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| I-494 |
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**School of Informatics, Computing, and Engineering**

Capstone Retrospective

Class of 2018

**** **SquaredUp**

Introduction:

The modern form of banking and peer-to-peer transactions is completely changing. There is an enormous demographic of people who are becoming more reliant on different forms of mobile payments, as the industry continues to grow. Through new peer-to-peer payment platforms, people from all over the world can send and receive money between parties almost instantaneously. Some of these mobile payment applications have transformed the modern banking industry and are forcing people to look outwards at how to go about the future of monetary transactions. Due to the new landscape of mobile payments, our team hypothesized that there was room for innovation and a new product line within the industry. We came up with the idea of developed a peer-to-peer payment platform that incorporated a wider range of features that were necessary to meet the needs of people today. *SquaredUp* is a mobile payment splitting, tracking, sending, authorizing, and receiving tool for groups and individual users. We incorporated new features that are not prevalent within the industry, and made sure that group transactions and built in budgeting were our two main priorities. Through defining a clear vision for *SquaredUp* we could design a group payment application, with built in budgeting to help keep track of payment in an organized manner.

Break-down of High Level Tasks per Team Member:

The year-long process that went into *SquaredUp* had a lot of moving parts with multiple different elements. When forming a team, we selected four different members who could each bring a different skillset to the table. This helped us down the line, as we had many different needs throughout the year. The four members of Team 52 are Grant Zucker, Josh Harris, Sam Ruben, and Ben Sack. Grant Zucker’s responsibilities were design, implementation, and documentation. He helped structure the layout of the application. Throughout the year, him and Josh Harris did the write-ups and communicated with the professors and AIs. He made sure that assignments were completed on time and coded the contact list page onto the application. Ben Sack was our team’s lead coder. His biggest role was implementing the payment aspect of *SquaredUp.* He successfully incorporated PayPal, allowed users to link their credit cards, and created a Sandbox account for the payments to go through. Additionally, he set up our login and registration database and ensured that all our user’s data was stored appropriately. The next member of our team, Sam Ruben, was our secondary coder and worked on design as well. Some of his additions included adding a functional camera to the application, incorporating the ability to make groups and add users to these groups, setting up user profile pages, and creating a billings page for budgeting purposes. The last member of our team, Josh Harris, oversaw implementation, documentation, and organization. He kept our SCRUM page up to date, he helped organize meetings, he maintained contact with teachers and AIs, he helped with researching different methods to implement features for our application, and Grant Zucker and him completed the various writing assignments due throughout the year. As a team, we were able to complete our high-priority features because we each catered them to our strengths.

Team Meetings and How We Functioned as a Team:

After brainstorming potential capstone ideas, our team agreed on *SquaredUp* very early in the year. Dating back to first semester, we would meet as a team for almost every small assignment and tech proficiency. We felt that having as much face time with each other as possible would lead to having more cohesiveness. Doing so also allowed gave the team insight into how each member of the team worked best. Once second semester rolled around our team would much more often. During each sprint, we would be meet once a week before each AI meeting and again before instructor meetings. Most of the time we would meet at Luddy Hall. Before meetings we each knew our role and would divvy up tasks depending on what our responsibilities were for that sprint. Having clearly marked goals we were able to keep an organized SCRUM document, with details about what each team member accomplished during each sprint.

While working on the SquaredUp application, our team had accomplished a lot of our goals that we had set for ourselves in the beginning of the year. However, some aspects of our project did not get completed due to unforeseen circumstances when we began our work. First, our team did not complete any technology training. In our past informatics courses, we have learned a variety of programming languages, like HTML, Python, and Java, but for an iOS mobile application we needed to utilize Swift to program. During the first couple weeks of the year, we decided to complete a Swift training course to become proficient in the programming language and to help us better understand how to construct our application. Although we didn’t complete that training goal, members of our team self-taught the programming language and with the use of other resources we completed our application on time.

Also, in addition to the incomplete training program, our team couldn’t complete a couple of the payment functionalities which we outlined in our prioritized feature list. One of those was the ability to receive a push notification from a requested payment and send money directly from that notification. We weren’t able to complete this part of the payment process due to the API we integrated from PayPal. The PayPal system we incorporated utilized sandbox accounts to mimic the sending of payments between users. This was the reason why some of the payment features were limited, or scaled back, from our original plan. Another was the ability to sync the application with Facebook for contact purposes. Instead, the application synced with the user’s contact list on their mobile phone. We found it to be a little more complex to link our application to another, Facebook in this example, when we could still incorporate the users contact list through another avenue, their contacts list.

Problems We Solved and What We Would Do Differently:

Over the year, our team faced many difficult challenges on the way to completing this application. We stuck to our plan and worked through issues that arose to ensure we completed the project before the deadline. Our biggest issue that we worked through was figuring out the peer-to-peer payment functionality where users could use PayPal or add a debit or credit card. This piece of our project seemed to be the most difficult due to all the variables that surround sending money from person to person. Location of payments, payment type, security, privacy and storage of funds where all issues that needed to be addresses. We researched many different types of peer-to-peer payment APIs to utilize before we settled on PayPal’s Sandbox account. The time it took us to find the correct API delayed our application process a bit due to the fact that we couldn’t complete other app pages before that piece was completed. In the end, we finished the API integration with plenty of time to complete the user pages and to test the payment system.

In retrospect, our team could’ve probably foreseen the issue with the PayPal API integration and planned more accordingly. I believe our team had a strong plan of action coming into this semester and we stuck to it throughout the months; however, since we didn’t plan enough time for that aspect of our project we were forced to rush a bit to complete other parts of the application before the deadline. With that being said, if we had also completed a Swift programming training course during the first semester, we may have been able to integrate the API in a more efficient time manor.

What the Team Learned During Capstone:

In all, Capstone was a very stressful, but rewarding, experience. Capstone teaches students a variety of things but one of the most important ones has to be the aspect of working in a team. Throughout our year together, our team learned a lot about one another and how we all can work within a team setting. We believed we worked together well and without any conflicts between members. In the professional world, the ability to work among others in a productive way is a highly regarded skill. Capstone forces students to meet, collaborate, and work together in a productive way which we can see will be beneficial after graduation.

Another important lesson we realized from capstone is to manage and plan the projects timeline appropriately. The structure of capstone allows students to work on their own time, without classroom workshops, and to complete the product by a certain date. Although we had weekly and biweekly meetings with associate instructors and professors, we were basically on our own to managing our time. This was a bit of a wakeup call since past courses always had a defined syllabus of when certain portions of a project were due, but capstone gave us a real-world taste of what to expect after graduation. We believe that capstone is designed to feel like we are engaged on a project with a client and the year is set up to mimic how our team would perform on the job. The experiences we’ve gained from this class is invaluable and will definitely be utilized after graduation in the professional world.