

ĐẠI HỌC QUỐC GIA TP. HCM
TRƯỜNG ĐẠI HỌC CÔNG NGHỆ THÔNG TIN



BÀI TẬP VỀ NHÀ BUỔI 1
TỔNG QUAN

Giáo viên hướng dẫn: ThS. Nguyễn Thị
Thanh Trúc

Nhóm thực hiện:

- 1. Trương Văn Khải 21520274**
- 2. Lê Yên Nhi 21520274**
- 3. Ngô Phúc Danh 21521924**
- 4. Lê Ngô Minh Đức 21520195**

TP. HỒ CHÍ MINH, 2023

BÀI TẬP VỀ NHÀ

1. What are the essential attributes of good software?

The essential attributes of good software are those that are not directly concerned with what the software does. They reflect its behavior while it is executing, the structure and organization of source program and associated documentation. The essential attributes of good software are:

- **Acceptability** - Software must be acceptable to the type of users for which it is designed. This means that it must be understandable, usable, and compatible with other systems that they use.
- **Dependability and security** - Software dependability includes a range of characteristics including reliability, security, and safety. Dependable software should not cause physical or economic damage in the event of system failure. Software has to be secure so that malicious users cannot access or damage the system.
- **Efficiency** - Software should not make wasteful use of system resources such as memory and processor cycles. Efficiency therefore includes responsiveness, processing time, resource utilization, etc.
- **Maintainability** - Software should be written in such a way that it can evolve to meet the changing needs of customers. This is a critical attribute because software change is an inevitable requirement of a changing business environment.

2. What are the two fundamental types of software product?

There are two kinds of software product:

- **Generic products:** This is some product are produced by a organization with a broad user base in mind. These product are “off the shelf” and may have more general features functionalities.
- **Customized software:** This product is commissioned and developed for a specific customer. An example of this could be a software product developed for an internal team at an organization.

The different between these kinds of product is that, in generic products, the team which develops the software controls the software specification. For the customized products, the development of the software is controlled by the customers which is buying the software. The software developers must work to that specification.

3. *What is software engineering?*

Software engineering is an engineering discipline that is concerned with all aspects of software production from early stages of system specification to maintaining the system after it has gone into use. These include **two key phrases**:

- **Engineering discipline** - Engineers make things work. They apply theories, methods, and tools where these are appropriate. They use selectively and always try to discover solutions to problem even when there are no applicable theories and methods.
- **All aspects of software production** - SE is not just concerned with the technical process of software development. It also includes activities such as Software Project Management and the development tools, methods and theories to support software production.

4. *What are the four fundamental activities in software processes?*

There are four fundamental activities in software processes is that:

- Software **specification**, where customers and engineers define the software that is to be produced and the constraints on its operation.
- Software **development**, where the software is designed and programmed.
- Software **validation**, where the software is checked to ensure that it is what the customer requires.
- Software **evolution**, where the software is modified to reflect changing customer and market requirement.

5. *What is the distinction between computer science and software engineering?*

Computer science focuses on theory and fundamentals. Besides that, software engineering is concerned with the practicalities of developing and delivering useful software.

Computer science is concerned with the theory and methods that underlies computer and software systems. Whereas, software engineering is concerned with the practical problem of producing software. Some knowledge of computer science is essential for software engineers as the same knowledge of physics is essential for electrical engineers.

6. *What are the 3 general issues that affect many different types of software?*

- **Heterogeneity:** Increasingly, systems are required to operate as distributed systems across networks that include different types of computer and mobile devices. As well as running on general-purpose computers, software may also have to execute on mobile phones. The challenge here is to develop techniques for building dependable software that is flexible enough to cope with this heterogeneity.
- **Business and social change:** Business and society are changing incredibly quickly as emerging economies develop and new technologies become available. They need to be able to change their existing software and to rapidly develop new software. Many traditional software engineering techniques are time consuming and delivery of new systems often takes longer than planned. They need to evolve so that the time required for software to deliver value to its customers is reduced.
- **Security and trust:** As software is intertwined with all aspects of our lives, it is essential that we can trust that software. This is especially true for remote software systems accessed through a web page or web service interface. We have to make sure that malicious users cannot attack our software and that information security is maintained.

7. *List 5 different types of software application.*

Application software (App) is a kind of software that performs specific functions for the end user by interacting directly with it. The only purpose of application software is to aid the user in doing specified tasks.

The five typical software applications today are:

- A collection of Microsoft software including MS Office, PowerPoint, Word, Excel, and Outlook.
- Real-time online communication tools like Facebook, Zalo, Google Meet, Zoom for video, and audio calls and messages.
- Common Internet browsers like Google Chrome, Safari, Firefox, etc.
- Project management software like Teams, Trello, Slack, Forecast, etc for official purposes.
- Graphics and designing software such as Canva, Adobe Photoshop, CorelDraw, and AutoCAD.

8. What software engineering fundamentals apply to all types of software systems?

These software engineering fundamentals that apply to all types of software system:

- **Software Process:** Systems should be developed using a managed and understood development process. The organization developing the software should plan the development process and have clear ideas of what will be produced and when it will be completed. Different processes are used for different types of software.
- **Focus on reliability:** Dependability and performance are important for all types of systems. Software should behave as expected, without failures and should be available for use when it is required. It should be safe in its operation and, as far as possible, should be secure against external attack. The system should perform efficiently and should not waste resources.
- **Importance of requirements:** Understanding and managing the software specification and requirements (what the software should do) are important. You have to know what different customers and users of the system expect from it and you have to manage their expectations so that a useful system can be delivered within budget and to schedule.
- **Leverage software reuses:** You should make as effective use as possible of existing resources. This means that, where appropriate, you should reuse software that has already been developed rather than write new software.

9. What are three key characteristics of the engineering of web-based software engineering?

The three key characteristics of the engineering of web based software engineering are:

- **The Software reusing** is the major approach for the development of web-based system, demands for those procedures cannot be fully developed and mentioned in the advance.
- **User interfaces** are limited through the abilities of the web browsing.
- **Performance and dependability** are major aspects. The available resources must be utilized through effective steps for cost effectiveness and minimum time utilization.

10. What is a software engineering code of ethics?

Like other engineering discipline software engineering is carried out within a legal and social framework that limits the freedom of people working in that area. As a software engineer one must accept some issues of professional responsibility:

- **Confidentiality** - You should normally respect the confidentiality of your employers or clients irrespective of whether or not a formal confidentiality agreement has been signed.
- **Competence** - You should not misrepresent your level of competence. You should not knowingly accept work that is outside your competence.
- **Intellectual property rights** - You should be aware of local laws governing the use of intellectual property such as patents and copyright. You should be careful to ensure that the intellectual property of employers and clients is protected.
- **Computer misuse** - You should not use your technical skills to misuse other people's computers. Computer misuse ranges from relatively trivial (game playing on an employer's machine, say) to extremely serious (dissemination of viruses or other malware).