1.2 What is the most important difference between generic software product development and custom software development? What might this mean in practice for users of generic software products?

The key difference is who controls the specification of product and audience. Usually generic software products are designed for a wide range of audience and specification is made by developers. Examples are different PC software programs such as graphic and project management tools, or those that are designed for specific markets such as appointment for dentists. Meanwhile, custom software products are made for exactly one customer, according to his specification. Customers may request to make updates according to his needs. As an example, traffic or air quality monitoring systems. So, in practice a customer who uses a generic software product, may face the problem that features he needs are not implemented, while a customer who uses a custom software product usually does not face this kind of problem.

1.3 Briefly discuss why it is usually cheaper in the long run to use software engineering methods and techniques for software systems.

Those softwares that are developed using software engineering methods and techniques are cheaper in the long term because they are well designed so that it is easy to refactor code, and if you want to delete or add features it is easy to do. The potential problems are solved in the beginning of development because the software system is planned in advance, and all possible tests are made. So that there is a low percentage of system breaking if one feature is added or deleted or updated.

1.4 Software engineering is not only concerned with issues like system heterogeneity, business and social change, trust, and security, but also with ethical issues affecting the domain. Give some examples of ethical issues that have an impact on the software engineering domain

Firstly, it is confidentiality. Often developers may access personal data of users that are confidential and should not be disclosed. Independent of what the developer find out, he should not disclose this information, and keep it as a secret. Also he should not try to know confidential information. Secondly, intellectual property rights. They must not steal some intellectual property, patents and commercial secrets of customers and keep them as a secret.

1.5 Based on your own knowledge of some of the application types discussed in Section 1.1.2, explain, with examples, why different application types require specialized software engineering techniques to support their design and development.

There might be different crucial constraints and requirements depending on software. If we take embedded control systems such as medical control systems that should track a high amount of information in real time and where mistakes might have serious consequences on the health of users, there should be used techniques that are focused on precise real time information and for sure a plenty of tests should be done in advance. If we take data collection and analysis systems such as weather data collection, it should interact with different sensors in real time with high precision. Since it collects a big amount of data clouds where high memory should be used and correlation between collected data should be easily detected. So techniques that are able to do those tasks are crucial.

1.8 Noncertified individuals are still allowed to practice software engineering. Discuss some of the possible drawbacks of this.

Non Certified developers may have no knowledge about different standards and crucial moments of development so that there is a higher percentage that product will be failed. There might be a high amount of errors that will occur during development and even after. It is not even guaranteed that he will finish the project. Even if he is fired for a new developer may be problematic to read his code so that it will took much time to refactor code or it might be even developed from the start again.