**Software engineering is important for two reasons:**1. More and more, individuals and society rely on advanced software systems. We  
need to be able to produce reliable and trustworthy systems economically and  
quickly

2. It is usually cheaper, in the long run, to use software engineering methods and  
techniques for software systems rather than just write the programs as if it was a  
personal programming project. For most types of systems, the majority of costs  
are the costs of changing the software after it has gone into use.

**Software Engineering Application:**

There are many different types of application including:  
1. *Stand-alone applications* These are application systems that run on a local computer, such as a PC. They include all necessary functionality and do not need tobe connected to a network. Examples of such applications are office applications on a PC, CAD programs, photo manipulation software, etc.  
2. *Interactive transaction-based applications* These are applications that execute  
on a remote computer and that are accessed by users from their own PCs or  
terminals. Obviously, these include web applications such as e-commerce applications where you can interact with a remote system to buy goods and services.  
This class of application also includes business systems, where a business  
provides access to its systems through a web browser or special-purpose client  
program and cloud-based services, such as mail and photo sharing. Interactive  
applications often incorporate a large data store that is accessed and updated in  
each transaction.  
3. *Embedded control systems* These are software control systems that control and  
manage hardware devices. Numerically, there are probably more embedded systems than any other type of system. Examples of embedded systems include the  
software in a mobile (cell) phone, software that controls anti-lock braking in a  
car, and software in a microwave oven to control the cooking process.  
4. *Batch processing systems* These are business systems that are designed to  
process data in large batches. They process large numbers of individual inputs to  
create corresponding outputs. Examples of batch systems include periodic  
billing systems, such as phone billing systems, and salary payment systems.  
5. *Entertainment systems* These are systems that are primarily for personal use and  
which are intended to entertain the user. Most of these systems are games of one  
kind or another. The quality of the user interaction offered is the most important  
distinguishing characteristic of entertainment systems.  
6. *Systems for modeling and simulation* These are systems that are developed by  
scientists and engineers to model physical processes or situations, which  
include many, separate, interacting objects. These are often computationally  
intensive and require high-performance parallel systems for execution.  
7. *Data collection systems* These are systems that collect data from their environment using a set of sensors and send that data to other systems for processing.  
The software has to interact with sensors and often is installed in a hostile environment such as inside an engine or in a remote location.  
8. *Systems of systems* These are systems that are composed of a number of other  
software systems. Some of these may be generic software products, such as a  
spreadsheet program. Other systems in the assembly may be specially written  
for that environment.

**Software Engineering Ethics:**

1. **Confidentiality** You should normally respect the confidentiality of your employers or clients irrespective of whether or not a formal confidentiality agreement  
   has been signed.  
   2**. Competence** You should not misrepresent your level of competence. You should  
   not knowingly accept work that is outside your competence.  
   3. **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.  
   4. **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).