3383F

Fusion

Software engineers are working to innovate the world

Software engineers are currently helping the world take a monumental leap into the vast subject of technology, and we, team 3383F, are exploring how software developers follow the steps of the Engineering Design Process just like us.

TEAM 3383F

SOFTWARE ENGINEER'S DESIGN PROCESS

WORD COUNT:

NOT INCLUDING CAPTIONS, TITLE PAGE, OR CITES

935 WORDS

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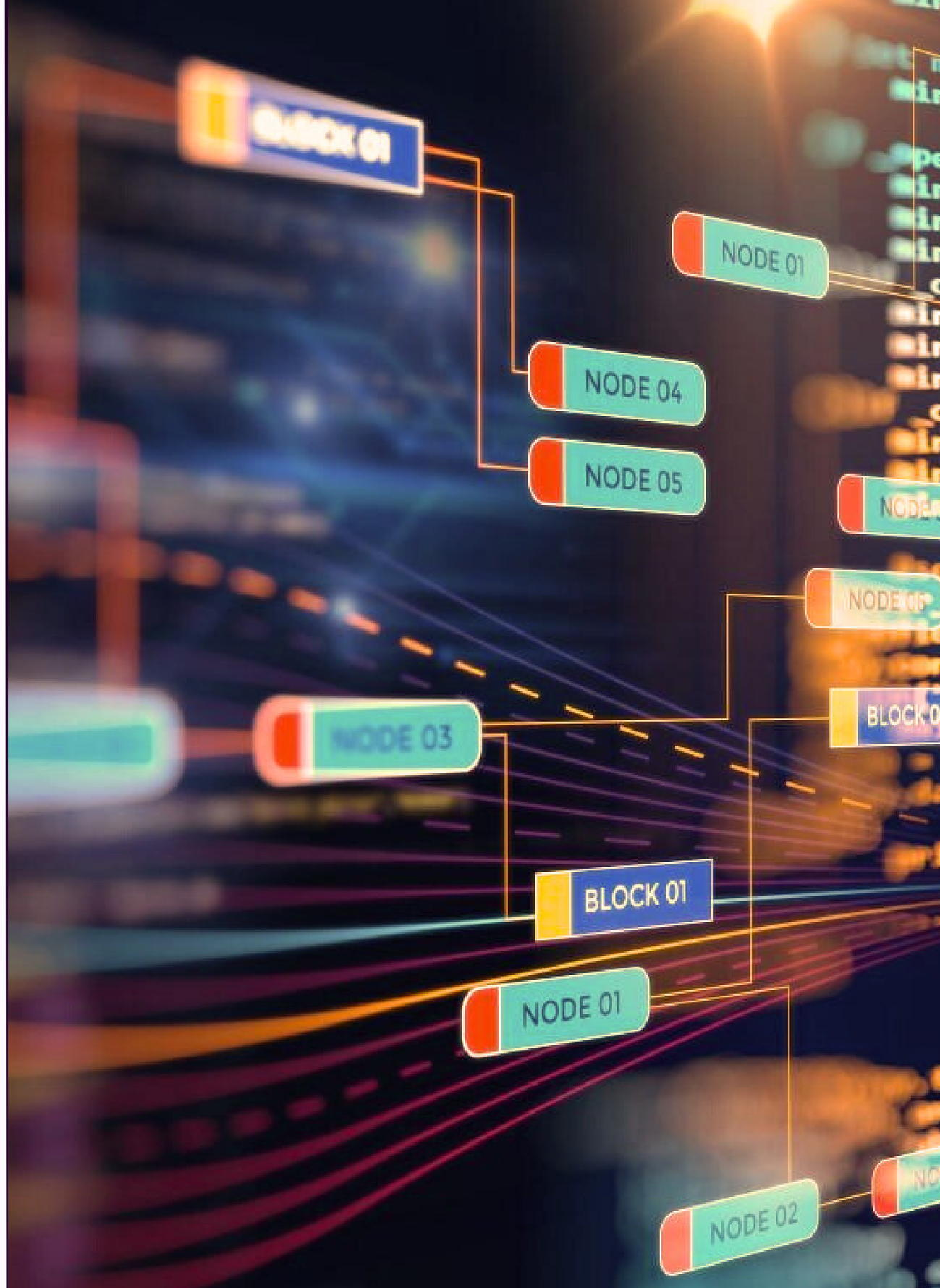
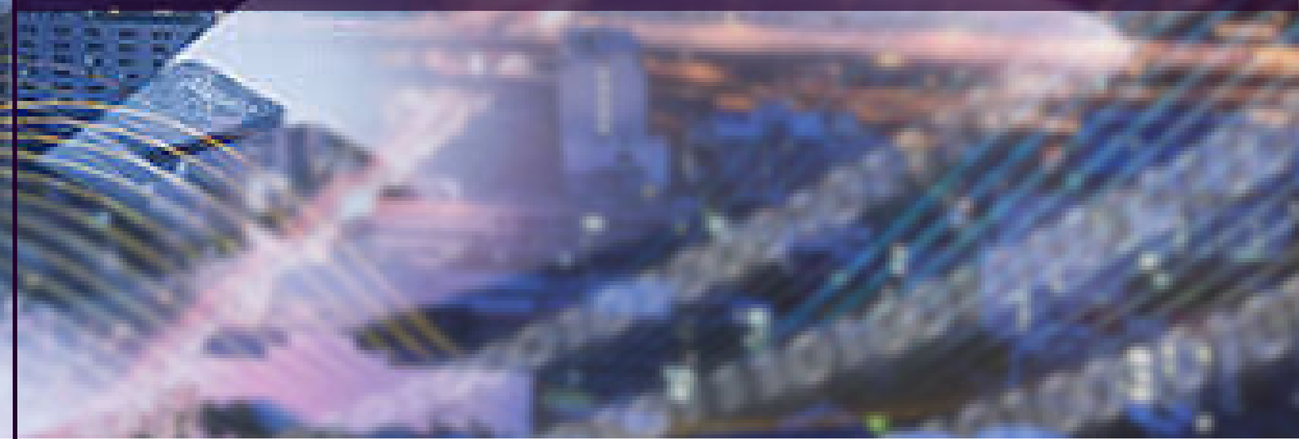
INTRODUCTION

Software engineering is a field that involves the design, and development of software systems. A software engineer is a professional who applies engineering principles to the engineering design process. Software engineers work in a variety of industries, from technology and finance to healthcare and entertainment. Software engineers ensure that software systems are secure and user-friendly. With the increasing demand for software in today's world, software engineers play a critical role in shaping the future of technology.



WHY SOFTWARE DEVELOPERS?

Everyday, millions of people open all different types of apps ranging from YouTube to iMessage. Life without these seems impossible without them, yet some people fail to realize that software developers are the reason apps and softwares are in existence. We chose software developers for this online challenge because they demonstrate a large use of the Engineering Design Process and impact the world with their distinctive prowess in technology.



“It’s fine to celebrate success, but it is more important to heed the lessons of failure.”

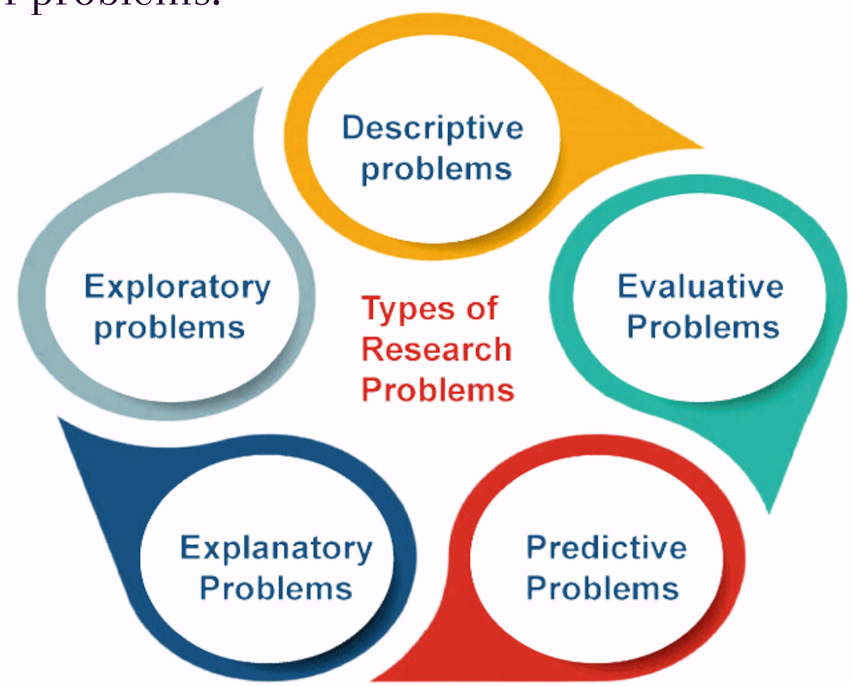
- Bill Gates

Failure’s Teachings

In this quote, Bill Gates emphasizes careful consideration of failure, rather than excessively celebrating success. Our team follows Bill Gates’s philosophy during the Engineering Design Process and it fuels us to have a mindset where failure leads to learning opportunities.

PLAN

Software engineers investigate the myriad of challenges that are given to them by considering and identifying the goals of the situation. They have to navigate through project requirements, limitations, and deadlines, all while ensuring the quality of their work. Software engineers brainstorm and research all prototypes of code and narrow down their priorities. When planning, all members of the team analyze the task meticulously and collaborate to craft solutions to all kinds of problems.



Game Analysis:

Like software engineers, we investigate the obstacles and goals of the game. We search for the criteria and constraints, as well as requirements and limitations. For example, in VEX IQ, we have size and motor constraints.

Brainstorm:

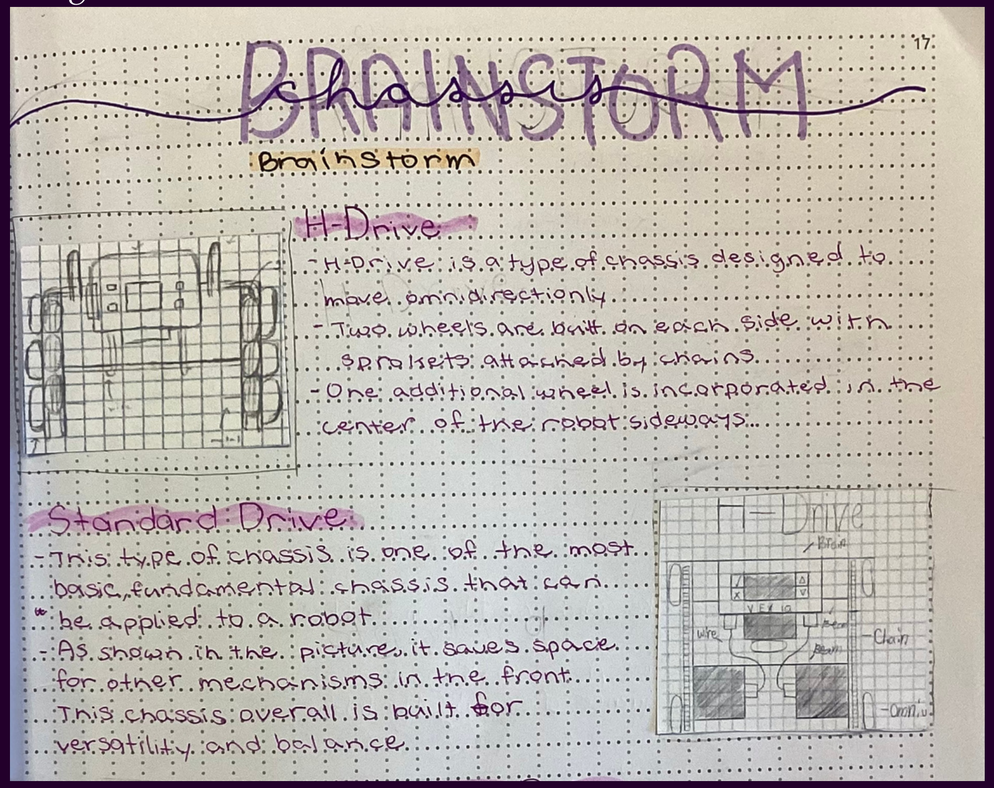
Our team brainstormed on potential robot designs that are capable of overcoming the various obstacles of the game. These are initial designs before the knowledge of research.

Research:

After brainstorming, we researched and viewed recent ideas and models of subsystems that can be integrated into our robot.

Plan:

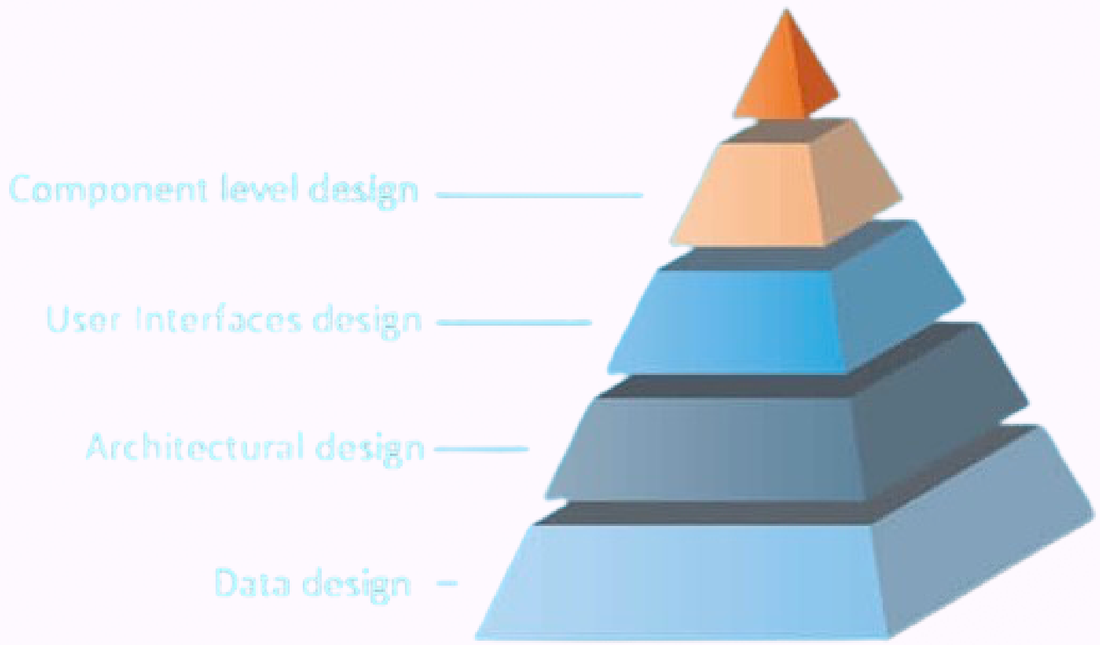
We make sure to manage our time by setting deadlines and finishing times.



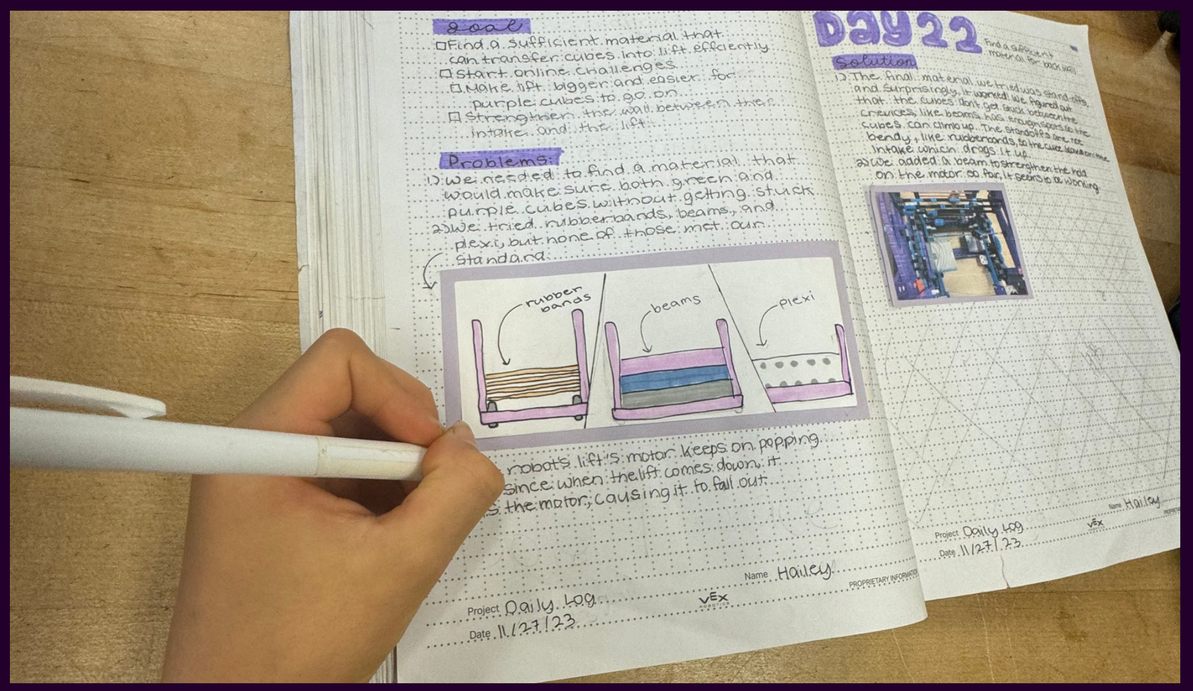
In this step, we rapidly come up ideas for our prototype.

DESIGN

When designing, software engineers remove ideas that will not work. They also design miniature sized prototypes that represent their finishing model. It serves as a blueprint for the ending prototype, showing a simple outline of features, and user interaction.



Similar to software engineers, we plan out our robot's design before making it. To do this, we eliminate prototypes that seem insufficient and improve our best design. We do this by sketching and explaining it in detail in our notebook.

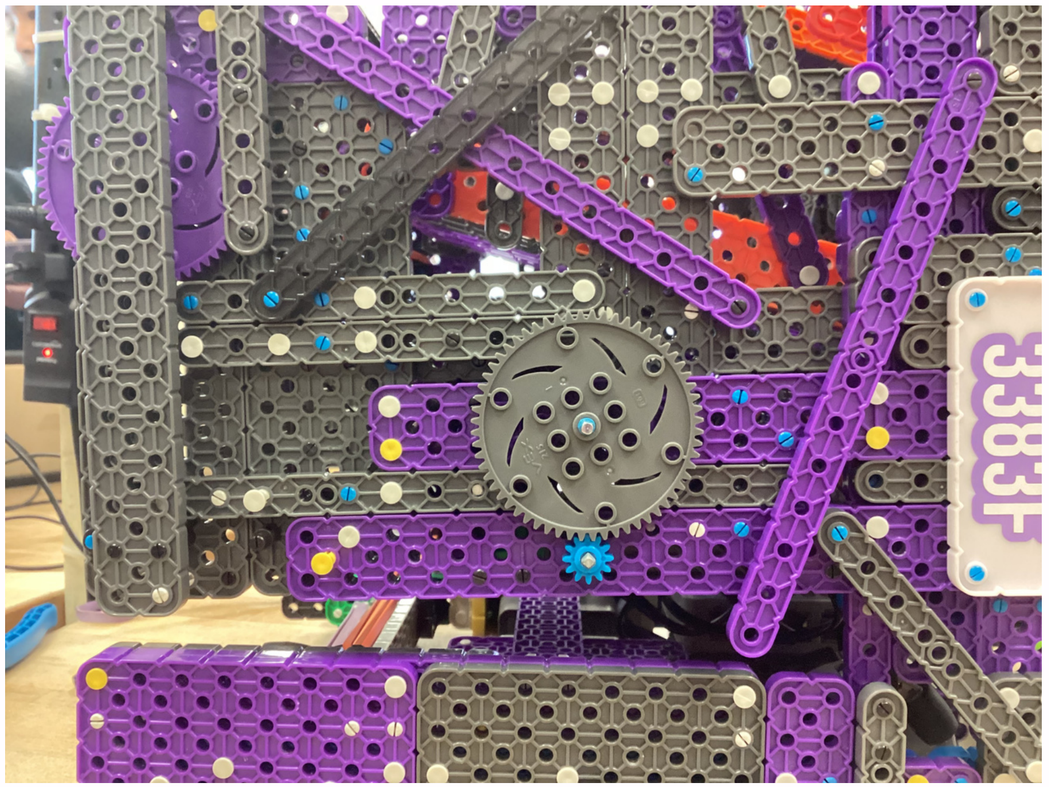


We record every step we take in our notebook.

BUILD

After much planning and careful consideration, software engineers take their initial best idea and start coding and designing a model. While building the model, software engineers think of the most efficient methods of coding to manage time properly. The engineer also has to make sure each piece fits perfectly together to ensure that the build/code works smoothly and without problems.

Like software developers, we begin building the selected prototype with a clear image in mind of the task. To increase efficiency, we include each other in building different subsystems simultaneously.

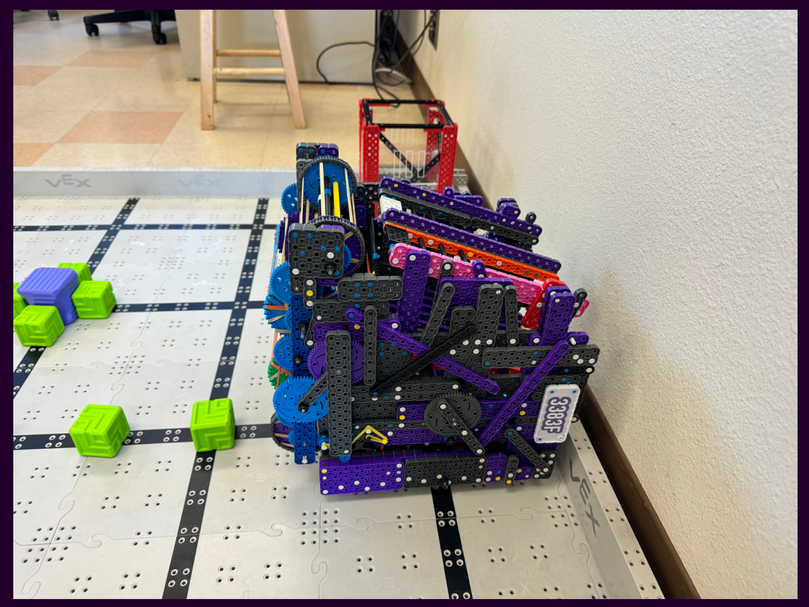


Our Choo-Choo lift mechanism

TEST & EVALUATE

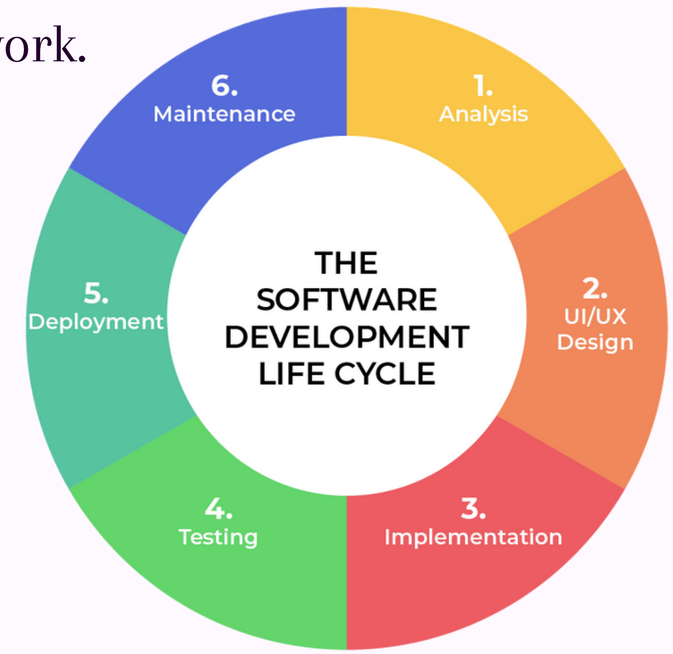
After the prototype is developed, it goes through testing. Both developers and clients evaluate the functionality of the prototype. They inspect for issues, bugs, and room for improvement. Clients can interact with the object, being able to provide current feedback on the product's usability and convenience.

When we test, we investigate every mechanism to see if they function effectively. This process is very similar to software engineers but in a different way.

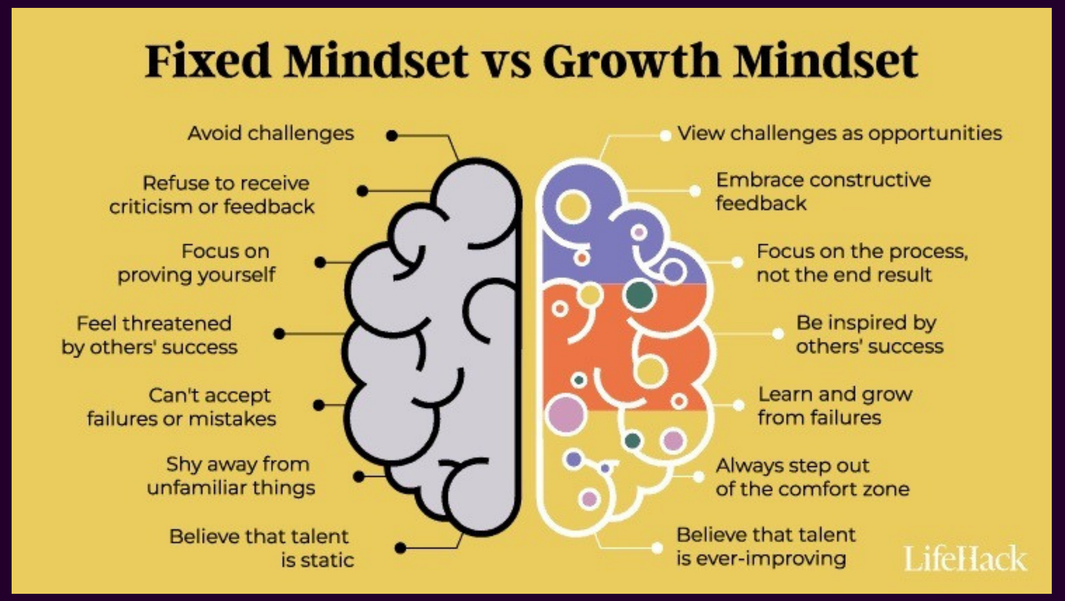


REPEAT

From refactoring and organizing codes to adjusting prototypes based on receiving user feedback, software developers continuously strive for improvement through a diverse approach. They may repeat various steps to enhance their software. Software developers may reconsider their original prototypes and find solutions to problems related to the code. They recognize the flaws that exist within their work.



Like software developers, going back to prior steps in the Engineering Design Process is an integral step for our team. We identify what worked well and what didn't. This helps in learning from mistakes and successes. We make sure to communicate and analyze our results and adjust to problems in our work. We embrace failure and maintain a mindset where we see failure as an opportunity to learn and grow.

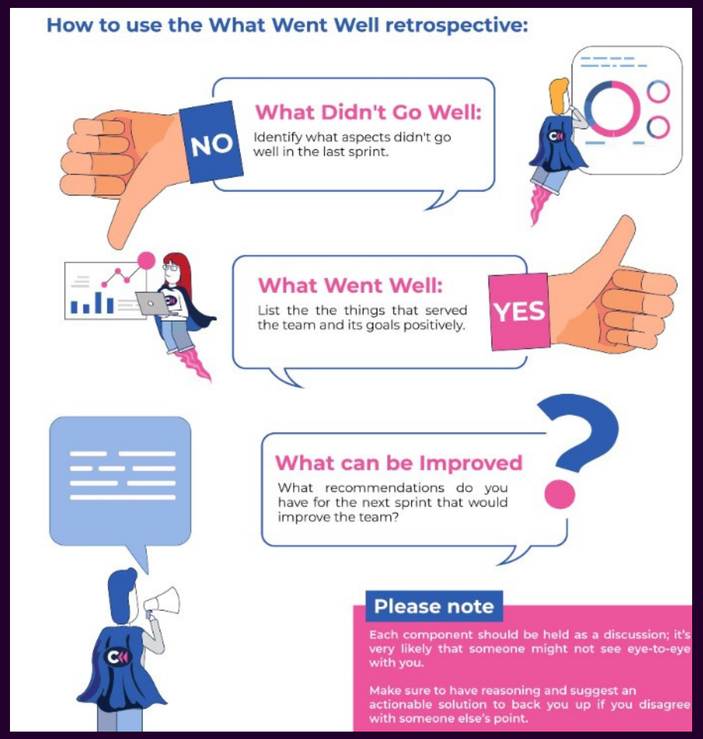


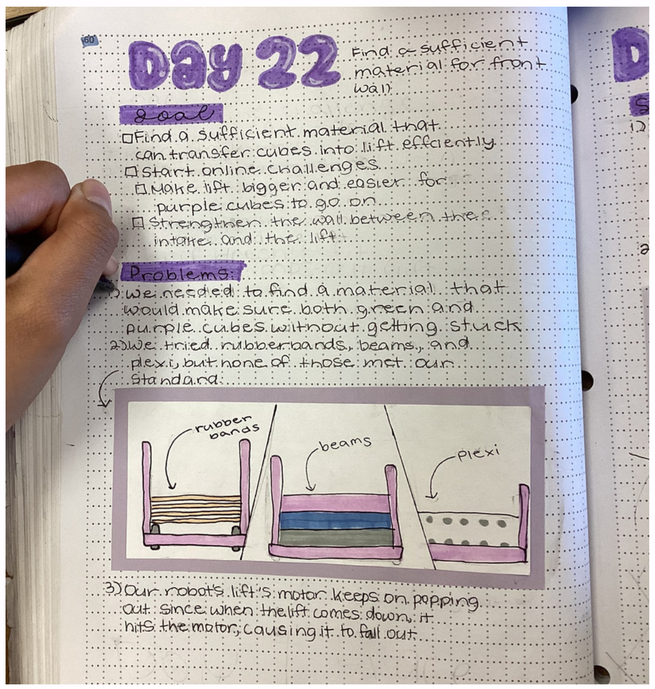
Having a growth mindset is an essential part of following the engineering design process.

DOCUMENTATION & COMMUNICATION

Software developers always document information to gain a more profound understanding of coding. Documentation is a guide for software developers, and it helps them understand the language of coding and how distinct components interact with each other. They can also refer to and share each other's work, leading to increased collaboration.

We follow the "What Went Well" retrospective to improve the design and build of the robot,





Software engineer make sure that they provide lots of information

HOW WILL VEX BENEFIT THE FUTURE?

Introduction to Distinct Careers

VEX presents various career paths that interest and fascinate students.

Practical Skills

VEX teaches students like 3833F practical skills like managing time wisely and documenting information.

Competitive Atmosphere

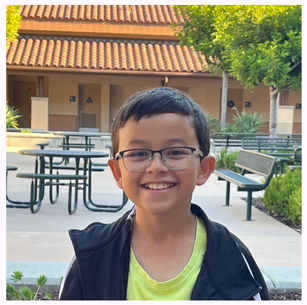
VEX includes and prepares students for competition, which is ubiquitous in the vast world.

Social Encouragement

VEX encourages students to socialize and interact with others to complete tasks.

MEET 3383F

Aaron
Builder



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REFERENCES

Website Citation

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- forbes
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- analyticsinsight
- coursera
- theknowledgeacademy.
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