

Patenting software, algorithms & mathematical processes – some thoughts and approaches

What is Algorithm or Software/Computer Programs for the purpose of Patent:

The word has not been defined in the Patent Act 1970; however, the Patent Manual defines as follows:

“any invention the performance of which involves the use of computer, computer network or other programmable apparatus, or an invention one or more features which are realized wholly or partially by means of a computer program/ programs.

Computer programs are a set of instructions for controlling a sequence of operations of a data processing system. It closely resembles a mathematical method. It may be expressed in various forms e.g., a series of verbal statements, a flowchart, an algorithm, or other coded form and maybe presented in a form suitable for direct entry into a particular computer, or may require transcription into a different format (computer language).

It may merely be written on paper or recorded on some machine readable medium such as magnetic tape or disc or optically scanned record, or it may be permanently recorded in a control store forming part of a computer.”

The Patent on Software, Algorithms are *per se* not patentable in India or even in US.

Section 3(k) of Patent Act, 1970 *Quote* “The following inventions are not inventions within the meaning of this Act - a mathematical or business method or a computer program *per se* or algorithm” *Unquote*.

Though the section has not been interpreted by the Courts in India so in absence of a clear interpretation by the Courts we can say the Patent protection is accorded when the software is incorporated into a Hardware that has some technical effects.

The Manual of Patent Practice of Indian Patent Office describes the policy for Patent of Program/Software/Algorithms as follows: The relevant portions are underlined.

“If the patent application relates only to a machine i.e., hardware based invention, the best mode of operation may be described along with the suitable illustrations. However, in the case of a process related inventions, the necessary sequence of steps should clearly be described so as to distinguish the invention from the prior art with the help of the flowcharts. The source or pseudo/object codes may be incorporated in the description optionally.

In order to distinguish the invention from the prior art, relevant prior art is also required to be given in the Patent Application (specification). It is always essential to analyze the invention in the light of what is described and the prior art, in order to identify the contribution to the art and hence determine whether this advancement resides in, or necessarily includes, technological features and technical application or is solely intellectual in its content. A hardware implementation performing a novel function is not patentable if that particular hardware system is known or is obvious irrespective of the function performed.

Applications related to computer inventions may broadly fall under the following categories:

- (a) Method/process:
- (b) Apparatus/system:
- (c) Computer program product.

The examiners of the Patent office have been instructed to look into following aspects while dealing with such applications:-

The method claim should clearly define the steps involved in carrying out the invention. It should have a technical character i.e. it should solve a technical problem.

The claims should incorporate the details regarding the mode of the implementation of the invention *via*. hardware or software, for better clarity.

The claim orienting towards a “process/method” should contain a hardware or machine limitation. Technical applicability of the software claimed as a process or method claim, is required to be defined in relation with the particular hardware components. Thus, the “software per se” is differentiated from the software having its technical application in the industry. A claim directed to a technical process which process is carried out under the control of a program

(whether by means of hardware or software), cannot be regarded as relating to a computer program as such and hence patentable.

For example, “a method for processing seismic data, comprising the steps of collecting the time varying seismic detector output signals for a plurality of seismic sensors placed in a cable.” Here the signals are collected from a definite recited structure and hence allowable.

Further in case of the apparatus claim it should clearly define the inventive constructional hardware features. The claim for an apparatus should incorporate a “process limitation” for an apparatus, where “limitation” means defining the specific application and not the general application.

As a general rule, a novel solution to a problem relating to the internal operations of a computer, although comprising a program or subroutine, will necessarily involve technological features of the computer hardware or the manner in which it operates and hence may be patentable.

For example, in a computer comprising means for storing signal data and a first resistor for storing data, the clause starting with “for” describes the function or process carried out by the apparatus, and form the part of “process limitation” here.

The claims relating to software program product are nothing but computer program *per se* simply expressed on a computer readable storage medium and as such are not allowable.

For example, if the new feature comprises a set of instructions (program) designed to control a known computer to cause it to perform desired operations, without special adoption or modification of its hardware or organization, then no matter whether claimed as “a computer arranged to operate etc” or as “a method of operating a computer”, etc., is not patentable and hence excluded from patentability. The claim might stipulate that the instructions were encoded in a particular way on a particular known medium but this would not affect the issue, for e.g., a program to evaluate the value of π and to find the square root of a number are held not allowable.

An invention consisting of hardware along with software or computer program in order to perform the function of the hardware may be considered patentable, e.g., embedded systems.

A mathematical method is one which is carried out on numbers and provides a result in numerical form (the mathematical method or algorithm therefore being merely an abstract concept prescribing how to operate on the numbers) and not patentable. However, its application may well be patentable, for example, in *Vicom/Computer-related invention* [1987] 1 OJEP 14 (T208/84) the invention concerned a mathematical method for manipulating data representing an image, leading to an enhanced digital image. Claims to a method of digitally filtering data performed on a conventional general purpose computer were rejected, since those claims were held to define an abstract concept not distinguished from a mathematical method. However, claims to a method of image processing which used the mathematical method to operate on numbers representing an image can be allowed. The reasoning was that the image processing performed was a technical (i.e. non- excluded) process which related to technical quality of the image and that a claim directed to a technical process in which the method used does not seek protection for the mathematical method as such. Therefore the allowable claims as such went beyond a mathematical method.

The patent application No.558/DELNP/2005 related to method of operating the credential management processor. This was refused as it was found to be attracting the provisions of section 3(k) as the alleged method was relating to 'receiving', 'de-referencing' and 'storing' being purely a computer implemented software application. As well as the enhancement of security as claimed in method claims was already disclosed in the cited document and is obvious to a person skilled in the art.

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