1. Introduction to the broad theme or challenge.

The general theme of the project is **Home Automation**.



Home automation refers to the use of technology to automate and control various aspects of a home, such as lighting, heating, and security. The need for home automation has increased in recent years due to the convenience and energy-saving benefits it offers.

Overall, while home automation offers many benefits, it also presents a number of challenges that need to be carefully considered before implementing it.

The specific domain taken up by our team is **Gardening.**

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One of the main challenges of domestic gardening is the time and effort required to maintain a healthy and attractive garden. Gardening can be labour-intensive, especially for those who are busy or have limited physical abilities.

Another challenge is the variability of weather conditions, which can affect the growth and health of plants. Extreme temperatures, drought, and other weather events can damage or kill plants, requiring constant monitoring and intervention.

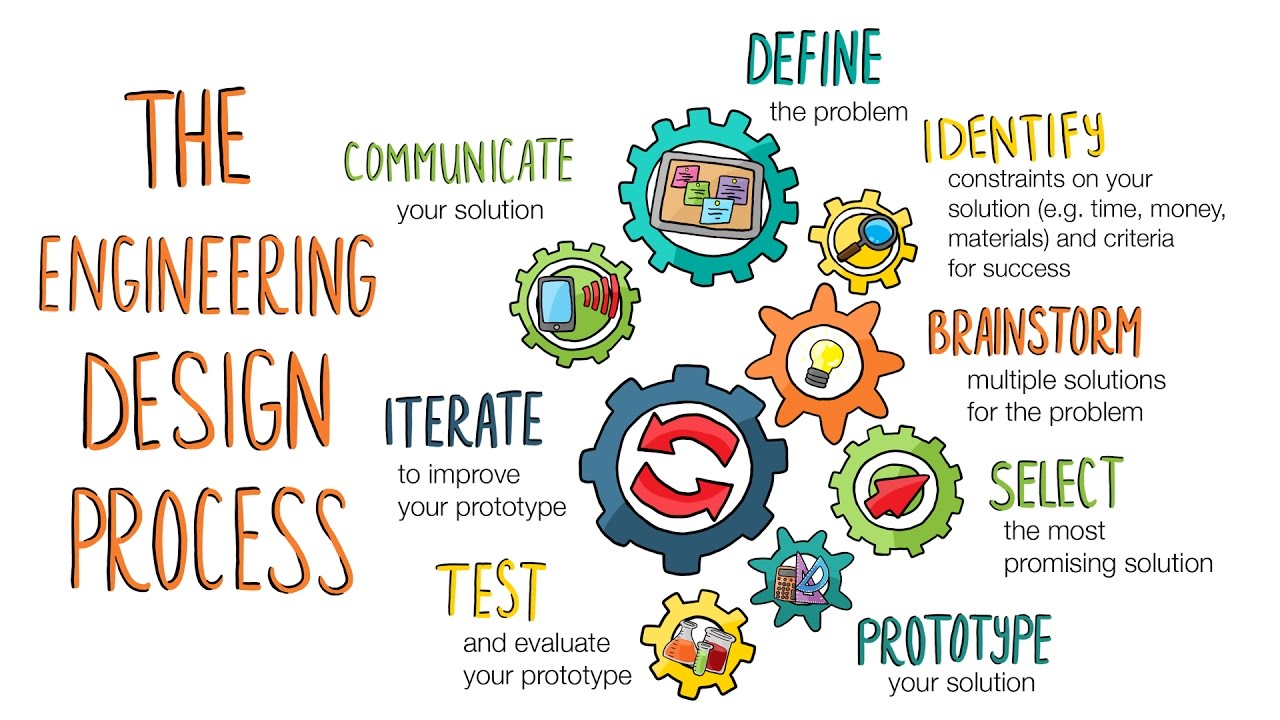
Another challenge is the need for specialized knowledge and skills to successfully grow and care for plants. Not everyone has the knowledge and expertise to choose the right plants for their climate and conditions, and to provide the necessary care and attention.

Automation in gardening can help to address these challenges by allowing for remote control and monitoring of gardening tasks. Automated systems can provide automated watering, fertilizing, and other essential tasks, reducing the time and effort required for gardening.

Automation can also help to optimize gardening conditions by monitoring weather conditions and providing timely interventions to protect plants from damage. Additionally, automated systems can provide personalized recommendations and advice based on the specific needs of plants and gardens.

Overall, automation in gardening can help to make the hobby more accessible and enjoyable for those with busy lifestyles or limited gardening knowledge and skills.

1. Identifying the systematic design process to be followed:



The ***engineering design process*** is a methodical series of steps that engineers follow to come up with a solution to a problem. It is typically an iterative process, with designers making multiple prototypes and refining their designs based on feedback and testing.

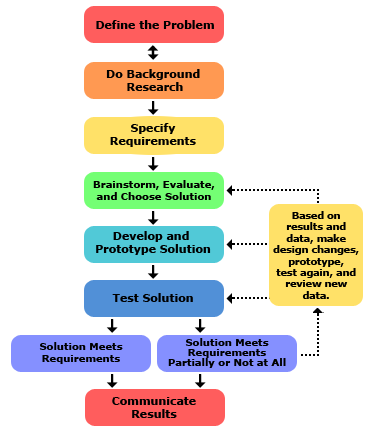
The engineering design process also helps to foster creativity and innovation. By following a structured process, engineers can generate a wide range of potential solutions and evaluate them based on their feasibility and potential impact. This allows engineers to come up with creative and novel solutions that may not have been considered otherwise.

Additionally, the engineering design process helps to ensure that solutions are safe, ethical, and sustainable. Throughout the design process, engineers consider safety, environmental, and ethical considerations to ensure that the final solution is not only effective, but also responsible and sustainable.

The steps in the engineering design process typically include:

1. Identify the problem or need. This is the starting point for the design process, and involves understanding the requirements and constraints of the problem.
2. Generate possible solutions. In this step, designers brainstorm and come up with a variety of possible solutions to the problem.
3. Evaluate and compare possible solutions. In this step, designers assess the feasibility, effectiveness, and cost of each possible solution, and select the one that best meets the requirements.
4. Develop a detailed design. In this step, designers create detailed plans and specifications for the chosen solution. This may include CAD (computer-aided design) models, engineering drawings, and other technical documents.
5. Build a prototype. In this step, designers build a physical model of the solution, often using 3D printing or other prototyping techniques.
6. Test and refine the prototype. In this step, designers test the prototype to see how well it performs and make any necessary adjustments to improve its design.
7. Create the final design. In this step, designers create the final version of the solution, using the lessons learned from testing the prototype.
8. Implement and evaluate the design. In this step, designers put the final solution into use and evaluate its performance to ensure that it meets the needs of the problem.

**General Flow of Engineering Design Process:**



Overall, the engineering design process is an important tool for engineers to systematically and effectively solve problems. It allows designers to systematically explore a variety of solutions, test their feasibility and effectiveness, and ultimately create a final design that meets the needs of the problem.