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Global Empatheticon Computer Programs and Databases as objects of Intellectual Property Rights

Deepthi Rodda[1]
[1](*Dr. B. R. Ambedkar College of Law, Andhra University, Visakhapatnam, Andhra Pradesh, India)*

Abstract:
This paper discusses possible ways to protect the rights and protect the legitimate interests of computer programmers and database creators. It gives a brief insight to effective legal protection of computer programs and databases within the framework of the current legislation, both in India and abroad with in the International legal framework of Computer programs and Databases protection. It also discuss the evolution of the International Regulations and the current position in order to protect Computer Programs and Databases.
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I. INTRODUCTION

Computer programs are one of the youngest and, at the same time, the most complex and specific objects of intellectual property law. The reference point in the development of computer technology is considered to be 1946, when a patent was issued to the creators of the electronic-digital integrator ENIAC. The work of this integrator was to execute a certain sequence of commands. The commands were recorded in the form of a chain of zeros and ones, then entered into the machine as numbers in binary, octal or hexadecimal.[1]

Commands created in this way were called machine code and were not accessible to human perception. Programmers who did not participate in the development of a computer program, as a rule, could not understand all the principles of its use, therefore such phenomena as plagiarism and borrowing of other people's ideas were practically absent among programmers. The next step was the creation of high-level programming languages, with the goal of speeding up and simplifying the process of developing computer programs. Such languages provided the ability to enter commands into the electronic computer using operators. At the same time, the commands used were more accessible to human perception, as a result of which copying other people's programs became much easier. Further, the development of programming went along the path of increasingly simplifying the process of creating computer programs, as a result of which programming to a certain extent became available even to ordinary users. The literature suggests that modern programming has become more like compiling a program from modules created by other modules, sections of program code.[2]

Initially, the development and distribution of computer programs was scientific in nature, since it was intended for computers serving research centers. The protection of the electronic computers themselves as new devices did not cause any particular problems, since they corresponded to all the features of patentable technical solutions, and the new solutions underlying the new computer models were protected by patents. And since in the first years of computer production software made up no more than 5% of the cost of the machine, the software itself was associated with a specific computer model produced by a certain company, there was no need for legal protection of the software as an independent object separate from the computer.[3]

However, with the improvement and complication of the computer technology itself, the importance of software began to increase; software products have received the status of a product on the market. With the advent and mass distribution of personal computers, computer programs have gradually become the object of commercial use. They began to be introduced into economic circulation as a commodity that has its value. Accordingly, there is a need to protect software as an independent object of civil rights.[4]

II. COMPUTER PROGRAMME AS SUBJECT MATTER OF INTELLECTUAL PROPERTY

Computer programs are the most unusual and in their own way unique subject of intellectual property rights. They have a number of distinctive features that make it possible to distinguish them from the total mass of objects.

Firstly, computer programs have a predominantly digital form of expression. A computer program can certainly be expressed as text, but this form of existence does not allow the program to be used for its intended purpose.

Secondly, a computer program is not only an object of intellectual property law, but also a technical means of controlling an electronic computer. The program is perceived by two completely different subjects: computer and person. The invariance of this perception leads to the presence of at least two forms of expression. The program is entered into the computer memory and processed as an object code, that is, as a sequence of zeros and ones. Such a sequence cannot be perceived and understood by man. Accordingly, when creating a program, the programmer does not write it in the form of such zeros and ones, he writes the source text in some high-level programming language, which will then be automatically translated into a sequence of commands on the object code. The source text can be perceived by any person, but understood only by a trained specialist.[5]

From the point of view of an ordinary user, such a text is a set of alternating characters and words, while a trained specialist sees in it the so-called "command syntax", logical operators, etc. Some experts distinguish the intermediate stage between the source text and the object code - pseudo-code. A program presented in the form of pseudo-code cannot be executed by the computing system directly as object code and cannot be accessible to human perception to the extent that the source text is available. By means of pseudo-code, a wide variety of software functions and creates today. Largely due to the presence of such a stage or form of software existence as the source text, computer programs began to be protected by copyright as literary works. The source text has all the features of a written literary work.

In addition, just as an ordinary work can be written in different languages, so a computer program can be written in different programming languages (C, Assembler, etc.). Upon reaching a certain goal, the author of the program can create his own original ideas, theories, methods, algorithms, etc. - It gives computer programs the features of a scientific work. Finally, the audio-visual images generated by the program have features of works of art that are also protected by copyright. It is suggested that the program interface can be protected as an industrial design.

But the source code of the program is not yet a computer program itself: it becomes such only after compilation, that is, translation of the entire source program into its equivalent resulting program in machine language. It is after compilation that an instance of a computer program is created that is ready for use. If the unfinished text of a literary work, the unfinished viewing of an audio-visual work still represent some value for the consumer (i.e., can partially bring some benefit), then the uncompiled source code of the program is not capable of even performing some of the functions of the finished program.

However, here it is necessary to pay attention to another point that determines the specifics of a computer program: a compiled program cannot be used without installing it on a computer. This technical process uses complex programs; It includes, as a rule, writing program components to the computer's permanent memory, registering individual components in the operating system, etc.

Describing a computer program as a specific result of intellectual activity, one cannot but note the special relationship of computer programs with other objects of intellectual property law. A computer program may include other objects of intellectual property rights. In addition to electronic information, a computer program may contain other objects, including works protected by copyright (literary and musical works, works of fine art, photographs, etc.). Certain graphic images can be used as elements of the program interface, the actions performed by it can be accompanied by sound signals, etc. The objects used can be the results of both the creative work of the author of the computer program and other persons. This, however, does not mean that the author of the program is the bearer of rights in relation to such objects. The computer program itself can act as a tool for creating other creative results. There are a significant number of computer programs designed to create graphic images, music and audio-visual works, etc. The process of creating such programs is less time-consuming from the point of view of the expenditure of the physical forces of the author, but much more demanding on intellectual investments. Nevertheless, the industry of electronic works has gained unprecedented proportions: a large number of galleries of graphic images have appeared on the Internet, the popular "electronic" music is also created mainly using computer programs.

Despite the large number of existing computer programs, their diversity in terms of complexity and purpose, we can distinguish the main categories of programs. An operating system is one large program to which all other programs are "attached" and function. It is the operating system that converts the commands received from a particular program into those that are understandable by the computer (although certain types of programs can also directly access the "iron" component of the computer — the so-called device drivers). As mentioned above, there are few operating systems. Well-known are: Windows, Unix, Mac OS, etc. The operating system can be represented as a kind of environment in which applications run. This comparison leads to the logical conclusion that programs designed to work in one operating system will not be able to function in another. Thus, the operating system is as integral to a computer system as, for example, a processor. The number

of different application programs is very large (especially when you consider that programs of a certain purpose are necessary for each operating system), and they constitute the bulk of the software market.

A significant part of the software existing today is made up of programs intended for commercial use. It is in relation to such programs that their developers, manufacturing companies use possible legal and technical protection measures that do not allow unauthorized copying and use. At the same time, the world has seen an increase in the popularity of so-called “free” software; otherwise, such programs are called "open source programs" (open-source). However, the definition of such software as “free” does not mean the release of the licensee from any obligations to the licensor and third parties, including does not always mean the possibility of free use. Software freedom means the user's right to freely run, copy, distribute, study, modify and improve it. More precisely, there are four varieties of freedom of users of the program:

- freedom to run the program for any purpose;
- freedom to study the program and adapt it to the needs of the user, and access to the source is a prerequisite;
- freedom to distribute copies;
- the freedom to improve the program and publish improvements, so that the whole society will benefit from this, and access to the source texts is a prerequisite.

In contrast to the concept of copyright as property rights to ensure that it is impossible for any person to restrict their rights to use, modify and distribute both the computer program itself and the programs based on it. “In order to place a program under the influence of copyleft, we first declare our copyright to it (copyright), then we add the terms of distribution, which are the legal basis, according to which everyone gets the rights to use, modify and distribute the program code, as well as any derivative programs on the condition that the distribution rules are unchanged. Thus, the code and the proposed freedoms become legally inseparable”.

The openness of the source text, the freedom of distribution and the absence of restrictions on its modification contribute to the intensive development of the software, largely due to the fact that everyone can participate in its development. In addition, such programs have greater flexibility, since at any stage of their existence they can be processed in accordance with the needs of the user. Due to the fact that after the modification, free software is still open, users have the opportunity to compare various modifications and use the most successful options. The consequence of this process is not only the rapid evolution of software, but also the development of information technology as a whole.

A computer program has recently been recognized as an object of intellectual property law. It is an ordered collection of commands and data to obtain a specific result using a computer. The software is protected by copyright as a literary work, since it is created on the basis of the source code, which has the features of a literary and scientific work. Nevertheless, in the scientific literature it is proposed to protect computer programs by other institutes of law. The main form of expression of a computer program is a digital form, and a material medium is needed on which it can be recorded. There are two main types of computer programs: operating systems (a kind of environment in which other programs work) and application programs. Computer programs can also be divided by functional orientation and by the criterion of openness of the source text (open-source and commercial programs).

Databases - a new copyright subject

Database - a compilation of materials, data, information on the selection and arrangement of materials representing the result of creative work; the concept of a database does not apply to a computer program with which electronic access to database materials can be carried out.

Information is traditionally defined as information about persons, objects, facts, events, phenomena and processes; data - as documented information; materials - as a collection of documents on any issue. From the definition given in the above Law, we can conclude that the database is a kind of composite works that differs in the nature of the objects included in it (materials, data and information are not copyright objects).

Currently, the Law no longer restricts the concept of a database to only machine-readable collections of information, defining it as a compilation (selection) of materials, data, information representing the result of creative work on the selection and arrangement of materials. Compilation - a combination of the results of other people's research, thoughts without independent processing of sources, as well as the work itself, compiled in this way. Consequently, compilation work is identical to compilation work, and the result of compilation work is a selection of materials (collection). Thus, the database can be safely classified as a composite work. The main difference between the database and other composite works is the nature of the materials included in it. As a rule, the database contains information, various kinds of data and other materials that are not objects of copyright.

III. INITIAL DEVELOPMENTS FOR COMPUTER PROGRAMS AND DATABASESPROTECTION

The development of computer technology and related software development has led to a number of problems associated with the legal protection of the results of intellectual activity in this area. The creative nature and the strong economic return on the work of programmers made it necessary to provide legal protection to computer programs.[6]

Problems associated with the introduction of software into public circulation arose in the early 60s of the last century. Moreover, the experts initially proceeded from the fact that the creation of computer software, as well as the creation of technical means, requires the cost of highly skilled creative work and, therefore, deserves special legal protection.[7] In many international stages the idea was expressed that creativity in the field of software creation needed protection by exclusive rights; the existence of such protection will contribute to the development of software, its use and the dissemination of knowledge related to it. Also in foreign literature, one can find suggestions of alternative modes of software protection, for example, protection "jus generis", i.e. "special kind" protection, or protection based on a combination of trade secret laws and antitrust laws. Currently, the legal protection of computer programs is provided by number of institutes of law.[8]

In the protection of computer programs by patent law, both legal and patent problems have arisen related to the preparation of the claims, the choice of a prototype for the patented program, and expertise on world novelty. The questions that arose were related to the technical nature of the software - it cannot be attributed either to devices that are characterized by design features, or to methods characterized by a certain sequence of actions performed on a material object. As noted by legal scholars, the theoretical justification for recognizing algorithms and programs as patentless as inventions was the fact that they cannot be reduced to material objects, i.e. are not "technical solutions" in the traditional representation of patent law.[9]

The protection of software with the help of legal norms ensuring the protection of undisclosed information also had significant shortcomings; if the idea of a computer program algorithm as the know-how of a developer is fully justified at the stage of program development, then from the moment the contents of the algorithm become available to an indefinite number of people, such protection is impossible by definition. In the India, the problem of protecting computer programs began to be actively discussed in the mid-90s. At the same time, scientists involved in the legal protection of computer programs substantiated the need to adopt a special regulatory legal act, on the basis of which a special legal institution would be created - "software law", which protects computer programs on the basis of registration without preliminary examination. International level in 1971, the problems of protecting computer programs for the first time acquired an interstate character. The advisory group of the World Intellectual Property Organization addressed the feasibility and feasibility of such protection. Moreover, in the mid-seventies this problem was simultaneously considered by two authoritative international organizations - the World Intellectual Property Organization (WIPO) and the International Association for the Protection of Industrial Property.

In 1975, the Congress of the International Association for the Protection of Industrial Property decided to recommend using the capabilities of the national legislation of the member countries to protect software products, while giving preference to copyright protection. It was understood that this situation should be maintained until the development of special international standards for the protection of intellectual property in the field of computer-mathematical and information support for computers.

In 1978, the World Intellectual Property Organization adopted the Model Provisions for the Protection of Software for Computing Machines, consisting of ten sections summarizing the positive experience in the formulation and solution of problems in the field of legal protection of software accumulated by now in various countries.

The main issues addressed in the Regulations were the definition of basic terms, fundamental rights to the software and the conditions for their occurrence, the duration of the rights to the software. In particular, in accordance with the Regulations, the following were subject to protection:

- computer program - a set of commands that, being recorded in a machine-readable language, can make a machine capable of processing information, perform a specific function or achieve a certain result;
- program description - a complete operational statement in verbal, schematic or other form, detailed to the extent sufficient to determine the set of commands that make up the contents of the corresponding computer program;
- auxiliary material - any material other than the computer program itself or its description, created in order to facilitate understanding or application of the computer program, for example, a description of the problem or instructions for the user.

The preparation of the Regulations pursued three main objectives:

- to eliminate the difficulties in providing international protection to software products caused by differences in legal protection at the national level;

- to provide a more serious degree of unification of the conditions for the protection of computer software in various countries; and
- to provide relatively broad access to information contained in computer programs.

At the same time, the Model Provisions did not exclude the possibility of applying general principles of legislation to computer programs or the application of any other law, for example, patent law. As the next step, it was planned to prepare and conclude an appropriate multilateral international treaty on the protection of software - in 1983, WIPO submitted a preliminary draft multilateral international treaty on the protection of computer programs.

However, such an agreement was never concluded, since, starting in the mid-80s, many industrialized countries adapted their legislation to protect computer programs as copyright objects, and made it relatively acceptable at that time for adequate legal protection of software products. As a result, the issue of developing special international legislation lost its relevance and was removed from the agenda of international organizations.

The final step in the establishment of existing international rules for the protection of computer programs was the conclusion, within the framework of the World Trade Organization, of the Agreement on Trade-Related Aspects of Intellectual Property Law (TRIPS Agreement), as well as the WIPO Copyright Treaty (1996). Both international treaties provide for the obligations of the states participating in them to protect computer programs presented in the form of source or object code as literary works in accordance with the provisions of the Berne Convention; at the same time, protection should extend to all programs, regardless of the method and form of their expression. In making such a decision, the position of the largest software manufacturers, for which the most urgent was the problem of combating mass illegal copying of their products, played an important role.

IV. PRACTICE OF THE FOREIGN COUNTRIES

The law enforcement practice of leading industrialized countries has gone along the path of protecting software with copyright laws. In November 1961, a computer program was first registered with the Library of Congress as an object of copyright. And since 1964, the Copyright Office of the Library of Congress began to register computer programs on a regular basis, giving them protection as works. In 1966, a special presidential commission concluded that the computer programs were patented. However, at the same time, in 1967, Congress rejected the bill amending the copyright law, and only in 1980 did it manage to pass amendments calling computer programs among protected copyright objects. After this, the USA was followed by the majority of industrialized countries, like Australia - in 1984, France, Great Britain, Japan - in 1985, China - in 1990 and Indian – in 1994.

At the same time, it was in the United States that in practice the most liberal patent protection system for decisions related to computer programs has developed and exists at the present time, which exists in parallel with the provision of copyright protection. In the United States of America the Copyright Act of 1976 did not expressly list computer program as works of authorship. In 1980, the Act was amended by adding a definition of "computer program". It also laid down exceptions to the normal prescriptions against. The methods and algorithms in a program are not protected. U.S. copyright protection for computer programs extends to non-literal elements including the structure, sequence and organization of a program, and to its graphical user interface. Together these elements are called look and feel. Most foreign jurisdictions do not yet recognize protection of these non-literal elements.[10]

Australian law considers a computer program an expression in any machine language, in any code or number system of a number of instructions (with or without related information) designed to enable a device capable of processing information in numerical form to perform a certain function.[11] These commands are implemented either directly or after completing both or one of the following operations: a) conversion to another machine language, code or number system; b) reproduction on another medium. The Spanish Copyright Law refers to a computer program as a sequence of instructions used by a computer to solve specific problems or achieve a specific result.[12] In article 1261 of the Civil Code of the Russian Federation, a computer program is defined as an objective set of data and commands intended for the operation of computers and other computer devices in order to obtain a specific result, including preparatory materials obtained during the development of a computer program and generated her audio-visual display. The German Copyright Law has dealt with the issue and has endeavored to protect work which is the personal intellectual creation of the author under copyright.[13]

All of the above definitions of a computer program reflect two main objectively inherent attributes: a systematic set of commands and data (program) and focus on obtaining a specific result using a computer (computer). Nevertheless, some states expand the scope of legal protection of software by extending it to the source text and object code, as well as the audio-visual images (displays) generated by the program, accompanying electronic documentation, etc.

V. CURRENT PRACTICE OF PROTECTING COMPUTER PROGRAMS

If we analyses the current practice of protecting computer programs at the level of national legislation, the following three main trends should be noted:

- First, most states protect computer programs by copyright by default;
- Secondly, many states do not exclude the possibility of applying patent law to solutions contained in software that are consistent with the general concept of the invention;
- Thirdly, the search continues for more effective legal means of protecting precisely computer programs.

Leading industrialized countries simultaneously apply two main institutions of intellectual property law - copyright and patent law. Such a cumulative method of protection allows the possibility of applying other legal institutions mentioned above. Depending on the legislative transformations aimed at increasing the efficiency of legal protection of computer programs undertaken by leading industrial states, the latter can be conditionally divided into three groups. The first is made up of countries where serious legislative reforms have not been carried out, and where issues of protecting computer programs are currently being addressed on the basis of existing copyright law, which applies to software products without any reservations. The second group includes countries in which minor copyright reforms have been carried out, as a result of which computer programs have been directly named among the objects of copyright, and the rules regarding the allowed free use of protected programs and their possible decomplication have been clarified. The third group includes countries that have seriously modernized copyright laws by incorporating provisions specifically dedicated to the legal protection of computer programs.[14]

Depending on the approaches to the application of patent law to protect computer programs, industrialized countries can be divided into three groups. The first includes countries whose patent laws expressly provide that computer programs cannot be considered as inventions. The second group includes countries whose patent laws do not consider computer programs as patentable inventions per se, in isolation from the technical result that is achieved with their application. The third group includes countries whose patent laws do not contain clear rules regarding the patentability of computer programs. It should also be noted that each of the methods of protecting computer programs known in modern legal science alone does not provide their complete and reliable protection. Therefore, the search for the most appropriate form of legal protection for computer programs continues to this day.

As regards databases, they, like computer programs, are relatively young and at the same time complex from the point of view of legal protection, objects of intellectual property law. Having emerged as objects capable of legal protection by copyright, databases gradually demanded that their content be protected by means other than copyright law. The first attempts to resolve this issue at the regional level were made by India through the adoption of relevant directives given by the International Conventions.

In addition to the traditional aspects of copyright, this Directive was the first to protect so-called “sui generis” (“special kind” rights) rights. The essence of the proposed legal construction was to recognize the database as a one-of-a-kind work, as it involves not only creative activity in the selection and classification of data, but also creativity of a special nature. The database created in this way received protection on the basis of “special kind” law. Thus, in the framework of this Directive, protection was provided not to the database as to the work, but in fact, to those investments that were invested in its creation. The legal protection of databases was further developed in connection with the adoption of international agreements such as the TRIPS Agreement on the Legal Protection of Databases and the 1996 WIPO Copyright Treaty. These agreements introduced copyright protection for databases, which are the result of creative activity in the selection or arrangement of materials included in it.[15]

VI. SOFTWARE AND DATABASE PROTECTION - PRACTICE IN INDIA

In India, the Intellectual Property Rights (IPR) of computer software is covered under the Copyright Law. Accordingly, the copyright of computer software is protected under the provisions of Indian Copyright Act 1957. Major changes to Indian Copyright Law were introduced in 1994. This amendment to the Copyright Act introduced a landmark in the India's copyright arena.

According to this Act "Computer" includes any electronic or similar device having information processing capabilities[16] and "Computer program" means 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.[17] This Act provides that "Literary work" includes computer programs, tables and compilations including computer database.[18] For the first time in India, the Copyright Law clearly explained the rights of a copyright holder; position on rentals of software; and the rights of the user to make backup copies. It is illegal in this Act to make or distribute copies of copyrighted software without proper or specific authorization.[19]

The violator can be tried under both civil and criminal law and both actions may be instituted for injunction, actual damages or statutory damages per infringement etc. Heavy punishment and fines for infringement of software copyright.[20]

Databases are protected as collections or compilations of literary and artistic works. The Indian Copyright Act, amended in 1994, provides protection for databases as 'literary works', which amongst others include works such as computer programs, tables and compilations, and computer databases (The Copyright Act, 1994). It is the skill, Labouré, and judgment of the author that is protected, irrespective of the form in which the product appears. Indian Copyright Act, 1957 protects "Databases" as 'literary works' under the Copyright Act which says that Copyright shall subsists throughout India in original literary, dramatic, musical and artistic works.[21] The definition of "literary works" includes computer programs, tables and compilations including computer data basis.[22] Indian Copyright Act provides that any person who knowingly makes use on a computer of an infringing copy of computer program shall be punishable for a minimum period of six months and a maximum of three years in prison.[23] It is pertinent to mention here that the Indian courts recognize copyright in databases. It has been held that compilation of list of clients/customers developed by a person by devoting time, money, Laboure and skill amounts to "literary work" wherein the author has a copyright under the Copyright Act. As such if any infringement occurs with respect to data bases, the outsourcing parent entity may have recourse under the Copyright Act also.[24]

In India "Data" defined as a representation of information, knowledge, facts, concepts or instructions, which are being prepared or have been prepared in a formalized manner and is intended to be processed, is being processed or has been processed in a computer, computer system or computer net-work and may be in any form (including) computer print outs, magnetic or optical storage media, punched cards.[25] The term computer Data Base has been defined under the Indian Legal System for the first time in India as a representation of information, knowledge, facts, concepts or instructions in text, image, audio, video data being prepared or have been prepared in formalized manner or have been produced by the computer, computer system or computer net-work are intended for use in computer, computer system or computer network.[26] Section 43 of Information Technology Act, 2000 provides for compensation to the aggrieved party up to One Crore of Rupees from a person, who without the permission of the owner or the person who is in charge of computer, computer system or computer net-work secures, access to the system or down-loads data or down-loads, copies or extracts any data or data base or information from the said computer, computer system or computer network or secures access to the system or down-loads data or down loads, copies or extracts any data or data base or information from the said computer, computer system or computer network which includes the data hold or stored in any removable storage media. Section 43 of the Act is very wide and cover instances of cracking the computer codes, computer trespass, digital copying, violation of privacy, data theft etc. This Act provides for penal liabilities to the person, who with the intent to cause or knowingly that he is likely to cause wrongful or loss or damage to the public or any person, alters or destroys any information residing in the computer resource or diminishes its value or utility or affects it injuriously by any means, the term commonly used for such crimes is 'hacking'.[27]

VII. CONCLUSION

However, the development of unified approaches to the protection of software was complicated by the need to coordinate the interests of states with varying degrees of scientific and technological development. That is why the development of regional agreements has proven more productive. The first step in this direction was the preparation of an analytical report on Copyright Protection among various countries in the world, through which some directions need to provide to mitigate the issues of computer programs and Databases. Those directives not only unambiguously attribute computer programs to copyright, but also establishes a minimum list of standards for the protection of programs, which should subsequently reflected in the national legislation of the countries.

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