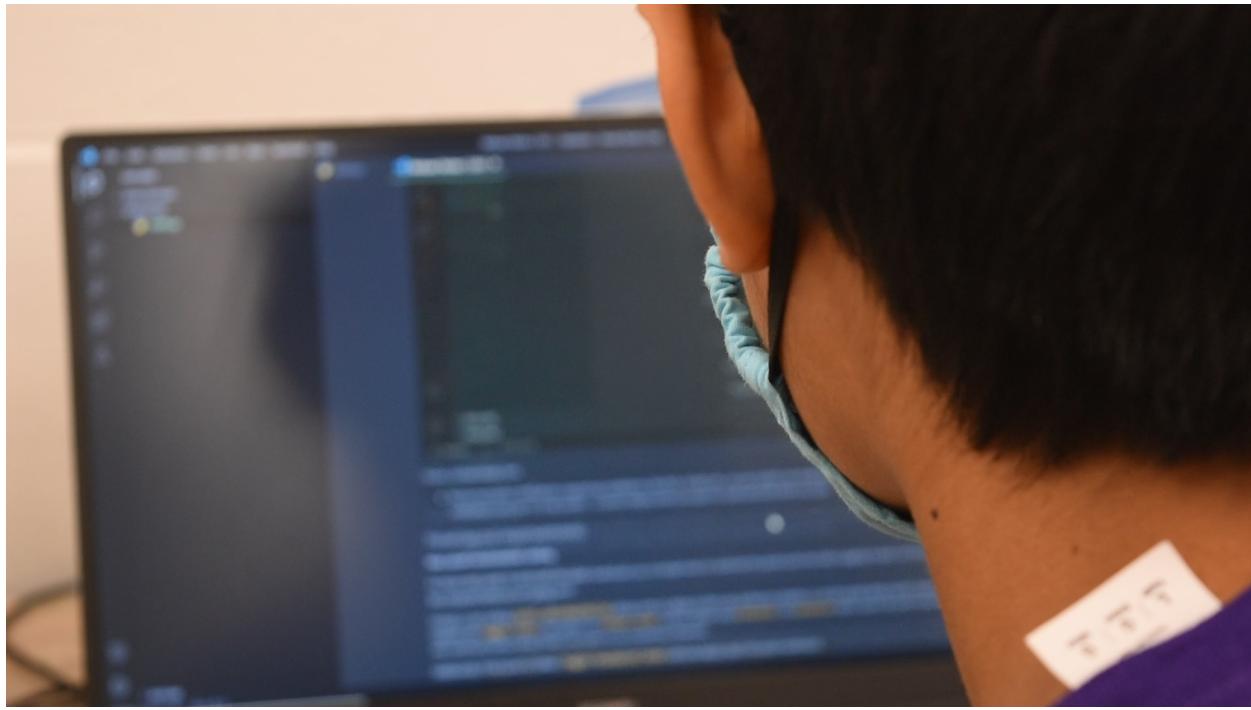


VRC Middle School - Career Readiness Online Challenge

Programmer

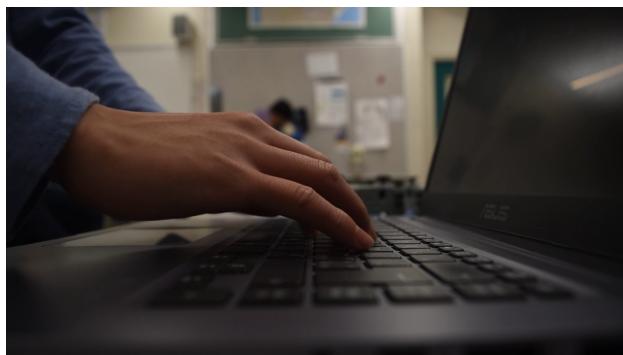
Created by 10012W

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Vast STEM careers exist in our world, each more stunning than the next. Each of these careers have an equally important involvement in STEM as a whole. One of these STEM careers is a Programmer and Programming. Programming is like the brain of the body. Without it, a robot has all the necessary pieces to function, but has no direction or queue. When we add programming, the robot comes to life and everything is able to function. This career appeals to us the most because it is in control and is similar to the leader. When it gives a direction, everything else works in unison and falls in line to meet its directions.

In our small VEX robotics teams, being a programmer is essential. Being a programmer in VEX competitive robotics directly prepares us to be programmers in the bigger world as it not only teaches you how to code, but how to problem solve, manage tasks and work as a team. The most successful programmers in the world have a certain amount of versatility. They are able to be versatile and maneuver their skills effectively to benefit the team. VEX competitive robotics can give us these skills. Furthermore, programmers also study and are familiar with a multitude of languages. This allows them to easily move between languages to meet the need of the task at hand. Knowing multiple programming languages is a strong advantage programmers can learn from VEX as VEX supports both Python and C++. A successful programmer can also solve problems very efficiently. They should be able to work around problems and solve them with others. In today's world, the world is leaning to rely on technology and with that comes programming. In the future, we believe everything will rely on technology, thus, relying on programming. We also believe programming will change into new, more advanced programming languages while the old ones fade away.

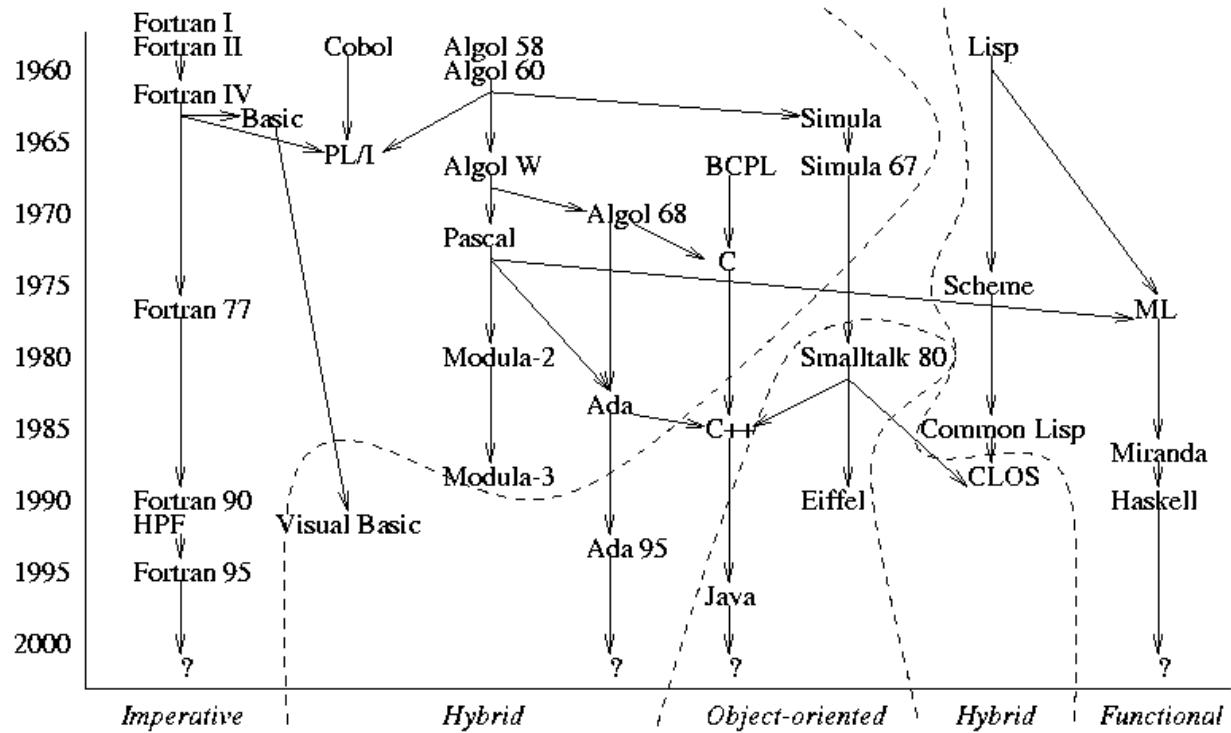


From my point of view, programming will become easier to do, understand, and be more accessible especially with the help of VEX robotics. We can see VEX competitive programming becoming easier with new forms like block-coding and movement inputs to code. This makes it easier for someone to start programming and more advanced programmers to save time. To continue, a very important aspect of programming is what you program, essentially the vessel for your program to

take effect. In the real world, programmers can program an infinite range of things, from machines to cars. VEX competitive robotics can prepare us for this as they not only support EDR, but also Drones, Factory Automation, and many, many more things to program. This variety and range that VEX competitive robotics offers can incredibly benefit future programmers looking for careers and job opportunities to give them an advantage in the real world.

To continue on, programmers solve problems effectively and find solutions using a process known as the “engineering design process” which not only solves problems but can also find new, unthought of ideas. A very important and unique way we can see the engineering design process is in the branches and development of programming. Looking at the history of programming languages, each language plays a crucial role in developing the next. We can start with Plankalkül which started before the tree. Plankalkul was a very basic language but was the base of everything. Next, there was the mathematical theory of communication followed by John Backus’ SpeedCode. John Backus’ completed the speedcode for a large-scale scientific computer owned by IBM. John Backus’ then went on to lead

another IBM team that created Fortran which shows the first signs of similarity to modern day code. It showed similarities to modern day as it was the first language that uses English-like statements. Skip forward a large amount of years and COBOL was produced in 1960 which stood for Common Business-Oriented Language. COBOL's aim was to be easily readable by computers and to have a large sense of independence. One of the things that was generated between important developments was ASCII which is still used today. ASCII code was a form of 128 unique series of both 0s and 1s. Each 128 of these sequences represented an English letter. The ASCII code is still used today to convey information from a machine that has a different manufacturer. The next important and popular language is BASIC, the aim of this language was to be easy to understand so new beginners could learn how to code. The next very important language was in 1972 when C programming was released by Dennis Ritchie and his team. This process of generating new languages is continuing to this day and we see new programs being put into action like Java, C# and now, Ruby.



You may be wondering, how does the history of programming languages relate to the engineering design process? To simply put, the development of languages and modern programming relies heavily on the engineering design process, without this process programming wouldn't have developed to where it is today. The engineering design process is all about failure, analysis, problem-solving, then finally, success. The process of developing new programming languages is very much like the process our team takes when we solve problems and create new mechanisms. We first start with failure, we then come together and conclude possible solutions, after testing these solutions, we can find success. However, when our team cannot find success, we approach the engineering design process again until we are satisfied with our results. If the most important people in developing programming like John Backus hadn't used this process, we would surely be progressing and advancing very, very slowly.

In conclusion, we are team 10012W and we are a first-year team competing in VEX EDR competitive robotics. Competing in VEX competitive robotics can teach us cooperation, teamwork, and programming skills that can prepare us to become a programmer in the real world. With VEX robotics, we truly believe programming can forever be changed.

