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Ms. Nishiwaki
IB Computer Science SL
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Criterion A:

Advisor: Peter Donaldson
Client: Latha Battina

The client, **Latha Battina**, is a recreational gardener who gardens at home who faces challenges in managing her backyard garden. She has limited knowledge about sustainable gardening practices and struggles to identify plants suitable for the local climate and conditions. She wants to have a sustainable garden that is easy to manage, and which can produce quality organic produce. She also wants a solution that can help her plan and maintain her garden while also reducing its environmental impact. Latha currently lacks a tool to manage her garden efficiently and sustainably, and wants a software solution that can help her plan her garden.

The solution to Latha Battina's problem is to implement a sustainable garden program called "GreenGarden" that will enable users to plan, track, and improve their sustainable gardens.

The proposed solution will solve the client's problem by providing instructions on how to sustainability garden, maintain, and acquire necessary resources. The program will allow Latha to input information about her local climate and the conditions of her garden. It will then recommend plants that are native to the area, promoting biodiversity. This feature will make it easy for Latha, as she no longer has to conduct extensive research on her own. Additionally, the program will create a list of the tools and supplies needed to maintain the garden and the most environmentally friendly way to acquire or grow them. This addition would allow the user to shop sustainably without having to make the decisions themselves. The program will also report the potential environmental impact of her garden, helping her monitor its sustainability.

The programming language that will be used for this project is Java. It is known for its robustness and security, which makes it a great choice for developing a program. Alternatives, like Python or R, may also have similar capabilities but Java has a larger community of developers and more resources available for creating applications, making it easier to find support and develop a solution that meets the success criteria. The software I will be using is intelliJ IDE because of its Java integration and its strong debugging capabilities.

Success Criteria:

- The program should be able to handle a multiple inputs, including different levels of maintenance (low, moderate, high) and amounts of sunlight exposure (less than 4 hours, 4-6 hours, 6-8 hours, more than 8 hours)
- The program should be able to generate plants for each garden
- The program should be able to recommend at least 1 plant that is native to the specified location to promote biodiversity and support local ecosystems
- The program should be able to generate a report that shows the environmental standing of the garden, including the amount of CO2 sequestered, the amount of water saved
- The program should be able to recommend specific tips based on the specific needs of the plants
- The garden and recommendations should predict a reduction in water usage by at least 10% compared to traditional gardens and gardening practices.
- Must provide users with a schedule for watering
- The total cost of the plants should be less than the budget

Word Count: 520