

Mobile App Development: Behind Every iPhone is a Non Disclosure Agreement for the Next Software Update

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Abstract

A new feature for an app that is downloaded to every iPhone was developed during the summer of 2022. However, the Cupertino-based technology company requires a Non-Disclosure Agreement (NDA) from its employees and interns so the feature may never see daylight. During my summer internships with this Cupertino-based technology company, I came in with many ideas for possible new features and worked with my team members to craft and narrow down the project with the most potential. Over the course of twelve weeks, I coded in Xcode using Objective C and Swift to build out the feature to a working prototype. While the end result was not perfect, the idea was pitched successfully, establishing the potential the app could grow into if the feature were adopted and developed further. While it was not tested on real users due to the confidentiality, there was much feedback that would be resolved with this feature, so I anticipate it would be well accepted by the public. Additional work on the feature will have to include more bug-fixing and

polishing so that it will be ready for future release.

Introduction

“All ideas grow from other ideas”

– Anish Kapoor

Every day, there is a brilliant idea that an engineer creates. They may share it with excitement to their team at work, and further develop it there, collaborating to form an even more innovative solution. When the engineer returns home that evening, and their family and friends ask about their day, it was just a typical day. As much as they would like to share their million dollar idea with their closest circle and hear their opinions on it, the engineer signed a non-disclosure agreement with the company, pledging not to spill company secrets to undisclosed individuals.

This summer I was able to develop a new feature for an iOS application; however, since it has not been released yet, and since I signed a non-disclosure agreement, I am unable to share the details. I wonder what could have been developed if I had been able to brainstorm with even more

individuals, and how the limitations of my creative circle may have limited my innovation. I did however learn so much during my internship, including the extensive details and thought that goes into the development of an app from start to finish to maintenance, as well as technical skills to get my specific feature off the ground and into prototyping.

Related Works

Witman (2005) discusses guidelines for non-disclosure agreements (NDAs), defining them as an “agreement restricting the use of information by prohibiting a contracting party from divulging data” [2]. He also describes the beginnings of NDAs, where in the “mid 1980’s, universities struggled with how to balance the needs of openness and proprietary control,” spurring from a new US federal law that made computer software’s main protection copyright [2]. This concept has continued somewhat within the academic area, where it is less common for universities to make their materials available to outsiders, though many do maintain special databases to protect student-specific information, including test scores and grades, testing, and lecture material..

In a *New York Times* article, Ovide (2022) discussed the growing normalcy of non-disclosure agreements inside and outside the workplace. For instance, some celebrities “require NDAs for friends or romantic partners” [3]. NDA’s have “become a fixture for many influential people and institutions that want to keep secrets, sometimes for understandable

reasons and” sometimes not [3]. My NDA was intended simply to keep the new features of the app from competitors and to avoid spoiling the surprise for users. The concept of the NDA is sometimes faulty. For example, if “tech workers hadn’t risked breaking NDAs at their companies, the public might have never learned about fraud at the blood testing company, Theranos” [3]. Moreover, NDAs “often protec[t powerful and trendsetting tech companies] at the expense of the rest of us” [3]. “All ideas grow from other ideas” -Anish Kapoor.

In an article about the impact on corporate social responsibility, Jackson, et. al (2020) discusses the idea that self-regulation within companies, while providing flexibility for the companies to “develop best practices...can also lead to complacency if the firms feel no external pressure” [1]. This again touches on the impact of secrets with the company and society, and begs the question: What are we missing out on? Within companies, silos exist between executives, employees, and different teams. One wonders: how is this negatively affecting possible collaboration in the workplace?

Process Design and the Limitations of NDAs

The design of my feature was based on preexisting applications the company had already produced. Architecturally, it required a lot of studying of the existing codebase, from which the app had been developed for many years now. I listed out the possible functionalities I’d like my feature to possess, and I worked with experts

in each of those functionalities to determine the feasibility of the feature. One of the challenges I faced however was the lack of accessibility to other code bases. There were some other app's codebases I had access to, but I was not able to work with the newer code that would later be released in the Fall, though the code would have been helpful for the development of my feature.

Another challenge was that during my internship, I could not share my project, even with some of my fellow interns. Moreover, there were special projects that many of my teammates were unaware of. While I was able to collaborate well with my direct team members, I do wonder what my feature could have developed to be, had I been able to discuss with more innovative minds. Even if the disclosure is simply for new ideas and internal knowledge like codebases, how are the companies limiting themselves by not allowing more collaborations with outsiders—whether it be friends, family, or even competitors? How has the secrecy within these companies held back the innovation of their technology?

As Witman stated, universities maintain their school information as proprietary, preventing knowledge from being shared between institutions [2]. In addition, Jackson claimed that NDAs could create complacency due to the lack of transparency that confidentiality allows [1]. There are major advantages to a more accessible knowledge base. We saw that with Theranos, it was life saving that an NDA was broken [3]. We also know that collaboration is essential in the workplace.

But why not collaborate outside of the workplace? My project could have majorly improved with the help of *outsiders*. By sharing more expertise, more people can be brought into the technology field, which will grow the industry.

Results

The app I worked on previously limited a user's ability to do a certain task, however thanks to my new feature, the app has now been expanded to include other approaches to completing this task. The feature has not been released, and I am not sure it will be, but if it is released, it would open up potential for even more new features within the app, continuing to develop its functions past its original basic utilities.

Due to the confidential nature of my feature, I was unable to fully test it on real users, however testing done by my team and me, we have determined that while it is aesthetically per standards, it does require bug fixes to improve its save functionality, as well as some laginess within the app due to its added abilities. This could be amended with more time and reference to the other features within the app.

Conclusion

My technical project, once fully developed, would help a lot of users around the world, and they would appreciate its addition to the app. Due to its proprietary nature, I am unable to share my idea until after it's released to the public. Moreover, most likely the addition will not occur for some time due to the time needed to polish and test.

I learned from the existing codebase how extensive and detailed a simple app could be behind the scenes, and I got to work from the precedents of code and design from the company's other projects and apps. Most importantly I learned that after a road block, it is best to ask early for help because someone on the team has most likely handled something similar before and could save me from a lot of dead time.

In regards to the Non-Disclosure Agreement, I feel that it makes sense for these companies to preserve their competitive edge, as well as preserve the consistency of releasing only the most polished products. I am however still curious what Big Tech would look like if they allowed the public's opinion while crafting and refining opinions. Would it be more inclusive? I'd imagine it'd snowball into a more impactful feature or product thanks to the increased collaboration.

Future Work

The next steps in this project, as I will be returning to the company after graduation, would be to sort out the final bugs of my minimal viable product, and then build from there the smaller features within my project to make the functionality that much more attractive to users. I intend to test it thoroughly to ensure that there is no memory loss within the program, and that there is sufficient success in performance on a large scale.

Once launched to the public, and if successful, I hope that this feature will create new possibilities for the app that it's

within, where there will be a greater focus on building out features similar and expanding upon my own.

UVA Evaluation

The University of Virginia has provided so much knowledge and so many opportunities to me. The biggest source of resources has been the Center for Diversity in Engineering (CDE). It created a network for me when I participated in Summer Bridge before my first year. It introduced me to my first UVA friends, and it introduced me to the many resources that the Engineering School provides for me, including the Society of Hispanic Professional Engineers (SHPE).

SHPE allowed me to find a group of students of similar interest and background, and it also provided me the opportunity to lead within the Engineering School. I had the privilege to be the marketing chair for our chapter, using my creative skills, and I also had the opportunity to serve as Co-President last year. Also through SHPE, I attended a leadership conference, NILA, and I was able to secure an internship that turned into a second internship and a full time job. Most importantly, it provided a *familia*, who understood what it meant to be latinx in the STEM field.

In my computer science classes, I had two women professors, and perhaps only two people of color professors as well. I felt unrepresented despite the efforts of the University to celebrate and increase diversity within the school. I worked to change this within the Race and Equity Task Force a couple years back.

In terms of the knowledge I gained from the university, many of the skills gained were the basic coding skills like using the terminal, data structures, thinking about efficiency, and adapting to new languages. Some classes like Physics and APMA, at the time, seemed quite pointless to my degree, however it did provide me time management skills, and perseverance in the face of difficult tasks. In regards to what I'll be taking to my job, I will keep in mind the efficiency lessons, I will adapt to a new language I wasn't taught in school, and I will learn about the conventional practices specific to my company.

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References

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