

## Anling, Sowjanya, Muhammad, Fatima

### FICS Proposal Script

1. **FICS: The Fixed Market Simulator: (Anling)** Hi everyone, we are team FICS. Our names are Anling, Sowjan, Muhammad, and Fatima and we are super excited to propose our capstone app: FICS
2. **Table of Contents (Anling):** We will cover several topics ranging from our demo, our design, ethics, and work distributions.
3. **What is FICS? (Anling)** FICS is an interactive Android app that functions as an investment simulation platform for the fixed income market. Let's see how this works
4. **Demo:** Imagine you just got a nice bonus from being a UTA here at Hunter for CSC127. Wow! Would you look at that - it's for \$10,000. You would like to generate incremental income from investing that into something you heard on Reddit or something: something called BONDS.
  - a. *Welcome screen:* If you wanted to invest in bonds, you're in the right place. Welcome to FICS.
  - b. *Introduction Screen - Why Now:* Bonds are an untapped market that is offers \$130 trillion dollars worth of opportunity for you to generate income from investing.
  - c. *Introduction Screen - FICS is Here:* We are here to offer you an investing simulation for you to learn about bond investing firsthand.
  - d. *Introduction Screen - Glossary:* *Feel free to check out the glossary page anytime to learn more about key terms to get started or come back after you've started investing for real.*
  - e. *Introduction Screen - Let's Invest:* You got this!
  - f. *Tutorial: - How to Play:* Wow, they're even going to have tutorial slides to show me how to play.
  - g. *Tutorial: - The Goal:* Hmmm I see, the goal is to make my wallet as big as possible at the end of these 12 months. Sounds like a plan.
  - h. *Tutorial: Key Metrics:* I see a bunch of metrics I need to know really well. That's going to help later on when I'm investing.
  - i. *Tutorial: - Net worth:* So, my net worth is the combined value of my wallet and investments. Got it,

- j. *Tutorial: Investments:* My investments is the sum of all of my bonds multiplied by their price. Makes sense.
- k. *Tutorial: Wallet:* My wallet is all of the cash I have? Jeez, that's a lot more money that I've seen in my life.
- l. *Tutorial: Bonds:* Here I can learn what bonds are. I see they are pieces of debt that let governments and companies raise capital and we gain income through interest payments? That's pretty cool.
- m. *Tutorial: Bond Transactions:* I can even learn about how a bond transaction works? Sick
- n. *Tutorial: To invest:* Here I learn how to invest, but I'll check these out later on when we get to the real simulation (SKIP SKIP SKIP UNTIL GOOD LUCK)
- o. *Tutorial: Good luck -* Good luck? Yep, I'm going to need it.
- p. *Demo (SWITCH TO SOWJAN):* Here we've gotten to start investing. I see my net worth, investments, wallet that will go up and down depending on my investment decisions. Then I see the specific bond that I will be investing in this month. I'm going to start off with treasuries. Hm, I wonder what they are. Let's click on the help button. Ah, it tells me that treasuries are bonds issued by government and they come in three different term lengths: bills, notes, and bonds. They also tend to be considered "risk free" because if they default, or go bankrupt, that means the USA has gone bankrupt. Cool. I can type in a quantity amount and then buy some too, to put into my tutorial. Nice!
- q. *Demo:* I can do this again for notes. Whenever I buy new bonds, I can see my net worth change, wallet go down, and investments increase.
- r. *Demo: —continue to show how buying and selling works—*
- s. *Demo:* Let's say I want to sell these bonds. I can click on this shopping cart icon to get to my portfolio page, where I see all of the bonds I have bought previously and sell all of them. I'd usually do this when I think the price of the bond is higher than the initial price I bought it at, or if I need more cash on hand.
- t. *Demo:* I can invest in corporate bonds as well. By pressing on the help button, I see that these are bonds issued by companies like Apple to raise capital to complete projects, like making a new office. These tend to have higher interest rates because they are a riskier investment than treasuries. Let's buy some of these and see how it affects our net worth. Wow! It's made our investment, and therefore our net worth, values go up by a lot. This must be a great investment.

- u. *Demo:* Oh no, wait what happened? We just bumped into default risk, or the risk of the issuer of the bond going bankrupt and being unable to pay their loan. We've automatically gone to our portfolio page to sell off all of these bonds - at a loss. Time to lose some money. I guess it's part of the investment process.
- v. *Demo:* We can continue to do this for other bonds, keeping in mind their prices and how much we want to buy. We want to make sure we have some cash on hand and not bet it all on black (roulette reference), but also enough invested so that we can generate some more returns every month from those interests. We can invest in municipal bonds, or bonds used to invest in communities and local governments, or TIPS, bonds that protect your portfolio during times of volatility.
- w. *Demo:* I can even invest in baskets of bonds, called mutual funds. These are a bunch of bonds contained in one place that I can invest in as a whole in order to get a diversified portfolio. If I just invested in Apple corporate bonds or AT&T bonds that just defaulted, I would be a pretty risky investor. They bankrupt? I'm bankrupt. **(SWITCH TO MOHAMMAD)**

5. **Product definition:** FICS tackles the issue of many folks not knowing about fixed income opportunities. We're all about making investing easy for young adults, offering a user-friendly simulation tailored to their needs. Unlike other complicated platforms, FICS keeps it simple and enjoyable. Our crowd is mainly young adults, like college students or those starting in the workforce, plus finance educators looking for engaging resources. We want users to finish the app smarter about fixed income investing and ready to use those strategies in their own portfolios. Our app includes a step-by-step simulator with fake money over 15 years, great for using on the go, and a glossary for quick reference after the simulation.
6. **Architectural design:** FICS will use Event Driven Architecture and feature three screens accessible through a bottom navigation bar. First-time users begin the simulation from the Home Screen, where they'll be introduced to Fixed Income investing terms and app navigation. Key terms will come from a persistently hosted glossary database. Users can restart the simulation anytime and access the glossary via the Navigation Bar. Simulation results will be stored in a local database, accessible on the History Screen. Navigation to the Glossary Activity and History Screen will be event-driven with database functionality implemented.
7. **System design:** Here we see our system implemented. FICS prioritizes an easy-to-use interface, setting it apart from competitors. The app caters to beginners in the fixed

income market, aiming to simplify the learning curve by offering a straightforward user interface, preventing information overload. Speed is a key consideration, ensuring quick population of the Records tab with users' previous investments for easy progress tracking, independent of application or database usage. Scalability is crucial for future growth. The app's architecture should seamlessly handle the implementation of new features or expansions as needed.

8. **Software Packages and Technologies:** The technologies we used for this app start with Android studio, which is accessible and convenient for students and for our team, who is all Android users. We then used JetPack Compose in Kotlin in order to implement the app and all of the simulation functionality. In order to get live interest rates, we used BeautifulSoup4 to web scrape for interest rates for each of our assets. For our UI, we used Figma to sketch everything out and a locally persistent database. **(SWITCH TO FATIMA)**
9. **Testing:** After launching FICS and releasing the final product, our testing strategy involves updating interest rate data through web scraping to ensure real-time simulation accuracy. Beta testers with low-to-medium knowledge literacy from educational institutions evaluate the app for usability and provide feedback on its helpfulness or potential confusion. We periodically check in with beta testers to assess the app's long-term impact and effectiveness upon replay. Finally, we promote the app in financial literacy and economics classes, encouraging student engagement and interaction, and collect ongoing feedback through surveys for continuous improvement.
10. **Ethical concerns:** Our app wants to keep your device info safe and sound, so we're all about beefing up security to keep out sneaky hackers. Right now, we don't have fancy cybersecurity stuff, but we're planning to add features that'll kick out ads, the Google Play store, and other apps that try to barge in without an invite. Oh, and about the money stuff – our app mimics investing, but don't go all in thinking it's a game. There's fake money involved, but it's not risk-free in the real world. Be smart z's with your investments if you want to make some pretend profits. We're not here to give you a deep dive into finance; we cover the basics, not the whole shebang. So, you're here to learn the terminology and fundamentals, but don't apply this to real life money.
11. **Work Distribution:** Our team is extremely multi-faceted and we worked on this project in all capacities. For Anling, she was the architect and content lead on this project since she has finance knowledge and wrote all of the tutorial text, glossary, help button content, and created the UI interface on Figma. She also learned BeautifulSoup4 to web

scrape for the interest rates integrated into the app. Sowjanya and Muhammad took the big responsibility of the backend functionalities, with Sowjan specifically creating many features in Android studio such as the snack bars, dialogue boxes, glossary search button, incorporating default risk, and more. Fatima was the queen of the UI, where she created the initial mockups on Figma and also implemented all of the frontend features for the app, so thanks to her, the app looks so seamless. Finally Muhammad was the fantastic chef that cooked up the simulation backbone with the sell button, history page, portfolio page, navigation buttons, bond cards, and more.

- 12. Challenges & Lessons:** We faced challenges from the opposition (our own experience levels) including finding APIs that were free and accessible for students. Hint: we never found one, so we shifted to using web scraping to integrate a feature that was connected to an external source. In addition, we discovered that our UI could be improved upon to be more aesthetically pleasing, so we overhauled it near the end of the app lifecycle, which is definitely a time crunch. We learned many things, such as work hard and work smart by prioritizing this project during times when we had other academic commitments as well so that we could finish earlier. Finally, Sowjan and Muhammad disagreed on if we should've planned in advance more or gone with the flow, but we can let them fight it out.
- 13. Thank you!:** Thank you and since this is our last class at Hunter, we'd like to say: CAW.