

SOFTWARE AND ITS APPLICATIONS

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WHAT IS SOFTWARE ?

SOFTWARE ENABLES PROGRAMS TO WORK.

SOFTWARE IS INSTRUCTIONS (COMPUTER PROGRAMS) THAT WHEN EXECUTED PROVIDE DESIRED FEATURES, FUNCTIONS, AND PERFORMANCE.

SOFTWARE ?

**COMPUTER SOFTWARE IS ALL INFORMATION
PROCESSED BY COMPUTER SYSTEMS.**

DIFFERENCE BETWEEN PROGRAM AND SOFTWARE

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- ✗ WHY is it Important ?
 - ✗ Software is important because specific software is needed in almost every industry, in every business, and for every function.
 - ✗ It affects nearly every aspect of our lives and our everyday activities.
 - ✗ It becomes more important as time goes on---

✗ Software Piracy ?

- ✗ Software piracy is the unauthorised copying of an organisations internally developed software or the illegal duplication of commercially available software.

WHAT IS SOFTWARE ENGINEERING ?

DIFFERENCE BETWEEN SOFTWARE ENGINEERING
AND TRADITIONAL ENGINEERING.

**PERFORMANCE BASED ON:
PROCESS, PREDICTION, STORAGE,
COMMUNICATION, ICT AND DATA SECURITY**

**FIFTY YEARS AGO, FEW PEOPLE HAD ACCESS TO A
COMPUTER SYSTEM OR NETWORK AND SECURING
THEM WAS A RELATIVELY EASY MATTER.**

RELIABILITY ENGINEERING

AND

SOFTWARE ENGINEERING

QUALITY SOFTWARE

ATTRIBUTES ?

IF WE LIVE IN THE DEVELOPED WORLD, WE ARE NOW AT THE LEVEL OF DEPENDENCY WHERE LITERALLY YOU WOULD DIE WITHOUT COMPUTERS.

ASSUME COMPUTER FAILURES IN VARIOUS SITUATIONS

COMMUNICATION SYSTEM

Message (Information)

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Sender _____ Protocol _____ Receiver
Medium

Security Requirements

Security threats motivate the following requirements:

- *Privacy*: information should be readable only by intended recipient
 - *Integrity*: recipient can confirm that a message has not been altered during transmission
 - *Authentication*: it is possible to verify that sender or receiver is who he claims to be.
 - *Availability*: of information and services
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FAILURE:

Consider a catastrophe where all the world's computers stop working for just one year.

LAW'S OF SECURITY

- ✖ If a bad guy can persuade you to run his program on your computer, its not your computer.
- ✖ If a bad guy can alter the operating system on your computer, its not your computer anymore.
- ✖ If a bad guy has unrestricted physically access to your computer, its not your computer anymore.
- ✖ If you allow a bad guy to upload programs to your website, its not your website anymore.
- ✖ Weak passwords trump strong security
- ✖ A machine is only as secure as the administrator is trustworthy.
- ✖ Encryption data is only as secure as the decryption key.
- ✖ As out-of-date virus scanner is only marginally better than no virus scanner at all.

Thank you

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