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SOFTWARE ENGINEERING

What is Software Engineering ?

Software engineering is a systematic engineering approach to software development. Software engineering is the application of principles used in the field of engineering, which usually deals with physical systems, to the design, development, testing, deployment and management of software systems. The field of software engineering applies the disciplined, structured approach to programming that is used in engineering to software development with the stated goal of improving the quality, time and budget efficiency, along with the assurance of structured testing and engineer certification.

▶ Software engineering is a detailed study of engineering to the design, development and maintenance of software. Software engineering was introduced to address the issues of low-quality software projects. Problems arise when a software generally exceeds timelines, budgets, and reduced levels of quality. It ensures that the application is built consistently, correctly, on time and on budget and within requirements. The demand of software engineering also emerged to cater to the immense rate of change in user requirements and environment on which application is supposed to be working.

Why we use Software Engineering?

1. Software engineers of all kinds, full-time staff, vendors, contracted workers, or part-time workers, are important members of the IT community.

2. What do software engineers do? Software engineers apply the principles of software engineering to the design, development, maintenance, testing, and evaluation of software. There is much discussion about the degree of education and or certification that should be required for software engineers.

3. According to StackOverflow Survey 2018, software engineers are lifelong learners; almost 90% of all developers say they have taught themselves a new language, framework, or tool outside of their formal education.

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➤ 4.Software engineering is important because specific software is needed in almost every industry, in every business, and for every function. It becomes more important as time goes on – if something breaks within your application portfolio, a quick, efficient, and effective fix needs to happen as soon as possible.

Purpose of Software Engineering

▶ The main aim of software engineering is to develop reliable and efficient softwares. Software engineering is committed to delivering quality software. Software engineering focuses on software engineering models, software engineering documents, software engineering data, software engineering reports, software engineering forms using management techniques that ensure quality software. Software engineering methods give methodology to develop software. These software engineering methods focus on analyses of software requirements, working on the design of the software, guidelines of program development, error check or quality check or testing of the developed software, and providing technical/non-technical support. Software engineering methods provide concepts, methods and principles emerging from different areas of technology to supervise software engineering models.

Application of Software Engineering

▶ Software engineers build software (applications, operating systems, system software) that people use. Applications influence software engineering by pressuring developers to solve problems in new ways. For example, consumer software emphasizes low cost, medical software emphasizes high quality, and Internet commerce software emphasizes rapid development.

Different Types of Software Application

▶ System Software: A collection of programs written to service other programs. Compiler, device driver, editors, file management.

▶ Application software or stand alone program: It solves a specific Business needs. It is needed to convert the business function in real time. Example –poin of sale, Transaction processing, real time manufacturing control.

▶ Scientific / Engineering Software: Applications like based on astronomy, automative stress analysis , molecular Biology, volcanology, space Shuttle orbital dynamic, automated manufacturing.

▶ Web application: It is also called " web apps ", are evolving into sophisticated computing environment that not only provide stand alone features, computing functions, and content to the end user but also are integrated with corporate database and business applications.

- Artificial intelligence software: This include- robotic, expert system, pattern recognition, image and voice, artificial neural network, game playing, theorem proving ... It solves Complex problems.

- Product Line Software: It is designed to provide a specific capability for used by many different customers. It can focus on unlimited or esoteric Marketplace like inventory control products. Or address mass market place like : Spreadsheets, computer graphics, multimedia, entertainment, database management, personal, business financial applications.

- Embedded Software: There are software control systems that control and manage hardware devices. Example- software in mobile phone, software in Anti Lock Braking in car, software in microwave oven to control the cooking process.