

The background features a light blue grid pattern. In the corners, there are several stylized gear icons. Some are solid blue, while others are white with blue outlines. The gears vary in size and are arranged in a way that suggests a mechanical or interconnected theme.

# Career Readiness Challenge - Cybernauts 3959E

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Rupesh

Based In Holly Springs



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# About the Team

Hi, we're Team 39359E.

Our names are Joshith, Sathvik, Avyukth and Avni.



Hi, my name is Avni. I'm in 8th grade and I am a skills and alliance driver and a builder for the team.



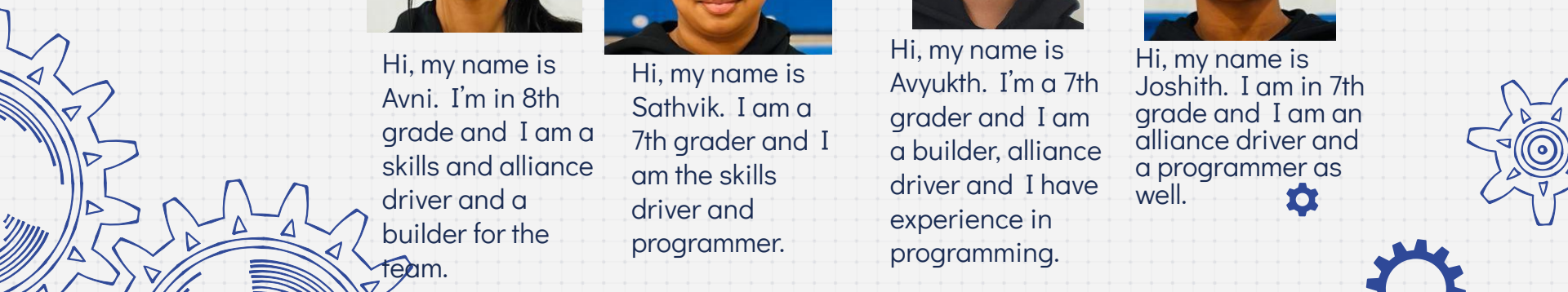
Hi, my name is Sathvik. I am a 7th grader and I am the skills driver and programmer.



Hi, my name is Avyukth. I'm a 7th grader and I am a builder, alliance driver and I have experience in programming.



Hi, my name is Joshith. I am in 7th grade and I am an alliance driver and a programmer as well.

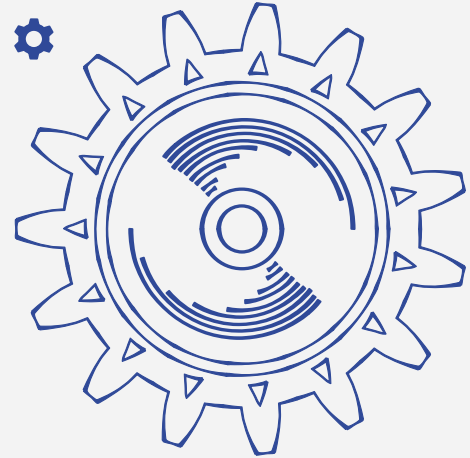




# What is a Software Engineer?

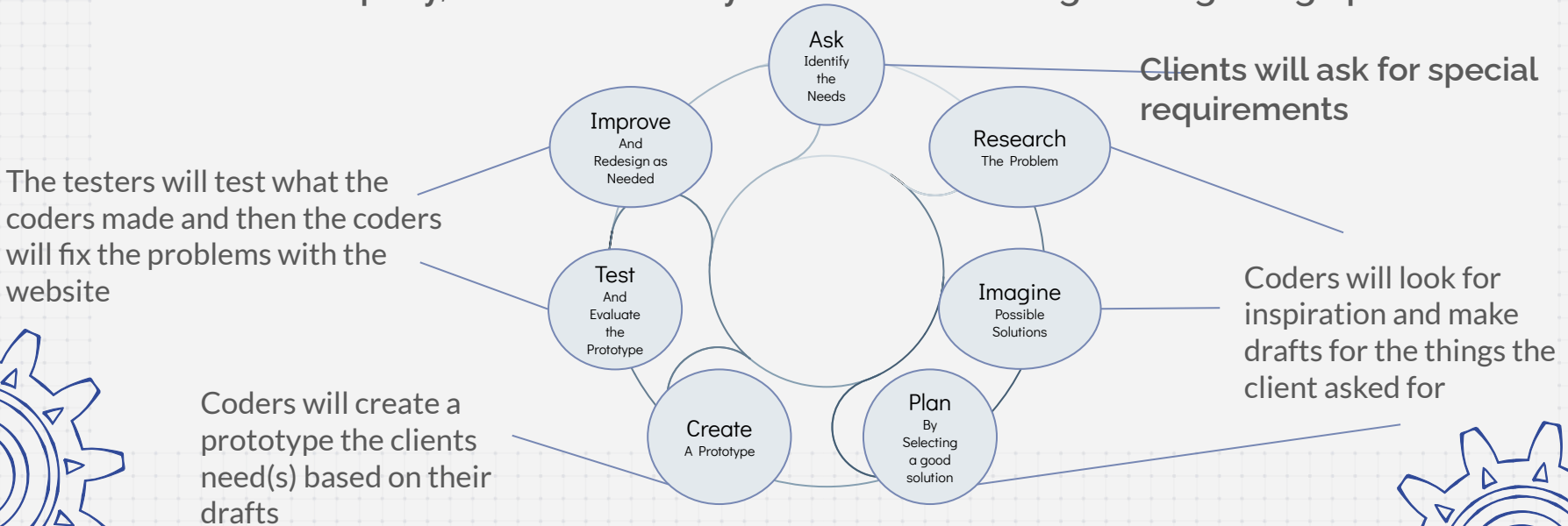
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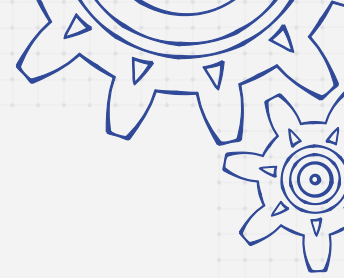
A software engineer is someone who uses their engineering expertise and knowledge of programming languages to make application for end users like us. This very presentation which is being made on Google Slides is the work of several software engineers. They used that engineering expertise and their knowledge of programming languages to create this product for end users like you and me.



# Why Software Engineers and About The Engineering Design Process

The reason we chose a software engineer is because they use the Engineering Design Process on a day to day basis. For example, take the coders and testers of a software company, look at what they do based of the engineering design process.





# A Software Engineer's Engineering Design Process

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A software engineer uses the engineering design process in many ways. First, the clients ask for requirements to fix the problem they have on their side. Then, the engineers research on that problem and what they could do to fix it. Once they have a general image of the problem, they brainstorm of possible solutions they could use to fix it, coming up with multiple designs. Choosing a solution is the next step: to plan. Once they have finalized the solution, they then create a model of the solution, and they then assess the model, determining if it is functional for the problem or not. They could either give the model to the clients, or have testers identify if their model is successful. If not, they choose a different solution and try again, which is the step of redesigning. If it is functional, they still try to improve it to make it the best possible. Finally, they present it back to their clients to fix their problem. If it doesn't fix it, they go back to brainstorming and go from there.



# Our Team's Engineering Design Process

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Our Vex Iq team uses the engineering design process as well. We first asked a question: What would be a good design for our robot, to intake and score blocks, knock down red blocks, and park. We researched and took inspiration from many other bots on the internet. We then brainstormed about the bot designs, and came up with an arm based design. We used this design for a few months, until we realized that it was neither very stable, efficient, nor consistent with our scores. We then created a completely new robot which uses rollers for the intake and outtake, a conveyor to transport the green blocks to the outtake, and a separate section for the purple blocks to get out-took. We used a half omni wheel and and half traction wheel drivetrain which uses 2 motors. We used this design for our first 2 tournaments, and realized we needed to score more blocks, and have a faster outtake, so we built a new robot. This robot also has rollers for the intake, and it can hold 14 green blocks and 6 purple blocks(not at the same time). We also made an outtake which uses the elevator mechanism to speed up the outtake time. We are going to be using this model for the states competition, and might change the model after that. Software Engineers fulfil other people's needs. We fulfill our own needs. While software engineers have testers, we are the engineers and testers.





# How Does Vex Robotics Prepare us for Future Careers?

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It can teach us how to manage ourselves and improvise if anything goes wrong, for example at our recent competition, we learned that we couldn't execute one of our programs, so we improvised and made a new program to hit the red block so we could still gain points rather than gaining a measly number of points. This also helps us become prepared for anything that might happen when a procedure is taking place in our future careers. For example, a doctor needs to make split second decisions that might cost the patients life during emergencies to save the patient.

Vex Robotics helps children improve their stem skills for their future careers. For example, a civil engineer will use engineering to design structures like bridges, and a software engineer will use technology to write code. In robotics, we build a robot to collect and outtake blocks, similar to a civil engineer's job. We also write code for our robot to score points using technology.






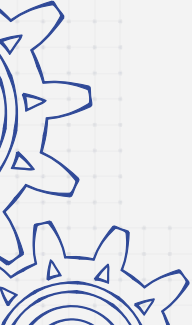
It helps children get better at collaborating with different people and working as a team to successfully complete tasks. In almost all careers, you work with other people to get information, share ideas, and solve problems. For example, a software engineer might review another person's code to make sure it works, and they may work together to write code. In vex robotics, we work as a team to write code that corresponds with the other coders code, and we build the robots with the help of the whole team. In alliance driving matches, you have to quickly and efficiently communicate with the other team to try and score as many points as possible.

Vex Robotics is a platform to extend our creativity into the field of engineering. It allows us to use our creativity in versatile way using the robot we build as the vessel of our imagination. We can use to create different outtakes, intakes, drivetrains, and other special functions like a conveyor belt. The applications are limitless. We can use that creativity to think of ideas and solutions never been heard of and certainly never thought of.



# Sources

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