

Assignment 7

ICE191 Software Architecture / Cloud Computing

1. Describe your career goals (5 years after graduation) and your plans to achieve those goals. 30 points.

My career goals have changed a little because my dad has a plan for me to help him with his rental equipment company. Although he has not explicitly told me that I will be in charge in the next few years, it feels likely. This situation is difficult because I have grown up physically and personally within the company since middle and high school. I worked there during summer breaks from the age of 15. Although some people might find this experience horrible, it has been a learning experience for me. It has also been a major source of income for my family. I started by working with the drivers to deliver equipment and scaffolds. It was basically loading and unloading these things. I did this until I went to university, where I started working part-time in the administrative area. There were only two people in that department, so it was a small team.

With this background, I have been part of the company's growth and always keep an eye on what is happening there. However, I also have a desire to work for a fintech company, preferably outside California due to personal and family issues. Of course, I would also like to make my social security work for me since I only worked there once. I am interested in working for companies such as Amazon, LinkedIn, Apple, etc. To get there, I plan to develop my skills and knowledge of the software I would like to work on. My options include front-end developer, back-end developer, full-stack developer, cloud engineer, or data scientist engineer. Although I know there are many options in these areas, I also understand that some might not be suitable for me once I discover the work environment associated with them.

Alternatively, I would like to work for a fintech company in a state other than California. For personal and family reasons, I prefer to work elsewhere in the United States. I also hope to utilize my social security benefits, as I have only worked there once before. My

ideal companies include Amazon, LinkedIn, Apple, among others. To achieve this goal, I plan to learn the software that I am interested in and develop my skills to land a job in this field. I have several options, including front-end developer, back-end developer, full-stack developer, cloud engineer, and data scientist engineer. Although there are many options to choose from, I know that I need to narrow down my choices based on my interests and career goals. Sometimes, when you discover the reality of the work environment associated with a particular role, you might end up removing it from your options.

To understand my options better, I am drawn to front-end development because I find the web design and layout aspects interesting. Back-end development was my first exposure to this field, and I find the back-end processes and how they work fascinating. Cloud engineering interests me because of its potential for growth in the tech industry, and data science caught my attention when I took a numeric method class. For now, I plan to practice my skills as a full-stack developer.

Starting this journey, I will review my knowledge on data structures and algorithms in Java or C++. To achieve this, I will combine books and online courses as these topics are crucial for interviews. Once I have a firm understanding of these concepts, I will move on to improving my skills in HTML, CSS, and JavaScript. To challenge my knowledge, I will work on my own projects and ideas. After that, I will learn frameworks from junior to senior levels. I will research and select a minimum of two frameworks or see the job requirements of the company I'm interested in.

Next, I will focus on the importance of testing in front-end development to ensure functionality and improve user experience. For example, it is crucial to understand the importance of testing to avoid errors or bugs in the code. I will then move on to TypeScript since it is more popular nowadays and essential for the job market. To practice my knowledge, I will work on at least three projects.

Moving on to the back-end, I will continue with Node.js or Python. I will study high-level concepts of MySQL and non-relational databases like MongoDB. My next focus will be on REST API, where I will work on multiple projects to understand the concepts and be aware of common mistakes.

I will apply for trainee or internship programs to gain more experience. For that, I will work on solving LeetCode or HackerRank problems, trying to solve at least one problem every two days for a minimum of six months. This will prepare me for the interview process.

Once I am accepted, I will stay for a minimum of one year to learn more about the company's culture and technologies. Then, I will apply for a full-stack role in a US company or a remote position. I will aim to stay there for two to three years, combining my knowledge from freelance projects and new technologies or frameworks available.

Finally, I will consider myself ready to apply for companies that align with my goals. I will contact recruiters in companies in my area to practice mock interviews, obtain feedback and improve my interviewing skills. I will conduct at least three to four mock interviews with my portfolio, resume, and background ready for the application process. With all of these steps in place, I believe I can achieve my goal of becoming a front-end developer.

2. Describe in (super mega extra) great detail a topic you are passionate about. 70 points.

- **Chess**

- History

- The game that we know today, was born out of the Indian game chaturanga before the 600s AD. And that game was spread throughout the world mainly in Asia and Europe over the next centuries, until eventually become the game that known today, that happen in 16th century. The chaturanga is played with dice on a 64-square board, gradually transformed into shatranj or chantrang this is a two player game popular in northern Indian, Pakistan, etc. Then Shatranj resembled chaturanga but added a new piece, a *firzān* (counselor), who had nothing to do with any troop formation. This game could be won either by elimination all an opponent's pieces (barring the king) or just capturing the king. In this game the initial positions of the pawns and knight have not changed. The game spread to the east, north,

and west, taking on sharply different characteristics. In the East, carried by Buddhist pilgrims, Silk Road traders, and others, it was transformed into a game with inscribed disks that were often placed on the intersection of the lines of the board rather than within the squares.

- The form chaturanga or shatranj made its way to Europe by way of Persia, the Byzantine Empire and the expanding Arabian Empire, for those years it found the oldest recorded game, found in a 10th century manuscript.
- Chess was introduced to North Africa, Sicily, and Spain by Muslims in the 10th century, and to Kievan Rus by Eastern Slavs around the same time. Vikings also spread the game to Iceland and England, and were responsible for the famous collection of 78 walrus-ivory chess pieces found on the Isle of Lewis in the Outer Hebrides in 1831. The game faced periodic bans from kings and religious leaders, such as King Louis IX who forbade it in France in 1254. Despite this, chess maintained its popularity among the wealthy and powerful, this is very important, including Kings Henry I, Henry II, John, and Richard I of England, Philip II and Alfonso X of Spain, and Ivan IV of Russia. The game was often associated with social cachet and was known as the royal game as early as the 15th century.
- In the 1300s, for example the pawn had acquired the ability to move two squares on its first turn rather than only one.
- Over time, the game of chess continued to evolve and change. By the 16th century, the game had reached its modern form, with pieces such as the queen and bishop taking on their current roles. The game's popularity continued to spread, and it became a favorite pastime of many notable figures, including Benjamin Franklin and Napoleon Bonaparte. In the 19th and 20th centuries, chess tournaments began to emerge, with the first international chess tournament held in London in 1851. The game's strategic and intellectual appeal also led to its inclusion in educational curriculums and its use as a tool for studying decision-making and

psychology. Today, chess remains a popular game around the world, with millions of players competing in tournaments and online.

- The rules of chess and how to play
 - Chess is two player game played on square board of 64 square, with each player with 16 pieces of chess. The goal of the game is to checkmate your opponents king which basically mean put their king under attack like their king does have a legal move to escape from there.
 - The pieces are divide into two colors: white and black. Each player starts with one king, one queen, two rooks, two knights, two bishops, and eigh pawns, The pars are placed in the second row of the board for each playr, while the other pieces are placed on the first row simultaneously.
 - It's important to mention that each piece is unique. The king can move one square in any direction, while the queen can move diagonally, horizontally or vertically any number of squares. The knight is the most difficult to understand because moves in an L-shape this means one square horizontally and two squares vertically or one vertically and two horizontally, and the knight is the piece can jump over other pieces. The rook move horizontally or vertically any number of squares. The bishop moves diagonally any number of times. The pawn moves forward one square at a time, but on its fist move, can move two square forward, its important to remember that the pawn capture diagonally.
 - If a piece moves to a square occupied by an opponent's piece, the opponent's piece is captured and removed from the board. If a player's king is in a position to be captured by an opponent's piece, that is known as "check". The player must then move their king out of danger, block the attack with another piece, or capture the attacking piece. If the king is in check and there is no legal move to escape capture, that is known as "checkmate", and the game is over.

- There are a few special moves in chess as well. Castling is a move where the king is moved two squares towards a rook, and the rook is moved to the square over which the king crossed. This can only be done if neither the king nor the rook has moved before, there are no pieces between them, and the king is not in check. En passant is a move where a pawn captures an opponent's pawn that has just moved and the other pawn isn't move yet. Finally, promotion is a rule that allows a pawn to be exchanged for any other piece except the king if it reaches the opposite end of the board.
- To end, its important to explain the chess notation, there are two main types of chess notation: algebraic notation and descriptive notation. The most common notation is algebraic notation in all tournaments and websites. It uses a combination of letters and numbers to represent the moves made by each player. Each square on the board is given a unique coordinate, with the letter representing the file (a-h) and the number representing the rank (1-8), and each pieces only use its first letter. For Example if you move your pawn from e2 to e4, the move recorded is e4.
- Openings, mid game and endgame
 - In chess there have been create openings for the game, that we said everything the white pieces starts the game, and those openings are the initial moves of a game the differences between the midgame. There are many different openings in chess, each one with its own set of strategies, defense, or plans to attacks, and of course different variations. Some common oppenings are like this ones:
 - e4 - This is known as the King's Pawn Opening and is one of the most popular openings played by White. It aims to control the center of the board by advancing the pawn on e4, and often leads to an open game.
 - d4 - This is known as the Queen's Pawn Opening and is another popular opening played by White. It aims to control

the center of the board by advancing the pawn on d4, and often leads to a closed game.

- c4 - This is known as the English Opening and is a flexible opening that aims to control the center of the board with the pawn on c4. It can lead to a wide variety of positions, depending on how Black responds.
- Now that we talk about openings we can move forward without talking the defense. The defense is a strategy used by the player with black pieces to respond to the white's opening moves. And everything a good defense means to try to control the center, develop pieces, and prepare for an effective counterattack. Some common defenses are like this ones:
 - Sicilian Defense: This is one of the most popular defenses against White's opening move of 1.e4. Black plays d6 and cxd6, with the aim of controlling the center and developing the knight on f6.
 - French Defense: In this defense, Black plays e6 and d5 to control the center and prevent White's pawn from advancing. This defense is often used against 1.e4.
 - Caro-Kann Defense: This defense is similar to the French Defense but with the additional move c6. This helps to control the center and prepare for the development of the knight on d7.
- Moving on the midgame, this is the stage of the game that starts after the opening moves, have been played and typically ends with the beginning of the endgame. The midgame is characterized by increased strategic planning and tactical complexity as both players have developed their pieces and positioned them for start the battle.
- Finally the endgame, the most complex stage of the game. This stage begins with where the players have just a few pieces, where the players have exchanged pieces, leaving behind kings, queen, rooks, and possibly a few pawns. In the endgame, the players

attention turns to creating passed pawns, queening a pawn, or checkmating the opponent's king.

- I personally only know one opening, the Queen's Gambit, and one defense, the Caro-Kann. As a beginner player with an Elo rating below 1200, it is important to feel comfortable with your openings and defenses, and to understand all their variations. This can take a long time, and while I may not be particularly skilled in the midgame, I am working on improving. However, I have found that I have become much better at the endgame, and I'm currently almost 800 in rapid and almost 700 in blitz games.
- Chess as a competitive sport
 - First able we need to talk about Elo, is a rating system used in chess to measure the relative skill levels of players. This Elo rating system works because assign a numerical rating to each player, which is updated after every game, based on the outcome of the game and the rating opponent. The higher the rating, the stronger the player. The system is widely used in chess tournaments and online chess platforms to determine pairings and rankings, as well as to provide a measure of a player's progress and improvement over time. Now that we understand what ELO is and how it is used to create categories in tournaments, let's move further into this area.
 - Chess is a highly competitive and organized sport that involves mental strength, strategic thinking, and careful planning. Chess tournaments are an essential part of the sport, where players from different regions and backgrounds come together to compete against each other. These tournaments are usually organized at different levels, ranging from local to international, and are governed by various chess organizations such as FIDE. The competitive aspect of chess and the organization of tournaments have contributed to the popularity of the sport, and many players dedicate their lives to mastering the game and participating in high-level tournaments.
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- Famous chess players in the history of chess
 - Chess has a long and rich history, and many players have made significant contributions to the game. Some of the most famous chess players in history include Garry Kasparov, Bobby Fischer, Anatoly Karpov, Emanuel Lasker, José Capablanca, and Paul Morphy.
 - Garry Kasparov is widely considered to be one of the greatest chess players of all time, and he held the world chess championship for a record 15 years.
 - Bobby Fischer, an American player, became the youngest player to win the U.S. championship at the age of 14 and later defeated Boris Spassky to become the world champion in 1972. Anatoly Karpov, another Russian player, held the world championship title from 1975 to 1985. Its important to add that this grandmaster won his first championship without teachers compare with the russians and just reading books of chess, russians went to chess schools and had chess instructors, so their feat was impressive and beyond words.
 - Emanuel Lasker, a German player, held the title for 27 years from 1894 to 1921, and was known for his strong positional play.
 - José Capablanca, a Cuban player, was known for his endgame skills and was the third world champion.
 - Paul Morphy, an American player from the 19th century, was known for his aggressive and imaginative style of play, and is considered one of the greatest attacking players of all time.
 - We can finish this small list of grandmasters without adding Magnus Carlsen, he became a Grandmaster at the age of 13, and in 2013, at the age of 22, he became the youngest chess player ever to be ranked world number one. He has won numerous major tournaments, including the World Chess Championship in 2013, 2014, 2016, 2018, and 2021. In addition, he has won the Norway Chess tournament a record eight times. Carlsen is known for his aggressive and dynamic playing style, and his ability to create winning opportunities in seemingly equal positions.

- The benefits of playing chess
 - Cognitive Development: Chess requires a great deal of concentration, strategic thinking, and problem-solving, which can lead to improved cognitive abilities such as memory, creativity, and decision-making.
 - Enhances Academic Performance: Studies have shown that playing chess can improve academic performance, particularly in math and science. It can also enhance reading skills and language acquisition.
 - Improves focus and concentration: Chess players need to be fully present and engaged in the game to make strategic moves and anticipate their opponent's move
 - Stress Relief: Playing chess can provide stress relief and relaxation by allowing individuals to focus on the game and distract them from other stressors.
 - Improves Mental Health: Chess can be a helpful tool in improving mental health and cognitive functioning for those with conditions such as Alzheimer's and depression.
- Why I chess is my hobby
 - My history with chess began when I was in my first year of university, where they offered extracurricular chess activities. I can't quite describe it, but I was drawn to it and found it pretty cool. I remember seeing about 10 to 12 tables set up with boards and pieces, and it was incredible to see everything working together. From that day on, I fell in love with chess and everything that makes it so beautiful. I started teaching myself and combined it with classes that were actually pretty cool. We started with the basics such as rules, openings, challenges, and homework with a lot of puzzles to help develop our vision. The fun part was writing everything down with notation, which made it more challenging. Since that day, I have opened my account on chess.com and lichess.com. Months later, the best chess series of all time for me, Queen's Gambit, was launched. It was great to see how the opening and defense concepts were taken seriously, and even

more amazing to see the series based on the history of Bobby Fischer and Kasparov. Even Kasparov taught her how to move the pieces to look more like a GM. If you understand chess, then you understand how great that series is.

- Moving on to the hobby itself, I used to play video games or watch videos, but I always felt guilty because I wasn't learning or improving anything. That's not the case with chess. It has helped me a lot with my vision, focus, and imagination. Just think about how you have to visualize 3 to 4 exchanges in your head. It may be challenging at first, but you'll be able to reach that level. It's fabulous, and even better with concentration. I've played matches that last 40 or 50 minutes with my full concentration and focus. It's beautiful because I'm not capable of doing that with other things, but with chess, it comes naturally to me. That's why chess is one of my favorite hobbies.