



3rd class

Software Engineering

هندسة البرمجيات

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Chapter 1: An Introduction to Software Engineering

1.3 Software Characteristics

1. Software is developed or engineered.
2. Most of software is custom build rather than assemble from existing component.
3. Computer program and associated documentation.
4. Easy to modified.
5. Easy to reproduce.
6. Software product may be developed for a particular customer or for the general market.

1.4 Programmer & Software Engineer

Software is not just the programs but also all associated documentation and configuration data which is needed to make these programs operate correctly. **A software system consists of:**

- separate programs
- configuration files to setup programs
- system documentation to describe the structure of the system.
- User documentation to explain how to use the system .
- Web sites to down load recent product information.

1.5The characteristic of software engineer

1. Good programmer and fluent in one or more programming language .
2. Well versed data structure and approaches .
3. Familiar with several designs approaches .
4. Be able to translate vague (not clear) requirements and desires into precise specification .
5. Be able to converse with the user of the system in terms of application not in “computer .“
6. Able to build a model. The model is used to answer questions about the system behavior and its performance .
7. Communication skills and interpersonal skills.

خصائص مهندس البرمجيات (characteristic of software engineer) :

1. مبرمج جيد ويجيد واحدة او اكثر من اللغات البرمجية
2. يمتلك دراية جيدة في هياكل البيانات ومناهجها
3. لديه دراية بطرق التصميم المتعددة
4. ان يكون قادرا على ترجمة المتطلبات الغامضة (الغير واضحة) والرغبات الى مواصفات دقيقة
5. قدرة على بناء النموذج . يتم استخدام النموذج للاجابة على الاسئلة حول سلوك النظام وادائه.
6. يمتلك مهارات الاتصال ومهارات التعامل مع الاخرين .

1.6Software Applications

The following software areas indicate the breadth of potential applications :

1. System software: It is a collection of programs written to service other programs .Some system software (e.g., compilers, editors, and file management utilities) process complex, but determinate, information structures. Other

systems applications (e.g., operating system components, drivers, telecommunications processors) process largely indeterminate data.

2. Real-time software: Software that monitors/analyzes/controls real world events as they occur is called real time. Real-time differs from “interactive” or “time sharing”. A real-time system must respond within strict time constraints. The response time of an interactive (or time sharing) system can normally be exceeded without results.

3. Business software: Business information processing is the largest single software application area. Discrete "systems" (e.g., payroll, accounts receivable/payable, inventory).

4. Engineering and scientific software: modern applications within the engineering/scientific area are moving away from conventional numerical algorithms. Computer-aided design, system simulation, and other interactive applications have begun to take on real-time and even system software characteristics.

5. Embedded software: Intelligent products have become commonplace in nearly every consumer and industrial market (e.g., keypad control for a microwave oven or digital functions in an automobile such as fuel control, and braking systems.)

6. Personal computer software: Such as (Word processing, spreadsheets, computer graphics, multimedia, entertainment, database management.)

7. Web-based software: The Web pages retrieved by a browser are software that incorporates executable instructions (e.g., HTML, Perl, or Java), and data (e.g., hypertext and a variety of visual and audio formats.)

8. Artificial intelligence software: It makes use of no numerical algorithms to solve complex problems that are not amenable to computation or straightforward analysis. Expert systems, also called knowledge-based systems, pattern recognition (image and voice), artificial neural networks, theorem proving, and game playing are representative of applications within this category.