

Josiah Sanchez
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Software Engineering in the Games Industry

In 2020, the lives of every human being on the planet were turned upside down. Due to the global pandemic, that still plagues us to this day, many different industries have been forced to operate in a limited capacity. An example of this would include the film industry, which is still producing films with many movie theaters being closed because of the pandemic. However, entertainment-related industries are not dead, but rather some sectors are flourishing such as the gaming industry. According to Newzoo, a gaming and e-sports analytics company, “2020’s global games market will generate revenues of \$159.3 billion” (Wijman, 2020) which would be a growth of approximately 9.3% (Wijman, 2020). This can be compared to the 8% growth in the same market between 2014 through 2015, estimated around \$61 billion (Desjardins, 2017). Trying to search for employment in a rapidly growing industry is one many software engineers will strive to be part of. Not only are aspiring software engineers scouting for companies to work for, but nevertheless game developers are also scouting for software engineering talent to fit their needs.

In every industry, there are heavyweights and these companies are known to have the reputation of releasing quality products to consumers. In the gaming industry there are big names such as Bethesda Game Studios, CD Projekt Red, Rockstar Games, Ubisoft, and Electronic Arts to name a few. These are all ideal landing spots for employment; however, some are more ideal than others. Bethesda Game Studios, who is famous for game series such as *The Elder Scrolls*, *Fallout*, *DOOM*, and *Wolfenstein*. There is also CD Projekt Red who has developed *The Witcher* series and the recently released *Cyberpunk 2077*. These two companies are some of, if not, the

industry heavyweights and can even be called the “best in the biz”. Both companies have a strong reputation of releasing large, groundbreaking titles that push the limits of both world building and storytelling. In any case, the focus will be on Bethesda moving forward.

Bethesda, which is known for its catalogue of roleplaying games (RPG) in both the fantasy and science fiction genres. Bethesda was originally established in 1986 by Christopher Weaver, and just like other tech companies, started small and began to grow larger over the years. With game series that set the bar of what RPGs should be, Bethesda became one of the best in world building, game design, and storytelling. *The Elder Scrolls* and *Fallout*, both became huge titles among gamers who love RPGs and would continue to release titles without gamers feeling underwhelmed. For example, *The Elder Scrolls V: Skyrim* originally released in November 2011 and to this day is still one of the top sellers on Steam, an online games marketplace for PC (*Top Sellers*, 2021). Not only is *Skyrim* a top seller on PC but has been a competitor for over two console generations, originally releasing on XBOX 360 and Playstation 3 in 2011 and releasing again for the XBOX One and Playstation 4 in 2016 as *The Elder Scrolls V: Skyrim Special Edition* (*Top Sellers*, 2021).

Albeit with continuing commercial and critical success, Bethesda’s relevance in the industry today can be contributed not only to the hardworking developers but also to those that can be known as the face(s) of the company. One of the leaders behind the operation is Todd Howard, who is the game director for *The Elder Scrolls V: Skyrim*, *Fallout 3*, *Fallout 4*, and *Fallout 76*, all of which are large open world RPGs. Howard originally began his career at a much smaller company, yet he did not always start out majoring in game development or software engineering. In college, Howard originally majored in finance, but it did not deter him from his passion and desire to make games. Instead, he still found ways to make himself known

by stopping by the Bethesda studio on his way home from school asking for a job. Although he constantly tried to get hired while in school, Howard did not start working at Bethesda until 1994, beginning as a programmer working on a wide range of games such as *The Elder Scrolls* and *Fallout* (Game Informer, 2011). Now he focuses on pitching his team's ideas and brainstorming what can be added to the game which he said in an interview with Geoff Keighley (Takahashi, 2018). Then on the business side of things there is Pete Hines, who is the vice president of public relations and marketing. Unlike Todd Howard, who has been with Bethesda most of his career, Hines joined the company after finishing his MBA at George Mason University in 1999 (Jackson, 2009). In 2015, with the release of *Fallout 4*, Pete Hines did something that many were not expecting by announcing a Bethesda Showcase during the Electronic Entertainment Expo, also known as E3 (Henry, 2015). This first E3 showcase not only brought Bethesda to the forefront of the expo, but it also brought more limelight to an otherwise undetected company.

In recent past, the company has not been without controversy, most notably the fiasco that was *Fallout 76*. The controversy originally began with a false advertisement surrounding the collector's edition of *Fallout 76*. In which Bethesda did not deliver the advertised product of a high-quality canvas duffle bag matched with the game but instead, sent gamers a cheaply made nylon bag (Kain, E. 2018). This does not even include the many issues that also came with the game at launch. However, despite controversy, Bethesda is a developer that is held to a higher standard and rightfully so. With the amount of critically acclaimed titles, Bethesda still has the capability to deliver titles that their community will love. As long as they do not have a disastrous launch with future titles, their reputation will continue to stand strong.

Just like how Bethesda likes to push the boundaries of what open world RPGs should be in terms of not only setting but immersion, there are many advancements and trend other than game development. As gaming continues to grow into a much larger industry, there are trends that can be seen especially in graphical fidelity or photorealism. Originally video games were two dimensional games with pixel characters to play as. Within the span of about 40 years, more life-like or photorealistic characters are now appearing on screens across the globe. Not only is photorealism becoming a trend, but then there is a next step. This next step was revealed when NVIDIA announced its new line of graphics cards, the RTX series which would bring raytracing to personal computers (Lee, 2018). With raytracing graphics cards in PCs, video games will no longer have photorealistic images but more realistic lighting and reflections, making what gamers see on screen look that much closer to reality.

The gaming industry is not just about programming or software engineering, but it can span across many different aspects of not just engineering but the arts. These games need creative writers, daring artists, and graphic designers. However, for myself to find a way to enter this industry, I need to choose a focus or specialty and that specialty happens to be Software Engineering. I am not focusing on the on the gaming industry because I play video games, but it is because of passion that I can see the heart and dedication coming from developers. Video games have had such an important impact, not only on myself but many people throughout the world. There have been games that bring tears to people's eyes or even touch their hearts to do something special. People use video games to escape reality when it becomes too tough or even to move past rough memories. It is for that reason that I strive to work in this industry.

How would I go about trying to get to become a Software Engineer in the gaming industry? There are many different routes to take, however, I already have a path and plan laid

out. First and foremost, is to earn a degree. Going into specifics, it will be a bachelor's degree in computer science. I do have a degree, but that is an associate degree in computer science which led me to where I am now, currently enrolled at CSU Monterey Bay as a student in the CS Online program. All the classes that are a part of my Individual Learning Plan (ILP) are the road that is laid out ahead of me. However, these are not the only classes that I need to take. If possible, try to find outside education courses that pertain to that industry such as game development courses or even game design courses would greatly me in my goals. Exercising my skills in the programming languages that I know and expanding my repertoire to meet the languages used in the industry to furthermore make myself a viable addition to the development team. According to the Software Engineer listing on Bethesda's website, some of the languages used are "C++/C, C#, Lua, Python, Golang, etc." (*Job Opportunities*, 2020).

Studying is a very important aspect when it comes to trying to find a career, but there is also one more thing that needs to be considered and that is experience. How would I find experience to add to my resume? The best solution is searching for internship opportunities or even open positions at local tech companies. A wise option would be to apply for a position at MindBody in San Luis Obispo, California. Not only is the company local, but also having a referral could lead to an advantage in the hiring process. According to Senior Editor for Job Search & Careers at LinkedIn News, Andrew Seaman, "Employee referrals are often thought to be the proverbial golden tickets of job seeking" (Seaman, 2020). This here is perfect, because of connections that have already been made with one of the database administrators that I personally know at the company. Although it does not mean that I will be hired on the spot, but it will allow me to get one step closer toward my career goals. Not only is MindBody an option, but there is Vandenberg Air Force Base which is located nearby. With connections that I made

while working there in the past, this is another opportunity to not only find employment but most importantly, experience.

Why is work experience important? I like to think of work experience as an advertisement for yourself. As discussed earlier concerning the reputation of Bethesda, work experience would be the reputation of the employee. The purpose of finding employment and gaining that experience, is to prove one's reputation. However, is work experience the only thing that is needed to achieve one's dream job? No, you also need to prove that your experience has been put into practice. Building a portfolio needs to be a part of that plan and the portfolio does not need to be solely made of work-related projects. Try to find a personal project to work on, or even try to develop a small game. Build a portfolio with projects that show you are truly up to the task and the best candidate for the position.

To accomplish many of these goals, I would need to stick on my current path. Everything so far is laid out for me to succeed. I have my ILP that has a schedule and plan laid out for me, detailing the classes that I need to take. Some of these classes include Software Design and Software Engineering, which will help me develop and master my computer science skills. To find employment and to stand out from the rest of the pack, mastery is of utmost importance. Placing everything that I learn from here on out into practice, setting goals for the future, and being disciplined in studying and educating myself. There is a world of information out there just waiting to be learned and waiting to be read, all I need to do is to go out there and find it. There is no excuse when it comes to a lack of knowledge or not knowing how to do research to find the right answers. I have to be able to ask questions without embarrassment and I also need to have the drive and motivation to find the right answer.

To conclude, there are many students who are going to be seeking employment after graduation. With the ever-growing gaming industry, one can truly expect game studios to be a hot destination. However, not everyone will be hired and not everyone will have the same qualifications. There are going to be applicants that have a wider range of skills than you do, but that should not discourage you moving forward. Instead, use this as motivation and become better at your craft. Many people love working in the gaming industry and many people enjoy working at Bethesda. Jeff Gardiner, a senior producer, said, “I feel like I never go to work. When you not only love what you do but the environment you do it in, you never have to feel like it is work” (Jackson, 2009). Imagining that environment is the motivation and drive that I need to continue in my goal. With games becoming more advanced and more immersive, the best option is become more prepared, become more qualified, and become more accustomed to change. The gaming industry is constantly evolving, and it is only right that I keep up with the pace.

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