

Assignment 1 – Individual assignment

Part A – SE Interview Preparation – 55 Points, 4 points each unless specified otherwise

For the interview questions especially, I recommend using it as an opportunity to actually practice by trying to speak/dictate/write an answer from memory, then look at slides and the readings to improve your answer before submitting.

1. What are the phases of the software development process? Briefly explain them.
2. What is the difference between **verification** and **validation**? Which software development stages are they part of?
3. What are some benefits and limitations of the agile development process? What are some practices to address them?
4. Describe the different roles on a software development project.
5. What distinguishes a great software engineer from a good one? Do you feel you have those qualities?
6. How do you prioritize which requirements to implement first?
7. How do you think about software development? What are the key challenges and how do you address those challenges when working?
8. In your opinion, what are the principles of good software engineering? What are some basic principles everyone should follow?
9. How do you respond when you disagree with a team member?
10. What are some tensions and trust issues that can arise between software developers and business people / customers? What are ways to address those tensions?
11. **(5 points)** Can you answer any of these interview questions well yet? You may either answer each one, or alternatively describe in 1-2 sentences how you can remember and have good answers to each by the end of this course.
 1. Have you ever had a problem with another team member that you were working with? If so, how did you handle it?
 2. Describe a time when you had to overcome a significant obstacle on a software engineering

project.

3. Why were you successful in your last software engineering project? Give a supporting example.
5. **(10 Points)** Are the following requirements **good requirements**? If not, why? Correct Them.
 - A. The system shall be secure enough to send messages between users and be available at all times.
 - B. The system shall recognize the user through face recognition and allow them to add friends when joined.
 - C. The system shall begin a file download within 1 second of a request 99% of the time.

Part B – User Stories and Functional and Non-Functional Requirements – 45 Points

You are the lead software developer at Les-Animaux company that develops mobile applications. Currently, they are developing a dog sitting application called, DogCare.

Les-Animaux's main high-level goals are to make profit through advertising, be fast in the market, minimize its development costs, protect the privacy of the individuals and ensure security of the application. The app has two versions: free and paid.

In DogCare application, there are two types of users: (1) Dog Sitters: the users that would like to work as dog sitters; and (2) Dog Owners: the users that need someone to take care of their dog(s) when they are away for holidays or just during the day, when they are at work.

Both users first need to register, and enter their personal information such as name, age, gender, location/address, hobbies, and why they are interested in dogs.

The dog owners also add information about their dogs: number of them, their breeds, the types of food/treats they eat/like, ages, any health restrictions, etc. The dog sitters need to also enter their availability, price per hour, and other restrictions. Both have options to upload their photos or the photos of their pets.

The app works similar to dating apps by creating a match between a dog owner and a dog sitter. Both can decide if they like each other or not (i.e. swipe left if they do not like each other). If one of them likes the other, they can send a friend request. The other user needs to approve or reject the request before they make connections.

The app tracks the location of the users. The users have an option to limit the tracking to *always, only once, while using the application* or *never*. If a user selects never, the application is not usable, though. The dog owners can also decide to ask to track the location of their dogs when they are with the dog sitter, at all times or at predefined intervals. This is an add-on feature which costs extra. On the other hand, the dog

sitters can reject to be tracked all the time but then they may not get enough customers.

The dog sitters can use the free app if they do not want to make money from dog sitting. If the dog sitters want to make money, then they must pay a monthly or yearly fee for the application. Similarly, the dog owners can use the free application if they only need dog sitters twice per month. For more than that, they need to pay monthly or yearly fees. DogCare also collects SSN and banking information from dog sitters for tax purposes if they use the paid application. The dog owners also should provide their banking information if they use the paid application.

To increase profits, DogCare might share data with certain third parties for advertising purposes.

Les-Animaux needs to make sure to protect the privacy and security of the collected data. In addition, since the company operates both in California and EU, the California Consumer Privacy Act (CCPA) and the General Data Protection Regulation (GDPR) applies to the application.

(In answering this question, you may do this [practice assignment](#) separately briefly, and/or look at the [solutions](#))

1. **(15 Points)** Write 10 user stories for different features of the DogCare application. **Make sure to number your user stories.**
2. **(30 Points)** Write 10 functional requirements and 10 non-functional requirements for DogCare. Make sure to have at least 3 privacy and security requirements. **Make sure to number your requirements.**