NWABINELI EMELDA CHISOM

15/ENG05/016

MECHATRONICS ENGINEERING

MCT 506

ASSIGNMENT 1

DIFFERENCE BETWEEN SOFTWARE ENGINEERING AND MECHATRONICS ENGINEERING

Software engineering is a field of [engineering](https://simple.wikipedia.org/wiki/Engineering), for [design](https://simple.wikipedia.org/wiki/Design)ing and [writing programs](https://simple.wikipedia.org/wiki/Computer_programming) for [computers](https://simple.wikipedia.org/wiki/Computer) or other [electronic](https://simple.wikipedia.org/wiki/Electronics) devices. A software engineer, or [programmer](https://simple.wikipedia.org/wiki/Programmer), writes software (or changes existing software) and [compiles](https://simple.wikipedia.org/wiki/Compiler) software using methods that improve it. Better quality software is easier to use. Software engineering can broadly be split into the following steps; Requirements say what the software should do. Software design is usually done on paper. It says what the different parts of the software are, and how they talk to each other. After the design phase is done, each component (part) of the software is coded. Code is what tells the computer exactly what to do at each step. Testing is done to see if the components meet the requirements and that the system as a whole meets the requirements. Part or all of this process can be repeated if [software bug](https://simple.wikipedia.org/wiki/Software_bug)s is found or new requirements are needed.

Mechatronics, which is also called mechatronic engineering, is a multidisciplinary branch of engineering that focuses on the engineering of both electrical and mechanical systems, and also includes a combination of robotics, electronics, computer, telecommunications, systems, control, and product engineering. As technology advances over time, various subfields of engineering have succeeded in both adapting and multiplying. The intention of mechatronics is to produce a design solution that unifies each of these various subfields. Originally, the field of mechatronics was intended to be nothing more than a combination of mechanics and electronics, hence the name being a portmanteau of mechanics and electronics; however, as the complexity of technical systems continued to evolve, the definition had been broadened to include more technical areas.

COMPUTER SCIENCE

Computer science is the study of processes that interact with data and that can be represented as data in the form of programs. It enables the use of algorithms to manipulate, store, and communicate digital information. A computer scientist studies the theory of computation and the design of software systems.

Its fields can be divided into theoretical and practical disciplines. Computational complexity theory is highly abstract, while computer graphics emphasizes real-world applications. Programming language theory considers approaches to the description of computational processes, while software engineering involves the use of programming languages and complex systems. Human–computer interaction considers the challenges in making computers useful, usable, and accessible.

COMPUTER ENGINEERING

Computer engineering is the branch of engineering that integrates electronic engineering with computer sciences. Computer engineers design and develop computer systems and other technological devices.

Computer engineering (CE) is a branch of engineering that integrates several fields of computer science and electronic engineering required to develop computer hardware and software. Computer engineers usually have training in electronic engineering (or electrical engineering), software design, and hardware-software integration instead of only software engineering or electronic engineering. Computer engineers are involved in many hardware and software aspects of computing, from the design of individual microcontrollers, microprocessors, personal computers, and supercomputers, to circuit design. This field of engineering not only focuses on how computer systems themselves work but also how they integrate into the larger picture.

SOFTWARE ENGINEERING

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. It 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.

Software engineering is typically used for large and intricate software systems rather than single applications or programs. Development, however, is simply one phase of the process. While a software engineer is typically responsible for the design of systems, programmers are often responsible for coding its implementation.