

LIFE CYCLE OF SOFTWARE

The life cycles of the software includes

- 1.Designing of the software requirements : (ALGORITHMS / FLOW CHART / LOGIC)
- 2.Building the designs to source codes and Object code i.e programs (PROGRAMING IN A LANGUAGE AND COMPILATION)
- 3.Testing the designs and programs whether they confirms the requirements (TESTING)
4. Maintenance of the same with updating as and required. (UPGRADES/ VERSIONS)



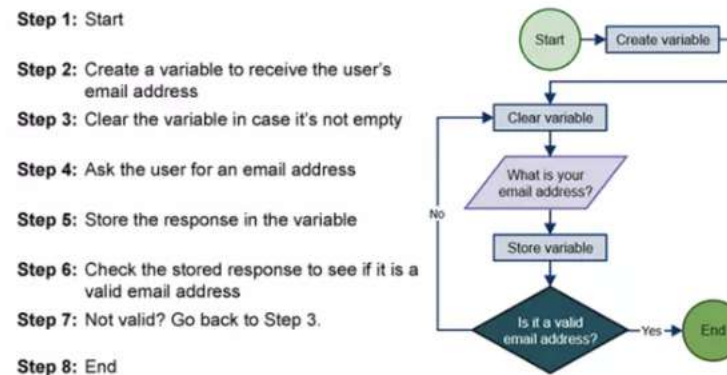
DEFINITIONS



- **Computer** is defined in The Information Technology Act, 2000 (No.21 of 2000) as “any electronic, magnetic, optical or other high-speed data processing device or system which performs logical, arithmetic, and memory functions by manipulations of electronic, magnetic or optical impulses, and includes all input, output, processing, storage, computer software, or communication facilities which are connected or related to the computer in a computer system or computer network”.

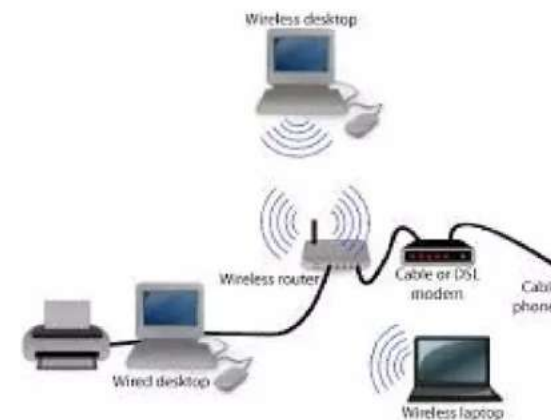


- **Algorithm** : Not defined in Indian statutes thus the general dictionary meaning “a set of rules that must be followed when solving a particular problem”.



DEFINITIONS

- **Computer network:** is defined in The Information Technology Act, 2000 (No. 21 of 2000) as “the interconnection of one or more computers through - (i) the use of satellite, microwave, terrestrial line or other communication media; and (ii) terminals or a complex consisting of two or more interconnected computers whether or not the interconnection is continuously maintained”.



- The term **computer program** has been defined in the Copyright Act 1957 under Section 2(ffc) as "computer program means a set of instructions expressed in words, codes, schemes or in any other form, including a machine readable medium, capable of causing a computer to perform a particular task or achieve a particular result”.



DEFINITIONS

- **Source Code:** The original lines written by the programmer source code.

```
#!/bin/bash
# Verifie la validite d'une date
function dateValide()
{
    local am=echo $1 | grep ^[0-3][0-9]M[0-1][0-9]M[0-9]{4}$
    if [ "$am" != 0 ];then
        jm=echo $1 | cut -d"/" -f1
        mm=echo $1 | cut -d"/" -f2
        aa=echo $1 | cut -d"/" -f3

        [ $j -le 31 -a $j -ge 1 -a $m -le 12 -a $m -ge 1 ]
        echo $?
    else
        echo 1
    fi
}

# Verifie si une plage horaire $1 est bien comprise dans la plage horaire $2
function appartientPlage()
{
    if [ "$(validoHoraire $1)" == "0" -a "$(validoHoraire $2)" == "0" ];then
        local h1=echo $1 | cut -d":" -f1 | sed s/://
        local h2=echo $1 | cut -d":" -f2 | sed s/://
        local lim=echo $2 | cut -d":" -f1 | sed s/://
    fi
}
```

- Can be understood by the programmer and computer
- Written by the programmer or on instruction of the programmer by a software.

- **Language compiler** is a computer program (or a set of programs) that transforms source code written in a programming language (the source language) into another computer language (object code / executable), with the latter often having a binary form known as object code.

- EG : C++ , VB, Java etc

- Works as a translator
- Provides protection to the source code.

- **The Object code:** The object code which gives the actual instructions that control the computer when the program is executed.

- Can be understood by the computer only.
- Translated by the compiler.



DEFINITIONS

- **A Copyright** is a legal right created by the law of a country that grants the creator of original work exclusive rights to its use and distribution, usually for a limited time (60 Yrs.). Copyright may apply to a wide range of creative, intellectual, or artistic forms, or "works". Specifics vary by jurisdiction, but these can include poems, theses, plays and other literary works, motion pictures, choreography, musical compositions, sound recordings, paintings, drawings, sculptures, photographs, computer software, radio and television broadcasts, and industrial designs, graphic designs.
- **A patent** is a set of exclusive rights granted by a sovereign state to an inventor or assignee for a limited period of time (20 Yrs.) in exchange for detailed public disclosure of an invention
- **A trade secret** is a formula, practice, process, design, instrument, pattern, commercial method, or compilation of information which is not generally known or reasonably ascertainable by others, and by which a business can obtain an economic advantage over competitors or customers. The source code usually forms a part of trade secret.

Prior to Copyrights and Patents trade secret was the only form of protection and Patent rights were granted for complete disclosure of invention.



COPYRIGHT PROTECTION TO SOFTWARE

- Computer programs are literary works under the definition in the Copyright Act. A “computer program” is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.
- Copyright for computer programs prohibits copying of
 1. Source code and Algorithms
 2. Object Code
 3. Graphics
 4. Sounds
 5. Appearance of a computer program also may be protected as an audiovisual workThus program can infringe even if no code was copied.
- Copyright comes into being when the original lines of source code or algorithm are written by the programmer. Another copyright comes into being for each addition or modification that shows sufficient originality. Thus a series of copyrights come into existence for software and can amount to ever greening
- While Fair use under section 52(1)a applies to literary work it does not apply to software program.



IS PROTECTION TERM UNDER COPYRIGHTS JUSTIFIED ?

- 1. No development could be made over the existing software without the knowledge of the source code and logic hidden behind the object code.

Thus unlike other works like music where inspiration derived or idea derived work is possible, in case of software no further development is possible

- 2. While literary work has a clear protection of 60 years. The software which is developed in version after version amounts to ever greening and no limit is set on the function or logic.

WHAT IS NOT A COPYRIGHT INFRINGEMENT OF SOFTWARE ?

The following acts are not infringements.

- Make back-up copies purely for protection of destruction.
- Make observation, study or test of functioning of the computer program in order to determine the ideas and principles
- Making of copies or adaption of the computer program from a personally legally obtained copy for non-commercial personal use.
- The doing of any act necessary to obtain information essential for operating inter-operability of an independently created computer program with other programs by a lawful possessor of a computer program provided that such information is not otherwise readily available.



PATENT PROTECTION OF SOFTWARE

- The Patents (Amendment) Act, 2002 also introduced explicit exclusions from patentability under section 3 for Computer Related Inventions (CRIs) as under:
(k) a mathematical or business method or a computer program per se or algorithms;
The computer software which has a technical effect is patentable under India Patent Act, 1970.
- The new invention, according to the Indian Patent Act is the technology which has not been anticipated by publication in any document used. Thus the 'technical contribution and technical effect' are also applicable for grant of patents.
- Accordingly the software programs 'per se' are not patentable. It gives a scope for grant of patents to software programs provided they form part of some machine or apparatus.



INDIA CONTROVERSY ON 2015 GUIDELINES

- Under the Patents Act – Clause 3(k) – which states that a patent cannot be granted for “a mathematical or business method or a computer program per se or algorithms.”

IN CASE OF MATHEMATICAL MODEL.

As per CRI (Computer related Invention) guidelines 2015.

- Mere use of a mathematical formula in a claim, to clearly specify the scope of protection being sought, would not necessarily render the claim to be mathematical method.
- Thus Mathematical model becomes a part of a claim
- Though a mathematical method cannot be patented, however if it becomes a part of a mathematical model, the model itself somehow becomes patent eligible



INDIA CONTROVERSY ON 2015 GUIDELINES

In case of business method patenting

- Act says no business method patenting, but if the method is not just a method but “specifies an apparatus in connection with or a technical process for carrying out a Business Method”, then it somehow becomes patent eligible.
- Thus, what was a blanket ban on patenting business methods – there is no per se in the Act as in computer programmes – is sought to be negated by adding some words that are not in the Act.



INDIA CONTROVERSY ON 2015 GUIDELINES

In case of software Patenting

- The original language of the Draft 2002 Act, had computer programmes as not being patentable; the JPC added the words per se to computer programme. Of course any such qualifier is a lawyer's delight;
- JPC defined computer programme per se quite clearly. They had clarified that they did not want to bar patents, if a device containing software was to be patented, but only if the patentability was claimed for the software.
- A computer programme runs on a computer, therefore any software running on a generic computer is computer programme per se.

But,

- If a machine has embedded software in it and the combination has novelty, as a whole, or in the part of the machine that does not run the software, it can be considered to be not computer programme per se, and therefore patentable.



SOFTWARE CONTRACTS.

- Software Contracts can be
 1. Sale
 2. Assignment of license.
- If the computer software is considered as a 'good',
The Sale of Goods Act, 1930 will have relevance in the formation and execution of the sale contract. Also the Consumer Protection Act, 1986, the conditions and warranties, as contained in the Sale of Goods Act (Sections 11-17) will apply. Also the exhaustion of right once sale is done applies.
- Because of the nature and digital format necessities that make copying easy, certain restrictions are imperative, which can be met through a license, which can also protect trade secrets in software easily. This has prompted software owners to structure their distribution transactions as end user licenses instead of sale.



END USER LICENSING VS. CONTRACT ACT.

- End user License agreements prevent the user from decompiling or disassembling the licensed program for any purpose.
- As the fair use doctrine indicates the legal requirement, it should not be constrained by the copyright owner in any manner. Since these agreements prevent the licensee from assigning its interest to a third party, they conflict with the contract law that makes any agreement which restrains anyone from exercising a lawful profession, trade or business of any kind as void (Section 27, Contract Act). This prohibition conflicts with the 'first-sale' doctrine also.
- In addition to using mass-market licenses to get around copyright law, copyright owners attempt to enhance their control over their property via technological restrictions such as encryption technology and transactional design. Thus they create a clear conflict between copyright law and contract law, which have different purposes and objectives.



ENFORCEABILITY OF END USER LICENSE.

- The legality and enforceability of these agreements have not been tested in Indian courts so far. No software license has been invalidated so far on the grounds of not being in tested by writing or signed.
- A license agreement, in spite of the fact it fulfills all the requirements of a valid contract, may not be enforceable if its stipulations conflict with the law governing it or it is an unconscionable or unreasonable bargain.
- In computer software, generally it is the tendency of software producers to do away with the rights and privileges of the user, which are specifically conferred upon the user by copyright and other relevant laws.
- For example, in case of copyright, can the contract take away the fair uses of the licensee/buyer? Can by an agreement, these rights of the licensee/buyer be contracted out? In these cases the court would step in and may hold such a license as unenforceable, which may happen in case of proprietary license that is generally one-sided.



OPEN SOURCE LICENSING.

- The distinction between open source software and proprietary software lies in the free use of the software and the licensing structure. While the proprietary software is released in the market by concealing the source code, under open sourcing the source code is made available with the object code. In proprietary software, the consumer is bound by the terms of license.
- The basic principles of open source licensing are:
 1. open source licenses must permit nonexclusive commercial exploitation of the licensed work,
 2. Must make available the work's source code, and must permit the creation of derivative works from the work itself.



QUESTIONS TO PONDER OVER

- There are various compilers available in the market. If source code in one language is converted to source code in other language and commercially exploited does it amount to infringement? Since in case of literary work it is a clear case of translation of a book?
- Can end user License be enforceable considering it conflicts with the law governing it for a unreasonable bargain. Also with computers being sold with the OS can the pre installed software be considered as a sold good ?
- When a open source software code is used and derived to make a commercial licensed software, where a part of the code is under GNU license how is the copyright to be applied to the executable being licensed?
- Has the law and software companies provided justice to the users who spend time and money on being trained on a software only to be bound by companies who own license ?
- While the Life cycle of a software version is not more then 2 years and over all life of a software not more then 10 years is protection for 60 yrs. under copyright justified ?

