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# Alternatives to IP; Special Reference to Computer programs, Open-Source Software and Non-Fungible Tokens

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## ABSTRACT

*This paper intends to enumerate various aspects of Intellectual Property (IP) protection for a computer programme and related functions. Every effort to finely express the ability of the human mind is needed to be appreciated highly. This is a basic assumption that again justifies the concept of proprietary interests in such intellectual works.*

*Computer programs have designed human lives easier. From the initial stage of enabling smooth computation of accounts, it has become an integral part of our daily lives. So, the upgradation was very drastic and thereby advantageous. The easiness of illegally accessing or copying made it crucial to ensure protection.*

*The entire article further deals with the limitations of each regime in providing adequate protection to computer-related inventions. This means the current IP regimes are not efficient to ensure adequate protection for computer programmes and software.*

*It was the trade secret and contractual obligation that has been used as a protective shield for software. Later on, the scope for reverse engineering became a barrier. Now, various nations use copyright and/or patents for preserving these inventions. Although these are also not that much efficacious to safeguard computer programme.*

*The emergence of free open-source software has resulted in dwindling the relevance of giving protection to software and computer programmes. In the present scenario, it is considered the strength of the producer to assure the protection of his invention from exploitation or infringement.*

*This article contains cases from different legal systems and it enables to get the evolution of legal protection to computer software. Further, it includes Non-Fungible Tokens as an alternative to Intellectual Property Protection to Computer programs.*

**Keywords:** *Intellectual property rights, Computer programs, Open-Source software, Non-Fungible Tokens.*

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## **I. INTRODUCTION**

The computer system is the invention and how to secure IP protection for computers is a hot topic of debate, especially since current IP systems do not work well in dealing with their full security. There is a lot of uncertainty about their protection due to the complexity of technology in computer systems and the difficulty of compliance with existing IP rules.

The creation of a computer program is not an easy process, nor it is inexpensive. Companies that make such heavy investments expect to get adequate returns in a short period, because software becomes outdated very quickly in this fast-growing era of technology and cut-throat competition, with software upgrades almost every minute, aiming to get ahead in the market. Thus, a need was felt for the protection of computer programs, as the creation of it involves substantial skill and labour as well as huge financial resources.

Owing to the developments in technology by which anything can be replicated, makers of computer programs stand to lose a lot without a legal mechanism in place to protect the investments made in these programs.

## **II. CONTRACTUAL LAW OR SCOPE FOR PROTECTION UNDER TRADE SECRET LAW**

It was through trade secret law that the computer software was given IP protection for the first time. When the software is distributed to relatively few customers, licenses are established the confidential relationships and obligations required to maintain trade confidentiality can be obtained through written agreements.

Software developers have tried to tackle the very complex problem of maintaining business confidentiality in bulk software with a "**shrink wrap**" license. It shows additional privacy and is established through marketing the software in a closed package with notice and license agreement visible outside the package. Agreement in general provides that the user, by opening the package, is deemed to have accepted the terms and conditions of the license. The license generally prohibits the deletion, duplication or copying of the program for any reason other than the use and copyright.

In India, there are no trade secret laws. Instead, contractual obligations can be found and protected in the Indian Contract Act. § 75 deals with provisions relating to Breach of contract. According to § 75, A person who rightfully rescinds a contract is entitled to compensation for any damage which he has sustained through the non-fulfilment of the contract. There is also a system of "standard terms" contract where one party who is dominant makes a contract and

another party is required to either sign or reject the contract. The validity of a such standard contract is still debatable.

### **Digi dyne v. Data General (1985)<sup>2</sup>**

Defendant Data General developed a computer system known as NOVA. The program contains a NOVA CPU designed to perform a specific "set of instructions" or group of tasks, as well as a NOVA copyrighted operating system called RDOS that contains the basic operating system instructions. Not all operating systems work with all CPUs. The plaintiffs produced an emulator NOVA CPUs designed to execute a set of NOVA commands and thus utilize the defendant's RDOS. Data General refuses to provide its RDOS to anyone who does not purchase it and its NOVA CPU. The plaintiffs allege that this implies a system of illegal arrests; Defendant RDOS is a binding product, NOVA command set CPU is a bound product.

### **Pro CD v. Zeidan berg (1996)<sup>3</sup>**

Defendant has purchased licensed CD-ROM data, which limits the consumer to non-commercial use. The existence of a license limit was announced by shrink-wrap packaging but the terms were within the package and not outside. Defendant ignored the license and resold the CD database.

The court found that the database was expensive to compile and costly to maintain. The plaintiff plans to charge a single price for limited use by consumers and a higher amount for commercial users who would normally pay the consultants expensive fees for such information. A Shrink wrap-up license for consumer products, sold at a lower price than the commercial version, has indicated that use is limited to non-commercial purposes. Each box announces that the software comes with the specifications specified in the license, which are available on disk and the screen whenever the software is running.

### **Specht v. Netscape (2001)<sup>4</sup>**

The plaintiffs complied with Defendant's invitation to download their free software, Smart Download. Because of the way Netscape implemented an online download setup, Plaintiffs were not required to read the full terms of the contract agreement, including the settlement clause, before clicking the download button. The District Court found that the software download did not include acceptance of the Respondent's terms because there was no clear notice and the reasonable internet user would not expect to submit a compensation clause when

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<sup>2</sup> Digi dyne v. Data General, 473 U.S. 908 (1985)

<sup>3</sup> Pro CD v. Zeiden berg, 86 F.3d 1447 (7th Cir. 1996)

<sup>4</sup> Specht v. Netscape, 150 F.Supp.2d 585 (S.D.N.Y. 2001)

filing a free download. Defendant's motion to enforce arbitration was rejected. In this case, the court held that the prudent buyer would not accept the terms of an invisible contract to disregard them altogether.

It is clear from these judgements that there are difficulties and limitations to protecting contractual or trade secret law. One of how the protection through trade secret law can be challenged is by the reverse engineering system. This is the process by which a finished object is examined to determine how the original object was assembled. Of course, this is an obvious way to bypass trade security protection is to disclose confidentiality.

### III. PATENTABILITY OF SOFTWARE

The United States Patent and Trademarks Office (USPTO) denied the patent to computer programs in 1964, describing them as “the creation of the physical universe.” In 1966, it tried to establish standards for the patent of the software, however, it was not successful.

The Bill of Rights gives Congress the power to legislate “to promote the advancement of practical science and 35 U.S.C. § 101, patent law defines a patent title, requires that inventions and inventions be "new and useful." <sup>5</sup>There are four categories of subject matter that apply to the patent: processes, equipment, builders, and object design.

In earlier cases like Gottschalk v. Benson (1972)<sup>6</sup> (*Can a mathematical formula without issuing a valid application for a digital computer be patented*),

Parker v. Flook (1978)<sup>7</sup> (*This case revolves around the patent application "How to Update Alarm Limits". These limits are numbers where the catalytic converter operates normally. The numbers are determined by taking a weighted time estimate of the appropriate operating parameter values, such as the temperature inside the reactor, by the smoothness algorithm*),

Diamond v. Diehr (1981)<sup>8</sup> (*The plaintiff has developed a synthetic rubber treatment system that incorporates the use of a mathematical formula and a digital computer programmed in a few steps.*), the court held on the mathematical algorithm as non-patentable subject matter.

<sup>9</sup>The Viacom case (1986) is a leading authority on the definition of "computer system" and what

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<sup>5</sup> Roy I Morien, *Proposal for a Project on Computer Science and Information Technology Education*, ACADEMIA, [https://www.academia.edu/27328606/Proposal\\_for\\_a\\_Project\\_on\\_Computer\\_Science\\_and\\_Information\\_Technology\\_Education\\_docx](https://www.academia.edu/27328606/Proposal_for_a_Project_on_Computer_Science_and_Information_Technology_Education_docx) last visited on 30th March, 2022.

<sup>6</sup> *Gottschalk v. Benson*, 409 U.S. 63 (1972)

<sup>7</sup> *Parker v. Flook*, 437 U.S. 584 (1978)

<sup>8</sup> *Diamond v. Diehr*, 450 U.S. 175 (1981).

<sup>9</sup> <https://kencorner.com/understanding-computer-system/> last visited on 30th March, 2022, *Vicom Patent Application EPO T 0208/84 (Computer-related invention)* of 15.7.1986

constitutes a "mathematical method". The Board<sup>10</sup> holds that the decision-making process for patenting determines which technological invention is required given the overall performance of the known art. It does not matter if the computer system takes over any of the software.

### **Gale's Application (1991)<sup>11</sup>**

The applicant has devised a new and better algorithm for finding square roots. After installing the method on a readable chip that can only be installed on a computer that can use an algorithm. The Court accepted the EPO's 'technical Contribution approach', but the development of the novel and the invisibility of the uncounted category do not count as technological advances. A computer program output is not just a code that builds a program, but a code that is located in a visible area that makes the computer work that code.

### **IBM Patent Case (1991)<sup>12</sup>**

International Business Machines Corporation (IBM) is an American technology organization. They won many patents in 1997.<sup>13</sup> The EPO rejected the claim and held that defining a computer program product and element, respectively, were directed to a computer program as such and, therefore, concerned subject matter excluded from patentability under Article 52(2)(c) and (3) EPC.

### **Astron Clinica (2008)<sup>14</sup>**

A Cambridge company has developed a flexible imaging technology that makes dentists and dermatologists look under the skin. The company's patented SIA copy technology is currently being used in its DERMETRICS® product program to assist in the early diagnosis and treatment of skin cancer (malignant melanoma) and can be used in many skin conditions.

### **Alice Corporation Pty. Ltd. V. CLS Bank International et al (2014)<sup>15</sup>**

Alice Corporation (Alice) is an Australian company that owns several patents with a similar function: managing risk in e-commerce when a third party fulfils obligations between the two main companies. CLS Bank International (CLS) uses the same software to facilitate transactions

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<sup>10</sup> A patent application related to digital image processing methods and tools that include mathematical calculations performed on a two-dimensional list of numbers representing image points. Algorithms used to slide or sharpen the differences between neighbouring data elements in the same members. The EPO rejected these claims due to a lack of innovation.

<sup>11</sup> Gale's Application <https://doi.org/10.1093/rpc/1991rpc305> last visited on 25th March, 2022

<sup>12</sup> IBM Patent Case, EPO T 1173/97 (Computer program product/IBM) of 1.7.1998

<sup>13</sup> Office, E., 2022. EPO - T 0935/97 (Computer program product //IBM) of 4.2.1999. [online] Epo.org. Available at: <<https://www.epo.org/law-practice/case-law-appeals/recent/t970935eu1.html>> [Accessed 19 August 2022].

<sup>14</sup> Astron Clinica Ltd & Ors v Comptroller General [2008] EWHC 85 (Pat)

<sup>15</sup> Alice Corporation Pty. Ltd. V. CLS Bank International et al, 573 U.S. 208 (2014)

as a third-party guarantee provided by Alice. In 2007, CLS sued Alice, seeking a ruling that Alice's patents were illegal and unenforceable and that CLS did not violate the law. Alice has been challenged along with allegations of patent infringement.

Do the claims for computer-generated inventions include claims for systems and equipment, processes, and products? The Court's decision, in this case, can substantially change the scope of the patent. The decision may encourage the development of software and other industries by rewarding those who use the resources to deliver a useful product to the community.

In Indian Patent Act, of 1970 deals with the law relating to the patent system in India. The question of the patentability of software or to patent a software-related invention starts from § 3(k) of the Indian Patents Act, 1970, which excludes “a mathematical or business method or a computer program per se or algorithms” from the Patentable subject matter.<sup>16</sup>The Oxford Advanced Learners Dictionary defines “*per se*” as “*by itself*”, meaning, you are referring to something on its own, rather than in connection with other things.

#### IV. COPYRIGHTABILITY OF SOFTWARE

In the late 1970s, Congress established the National Commission for the New Use of Technology for Copyrighted Services (CONTU) to make recommendations for computer copyright laws that are directly related to computer software or programs, database, and functions created by the use of computers.<sup>17</sup>In 1980, the following recommendations were made by CONTU, the law for the protection of copyright explicitly in computer programs. So, computer programs were copyrightable as literary works. The term "computer program" is also defined in section 101 as “a set of statements or instructions used directly or indirectly in a computer to bring about a certain result.”

The court in Feist Publications Inc. v Rural Telephone Service Company, Inc (1991)<sup>18</sup> held that information alone without small creativity may not be protected by copyright. This decision is a landmark and has its implication in matters relating to copyrightability in computer programmes even though the issue was not copyrightability of computer programs.

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<sup>16</sup> Lexico Dictionaries | English. 2022. PER SE | Meaning & Definition for UK English | Lexico.com. [online] Available at: <[https://www.lexico.com/definition/per\\_se](https://www.lexico.com/definition/per_se)> [Accessed 19 August 2022].

<sup>17</sup> Bestfilebook.com. 2022. The Final Report Of The National Commission On New Technological Uses Of Copyrighted Works Contu S Download Book – Best File Book. [online] Available at: <<https://www.bestfilebook.com/pdf/the-final-report-of-the-national-commission-on-new-technological-uses-of-copyrighted-works-contu-s/>> [Accessed 19 August 2022].

<sup>18</sup> Feist Publications Inc. v Rural Telephone Service Company, Inc, 499 U.S. 340 (1991)

**Lotus Development Corp. v. Borland International (1996)<sup>19</sup>**

Lotus Development Corp. market a computer spreadsheet program, Lotus 1-2-3. The program included 469 menu commands that allow the user to type macros that can mean a series of commands with one click. Borland International then released two versions of its spreadsheet programs, called Quattro and Quattro Pro. Borland included a nearly identical copy of the entire 1-2-3 menu in its Quattro programs. It did not copy any computer code but copied Lotus's names and properties so that users using Borland's programs would not have to re-read any instructions or rewrite their Lotus macros.

Is the computer menu command domain or a user interface a copyrightable matter? The Supreme Court held that copyright does not extend to the user interface.

In India, by realizing the relevance of the development of computer programs and the need for their protection, The Office of the Controller General of Patents, Designs and Trademarks issues Guidelines for Examination of Computer Related Inventions (CRIs)<sup>20</sup>The important feature of this guideline of 2017 is “three-stages” test, to determine the patentability of CRI.

- 1) Properly clarify the claim and identify the actual contribution;
- 2) If the contribution is based solely on a mathematical method, business method or algorithm, reject the claim;
- 3) If the contribution lies in the field of a computer program, check whether it is claimed in conjunction with novel hardware and proceed to other steps to determine patentability concerning the invention.

Indian Copyright Act, 1957 considers Computer programs as literary works. Furthermore, the word “computer program” has been defined under Section 2 (ffc) of the Copyright Act, 1957 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”. Section 2 (o) - “literary work” includes computer programs, tables and compilations including computer databases.

Rule 70 of Indian Copyright Rules 2013 deals with Application for Registration of Copyright. Clause (5) states that Every application for registration of a computer program shall be

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<sup>19</sup> Lotus Development Corp. v. Borland International, 516 U.S. 233 (1996).

<sup>20</sup> IPIndia. 2022. Guidelines for Examination of Computer Related Inventions (CRIs). [online] Available at: <[https://ipindia.gov.in/writereaddata/Portal/IPOGuidelinesManuals/1\\_86\\_1\\_Revised\\_\\_Guidelines\\_for\\_Examination\\_of\\_Computer-related\\_Inventions\\_CRI\\_\\_.pdf](https://ipindia.gov.in/writereaddata/Portal/IPOGuidelinesManuals/1_86_1_Revised__Guidelines_for_Examination_of_Computer-related_Inventions_CRI__.pdf)> [Accessed 19 August 2022].



accompanied by at least the first 10 and last 10 pages of source code, or the entire source code if less than 20 pages, with no blocked out or redacted portions.

### **Open-source software**

All software companies are there to make a big profit. Therefore, it is common for these companies to look for new ways to make money and reduce costs. Growing up, companies are using open source as a business strategy to achieve both of these goals.<sup>21</sup> Open-source software products provide access to source code in addition to usable applications and allow this source code to be modified and redistributed. This is a rare occurrence in the industry when software developers diligently monitor source code as intellectual property.

### **Non-Fungible Tokens (NFTs)**

NFTs are virtual tokens or collections of data created by computer programs called smart contracts that keep track of all transactions related to each token stored on the blockchain, acting as a certified public logger<sup>22</sup>. These tokens are unique even though their values are equivalent. The unique identifier is used to maintain it non-fungible. It can be programmed to associate with the limitless subject matter. This means it is capable of being applied along with human imagination runs and there is no limit on the subject matter on which NFTs work.<sup>23</sup>

## **V. CONCLUSION**

Computer programming is a process that leads from the initial design of a computer problem to using computer programs. Source code is written in one or more programming languages (such as C, C ++, C #, Java, Python, Ruby, Smalltalk, JavaScript, etc.). The purpose of the plan is to find a sequence of instructions that will automatically perform a specific task or solve a particular problem.

At the initial stage, contractual law along with trade secrets was used for protecting Computer Software. The trade secret provisions are limited to the success of reverse engineering. The problem with contractual obligation is that it can be enforced only against the parties to the contract.

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<sup>21</sup> (Shahrokh Shahrivara, Shaban Elahia, Alireza Hassanzadeha , Gholamali Montazer), (A business model for commercial open source software: A systematic literature review), 103, Information and Software Technology, 202-214, November 2018, available at [www.elsevier.com/locate/infsof](http://www.elsevier.com/locate/infsof)

<sup>22</sup> Adele, Where Are NFTs Stored and Are They Safe There? NFT EVENING <https://nftevening.com/where-are-nfts-stored-and-are-they-safe-there/> ; (assessed on April, 30, 2022),

Batin Evirgen, In-Depth explanation of NFTs, GITCONNECTED <https://levelup.gitconnected.com/in-depth-explanation-on-nfts-d9960db3df69> (assessed on April, 30, 2022),

Nonfungible tokens (NFT), ETHEREUM.ORG, <https://ethereum.org/en/nft/> (assessed on April, 30, 2022).

<sup>23</sup> Ante, Lennart. "Non-fungible token (NFT) markets on the Ethereum blockchain: Temporal development, cointegration and interrelations." *Available at SSRN 3904683* (2021).

Copyright and Patent were used to protect IP in Computer Software at a later stage. Copyright protection can be extended only to original works. This originality requirement is hard to meet which in turn makes it difficult to claim copyright protection for software protection. Patentability standards exclude mathematical algorithms per se from patent eligibility. Thus, most patent applications are rejected on this ground. The software does not fit well into the established official categories.

Although the US gives Patent protection for software whereas India and UK it is given Copyright protection. As a practice to ensure IP protection, the software is not being sold. Instead, the purchaser is getting a license to use it. Another issue in this field is the law remaining vague and uncertain. Clear statutory provisions are required to be implemented to ensure feel-good protection for software.

These IP rules seem to be failing to provide effective protection for computer systems, leading to the need to establish a more efficient approach for this purpose. As far as I am concerned the alternatives like Open-Source Software and Non-Fungible Tokens provide balanced protection for the computer-related inventions. Moreover, it also ensures merit-based developments and achievements.

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