program.

Planned features:

- A library of plant groups and information about them
- A dictionary of all the data of the different plant needs
- It will give instructions on how to take care of the plant properly
- A menu that will show all of the different plant group

- Adds small fun facts about each plant group.

Target Audience:

- Beginners who want to learn basic plant care
- Students
- Home gardeners
- Anyone researching plant biology

Planned inputs and outputs:

- Input: The program will ask the user for the group/category of plant, and the plant's environmental condition.
- Output: The program will give the user the information on how to take care of the plant.
- Output: The program will present a menu showing the different kinds of plants.

Example: User input: Angiosperms, dry, hot.
Output: Your plant is too dry! Angiosperms need moisture. Apply moisture.

Logic plan:

1. Menu
    - WELCOME TO U.B.E.T!
    - Option 1: View plant group library
    - Option 2: Identify plant needs
    - Option 3: Quit

2. Option 1: View plant group library
    Plant_library = {
    ANGIOSPERMS - Flowering plants are plants that bear flowers and fruits, and form the clade Angiospermae.General care for angiosperms includes: understanding their light needs (direct or indirect sunlight for photosynthesis), providing consistent moisture (but not waterlogged soil), and using suitable soil for their roots and necessary nutrients.

    BRYOPHYTA - Division Bryophyta (Mosses) Moss growing in damp woodland soil.To care for them, keep their environment damp, provide bright, indirect light, and ensure they have nutrient-rich soil, such as peat.

GYMNOSPERMS - Like the flowering plants, gymnosperms are vascular and produce seeds and pollen rather than relying on spore dispersal. To care for them you need to provide full sun and well-draining soil with sufficient moisture. Although it can vary with different species, for example Ginkgo trees require ample water, while many conifers are adapted to poor, cold conditions. Maintenance primarily focuses on providing the right environmental conditions and avoiding issues like excessive moisture, which can lead to disease in the poorly drained soil many species prefer.

PTERIDOPHYTES - Pteridophytes have a well-differentiated plant body into root, stem and leaves. To care for them, place them in filtered light away from direct sun, keep the soil damp by watering when the top is dry, and increase humidity with a humidifier, misting, or a pebble tray. Use a fluffy, well-draining potting mix and pots with drainage, and fertilize lightly with a nitrogen-based fertilizer during the active growing season.

CYCADOPHYTA - Cycadophyta (Cycads) A typical cycad. Cycads resemble short palm trees. They have thick, woody trunks and a crown of spiky evergreen leaves. To care for them you need to water them when the top two inches of soil are dry, but never allow the soil to dry out completely, and use a granular fertilizer containing nitrogen, phosphorus, and potassium with added magnesium during the growing season. Protect them from harsh, direct sun.

HORSETAILS - Horsetails are a group of around 40 fern-like plants that usually grow in damp areas.To care for horsetail, provide it with moist to wet, well-drained soil, a location in full sun to partial shade, and consistent moisture, ideally with a pot or root barrier to prevent invasiveness.

LIVERWORTS - Liverworts prefer cool temperatures, low ultraviolet (UV) light radiation, high fertility and moist or damp substrate Liverworts prefer cool temperatures. They thrive in shaded, humid areas, need consistent moisture, and are best kept away from direct sunlight or drying winds.

TREES - Trees grow in a wide range of climates and soils but generally prefer well-drained soil, regular watering when young, and full sun to partial shade. Pruning helps maintain shape and health, and mulching around the base conserves moisture and supports root growth**.**
} (*The Five Basic Groups of Plants*, 2016)

3. Option 2:
    - get_category(): - string
    - Using the plant data dictionary, the user will enter the plants category which assigned to care values

    - get_environment(): - list of strings

Identifies the user's plant environment so we can use it to get_care() and find what environment the plant resides in.

- get_care(category,environment): - string
  If the user's variables do not match with the needs of the plant's category, it will require the user to take the proper steps to balance and handle their botanical essentials accordingly.

- view_library(plant_library) - string
  Allows the user to choose one plant category, and see its data.

- Check if the user enters a valid plant category; if not, show: "Invalid category. Please choose from the list."
- Ask the user about sunlight, moisture, temperature, or humidity and validate inputs."
- Suggest improvements if the plant's environment is not ideal (e.g., "Your plant is too dry. Water it carefully.").
- Plant_data = {

```
"ANGIOSPERMS": {
    "light": "direct/indirect sun",
    "water": "moist",
    "soil": "nutrient-rich"
},

"BRYOPHYTA": {
    "light": "indirect sun",
    "water": "damp",
    "soil": "peat-rich"
},

"GYMNOSPERMS": {
    "light": "full sun",
    "water": "moderate",
    "soil": "well drained"
},

"PTERIDOPHYTES": {
    "light": "filtered",
    "water": "damp",
    "soil": "well drained"
},

"CYCADOPHYTA": {
    "light": "avoid harsh sun",
    "water": "when top soil dry",
    "soil": "NPK fertilizer"
},
```

```
    "HORSETAILS": {
        "light": "sun/partial",
        "water": "wet/moist",
        "soil": "well-drained"
    },

    "LIVERWORTS": {
        "light": "shade",
        "water": "constant moisture",
        "soil": "moist "
    },

    "TREES": {
        "light": "sun",
        "water": "moderate",
        "soil": "well-drained"
    }
}
```

4. Option 3:
    - Makes the variable program_on False, ending the menu loop
    - If the user chooses “No,” return to the main menu instead of exiting.

References:

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