Software Development

Approximately 85% of businesses in the United States depend on certain computer applications. Some are used to store customer data, sell products online, or keep track of sales. Regardless of its use, computer software is a vital component of this modern world. These complex software applications are designed and built by software developers. Software developers may work individually or in a team to create certain computer applications. These computer programs may be used by their company, or may be distributed directly to clients. Software developers possess certain qualifications, are impactful to society, and must overcome certain challenges; all while developing these complex computer programs that humanity so heavily relies on.

First of all, becoming a software developer requires many different qualifications and traits; including an eagerness to learn and substantial patience. Computer science involves many complex concepts and requires great knowledge of many different technologies. Due to this great intellectual demand, most positions in software development typically require a bachelor's degree or higher. Almost all positions require a major in computer science, regardless of the required degree. Additionally, software development also requires certain personality traits in addition to its few educational qualifications. Software developers must have a vast eagerness to learn; the ever changing technologies and tools that developers use daily require them to re-learn certain technical concepts. The article written by Sakshi Gupta and published by *Springboard* on July 8th, 2020, titled "5 Qualities of High-Performing Software Engineers", reads, "Programmers spend more time learning than any other professional—48% of software engineers learned a new skill recently, compared to 36% among all professionals. Continuous improvement is not just a good practice for the software, it's great for the engineer too."

Therefore, even the most profound programmers learn new things every day. This is because development tools and technology that developers use constantly evolve and change, which requires software developers to re-learn certain concepts. The article additionally mentions that software developers must not only learn about new technologies in order to improve upon their software, but also learn to improve their own knowledge. Improvement isn't only good for the developers' work, but also for the developer themself. In addition, software development also requires great patience and perseverance, because of the many technical difficulties that one may face. Since software development involves complex logic and often depends on software maintained by other developers, software developers will face many frustrating technical problems and limitations. However, developers must find eccentric workarounds to the various problems they may encounter. Since many problems are caused by software that developers' projects depend on, developers may not always have control over the causes of certain problems. However, they must have immense determination and patience in order to solve these frustrating and time-consuming issues. Software developers may even need to rewrite entire libraries or frameworks that their projects depended on if there is a critical problem with the dependency, which can be extremely time consuming and requires great effort and perseverance. The article titled "11 Beneficial Personality Traits of a Successful Software Developer", written and published by Stephan Bradstreet, a professional software developer at *Amazon Web Services*, published on July 6th, 2016 states, "Software development comes with several challenges. You will spend a lot of your time rooted to your computer screen as you write super-complex codes. You must, therefore, have the patience to persevere through challenging situations and provide a solution. This field also involves a lot of teamwork, which might be time-consuming. You should create a room to accommodate others, however dull or discouraging they sound. You are likely

going to give up on your career soon if you lack the courage and resolve.". Thus, software developers must not only need great perseverance and patience in order to solve problems that are often out of their control, but must also have good teamwork and communication skills in order to effectively solve technical issues. Furthermore, the process of debugging software is extremely time consuming, and developer's coworkers may not always be helpful or encouraging, which takes great patience and grit to overcome. Therefore, software development requires many specific traits and qualifications including an eagerness to learn and great perseverance.

In addition, Software developers' complex work greatly benefits their company and the world around them. Software developers' software may be used by other members of their company in order to create or market a product, or developers' software may be directly distributed or sold to clients. Unlike other careers, software development is not specific to certain industries, since almost every industry depends on software in a certain way. Software developers contribute to the overall success of their company by developing and maintaining software that is crucial to creating or marketing products. Companies that sell physical products may use software to help keep track of sales data or may sell their goods through a website. Even companies that sell software may depend on other software that is created by its own developers, such as database or server software, custom user interface frameworks, scheduling software, or even custom operating systems. The resource published by *Achieve3000*, titled *Career Center: Software Developers, Applications*, reads "Software developers create and make modifications to applications, or programs that enable users to perform tasks. Working individually or as part of a team, they start by analyzing the needs of users and then develop software to address those needs." The text explains that each individual developer is not only an asset to their company,

but are also vital to their individual department or team. Software developers develop software that is valuable to their company. Software developers also design and plan the software based on its use, in addition to developing it. Therefore, developers are also responsible for the user experience of the software, not just its functionality. Software developers not only make an impact on their company, but also directly affect the world around them. Since software developers create a variety of products that may be used within their company or may be sold to clients, their products impact society in many diverse ways. The article titled "What is software and how do we use it nowadays" published by *Amsterdam Standard*, reads, "Digital alarm clocks, electronic parking meters, home security systems, traffic lights, fire alarms, printers, and many more are all examples of software in embedded systems we use nowadays. Lights around town and at your home can brighten when they detect you are walking in the darkness; televisions can make suggestions and record favorite shows based on your preferences, and that's all because of technology and software." Therefore, countless everyday utilities depend on software to function, proving software developers to be vital to society. Hence, software developers make a huge contribution to their company and the entire world, just by doing their everyday job of developing and designing software.

To add on, software developers often face many challenges during their daily workflow; some of these challenges include dealing with outdated technologies and ensuring software works across different platforms. Software development involves working with several dependencies and technologies. Moreover, software developers must keep up with ever changing technology and waning support for older dependencies. New technologies are constantly made and older ones constantly change, which can make it difficult for software developers to keep up with the constantly updating tools they use. Because of the constantly changing tools and

dependencies that developers use, it may be a struggle for developers and product managers to incorporate the latest technologies into their software. The article published by *3 Pillar Global*, titled "10 Software Development Challenges Faced by Modern Enterprises", reads "We've been talking about digital transformation for years at this point, but many companies are still struggling to bring their systems and processes into the 21st century. Dealing with outdated technology is a huge concern: legacy systems are a prime target for bad actors, end-users can't locate information (and if they can, it's often inaccurate), organizations lose time and money to manual processes and poor decisions. On-premise hosting is at odds with remote work. And, of course, there's all the missed opportunities hiding out in poorly-managed datasets." The article explains that outdated or deprecated dependencies are easy targets for viruses or malware, and also harm end-user experience and usability. This is why using the latest technologies is important to software developers. However, keeping up with new tools isnt the only challenge software developers face. Making one's software function across different platforms and hardware can also be a huge hassle for software developers. Due to the countless different operating systems, programming languages, and hardware that exist, software may not always function as intended, or at all, across different platforms. The article titled "10 Software Development Challenges Faced by Modern Enterprises", published by *3 Pillar Global*, states, "Today, there's the expectation that companies need to offer a unified—or rather "seamless"—experience across all platforms, channels, and devices. One of the biggest challenges facing software development teams is the pressure to maintain consistency—in tone, messaging, and aesthetic across all touchpoints and be ready to provide on-demand support wherever customers decide to make contact. 3Pillar's Abel Gonzalez Garcia shared an example from a project he worked on. He says, "in one recent case, the application that we were testing

was designed to work on different OTT platforms like Roku, Apple TV, Fire TV, Android TV, and Xbox. This is a significant challenge, as we need to have the same functionalities on all the platforms, however, sometimes the platform's architecture didn't allow us to implement certain things, and we needed to figure out a workaround."" Thus, software developers not only need to ensure their computer programs work across different platforms, but may even need to rewrite the entire application in a different programming language, or using different libraries, in order for it to function on different platforms. Therefore, software developers must overcome certain challenges during their daily workflow, such as keeping up with constantly changing dependencies and ensuring their software works across many different platforms.

Thus, software developers must adhere to certain qualifications, are a vital part of society, and must overcome complex challenges. Software developers must have an eagerness to learn and immense patience in order to effectively design and develop their software. Developers are a useful asset to their company and team, and also contribute to many aspects of modern society and impact the daily lives of many around the world. Software developers must also overcome certain technical issues such as keeping up with new technologies and ensuring their programs work across different platforms.Therefore, software is one of many other vital components of modern society and is a great technical achievement that has effected the world at an immense scale.