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[Home](#)

[About SAO](#)

[News](#)

[Events and Programs](#)

[Membership](#)

[Sponsorship](#)

[Chapters](#)

[Oregon Training Network](#)

[Techstart Education Foundation](#)

[Resource Center](#)

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Be Alert to IP Issues when Students Are Involved in Software Development



By Ariel Rogson, Marger Johnson & McCollom

For students studying computer science, learning their subject includes computer programming languages and various problem-solving techniques. Students often learn by copying code, experimenting with it and changing it to suit particular situations. While these activities can involve copyright infringement, copyright owners frequently do not follow up on this copyright infringement, because it is not cost-effective to do so, and the copying may actually be legally excused. But where companies participate in the educational process by having students work on company projects for educational credits, this picture can change. In this article, we will look at the potential implications to software companies that participate in the educational process.

Background

Software development, especially in the university educational process, involves learning different types of problems, and how different solutions to those problems work. For example, students are exposed to the problem of sorting lists, as well as solutions such as bubble sort, insertion sort, quick sort and others.

But learning about software algorithms sometimes requires more than just exposure to the algorithm in the abstract. For example, an operating system is typically a major piece of software, often involving thousands of lines of code. Expecting students to fully implement an operating system – so that the students can learn something about, say, the operation of the kernel or the file system – is at best optimistic and most likely completely unrealistic. If the object is to teach the students something about parts of the operating system, it makes more sense to start with an implementation of the operating system and ask the students to add some functionality by modifying the operating system source code.

Not too long ago, universities focused their graduation requirements on the theoretical aspects of education. Except for the occasional course where a professor focused the student on a practical project – for example, a team project on software implementation – most courses focused on abstractions and the basics expected of students entering the software field.

But universities have continued to evolve their requirements for students to graduate. Now, some universities have added to their graduation requirements that students gain some practical experience in the software field before graduation. Some of these requirements translate into students doing projects for software companies: practical, real-world work that might actually be used by the company. The benefits of the practical experience for the student are obvious, and the company can end up with software developed at a lower cost than would be required by hiring programmers. If the student is sufficiently impressive, the company might even offer the student a job upon graduation – saving the student the time spent job hunting, and saving the company the cost of looking for a software developer who might not work out for the company.

Students are often unaware of – or are unconcerned about – intellectual property rights in software. Some students, seeing segments of code they think could be useful to a particular project, will simply copy the code. Indeed, stories about students copying each other's code as solutions to homework problems are well-known. Aside from the unethical aspects of copying another student's work to answer a homework problem, is it acceptable for a student to copy code? The answer depends on how the copied code will be used. For educational-only purposes, the answer is probably "yes"; for uses with a potential commercial impact, the answer is potentially "no."

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Oregon Training Network

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Fair use of copyrights in education

Congress, aware of the fact that teachers often use examples of copyrighted material to educate students, wrote a specific statute into the law designed to permit certain uses of copyrighted materials. Title 17, section 107 of the US Code permits "fair use" of copyrights, stating that fair uses of the copyrighted work do not infringe on the rights of the copyright holder. To help courts determine whether a use of a copyrighted work is a "fair use," Congress included 4 factors in 17 USC § 107:

1. The purpose or character of the use.
2. The nature of the copyrighted work.
3. The amount of the copyrighted work that was used.
4. The effect of the use on the market for the copyrighted work or the value of the copyrighted work.

The analysis of these factors, at least for software coding that is done entirely within the education context, generally favors a result of fair use.

The first and fourth factors are the ones that most clearly favor a finding of fair use – an educational purpose, coupled with the fact that the use has effectively no impact on the market for the work or the value of the copyrighted work. These two factors suggest that the use of the copyrighted work is a fair use.

The second factor – the nature of the copyrighted work – can favor either result, depending on how the copyrighted work is viewed. And the third factor – the amount of the copyrighted work that was copied – depends upon the copy itself, and therefore does not always lean one way or the other.

The analysis depends very heavily on the specifics of the copying. When a student copies a short segment of code from a program that is thousands or millions of lines long, the amount of copying can be considered trivial. But if the student sees a segment of JavaScript on a web page that the student thinks is useful, the copy could amount to the entirety of the work.

How does student involvement affect fair use?

Let us focus on the particular situation described above – students working on a project for a company, as part of the students' education. By working on real-world projects for a company, students gain practical experience that is difficult to fully experience in the theoretical environment of the classroom. The students can see types of programming projects that are often not presented in the classroom – for example, projects requiring a team of programmers to work in concert, or that are difficult to complete in a single term. Students might be required to pick up code written by other programmers and finish or improve that code. These situations all involve potential copyright issues that can be overlooked in the push to ensure students have the expected theoretical foundation.

Companies participating in such student projects benefit as well. Aside from the altruistic benefit of being able to state that they are associated with a university, a company is exposed to a crop of future graduates, some of whom might be hired by the company. And if the project is something that might be commercially viable, that is an added bonus.

When students are working for companies as part of their education, whether students' actions in copying code still qualify as fair use can change. The question is: are the students working for the company or not? If the students are formally employed by the company – for example, working part-time and going to school part-time – this question is easy to answer. On the other hand, if students are working on a project with a company as part of the requirements for graduation, the students still might legally be considered to be "employed" by the company, despite the lack of a formal employment contract or even payment for services rendered.

If the project is just an abstraction and the company will not be using the students' efforts, the company's involvement in the students' education does not really change whether the students' efforts – where they might infringe on a copyright – qualify as fair use. For example, if the company uses the students to explore whether a particular programming project is something that can be done relatively easily and the students' work is discarded after the project, the programming is still essentially part of the educational process and any copyright infringement will likely qualify as fair use.

But what if the company offers students the opportunity to program – in whole or in part – a portion of code that will be incorporated into one of the company's products? In this situation, the purpose or character of the use is no longer exclusively educational – the

company has a commercial interest in the students' work product. This can weaken the argument that students' copying of a work is for an educational purpose, reducing the strength of the argument relating to the first fair use factor – the purpose or character of use. And if the company incorporates the students' work into a commercial product, there is a potential market for a copied work, which weakens the argument regarding the fourth fair use factor – the effect on the market or commercial value.

How should your company manage student involvement from an IP perspective?

So what does this mean for software companies involved in projects with university students?

- Companies cannot rely on the students' status as students to be free of worry about copyright infringement. Even if the copying is done by a student, the company might still be liable. Thus, companies involved in student education need to either avoid using software developed by students or need to educate students about copyrights and how to avoid infringing on them.
- A company can choose to simply assign students projects that will not be used in commercial products. If the copied material is not used for a commercial purpose, the copying is more likely for educational reasons.

There are other solutions:

- When a student sees a particularly useful piece of code that the student would like to include in his or her portion of the project, this does not mean that the student cannot study, learn from, and functionally emulate the code. For example, software can be written that is based on an analysis of existing code, without necessarily infringing on the copyright. The software can be studied to determine its inputs and outputs, so that a requirements document can be written for the software. Then, given the requirements document, new code can be written (without looking at the original code) that provides similar functionality without copying the original code. Preferably, different people can be responsible for writing the requirements document and the new code. That helps to avoid the possibility that the person(s) writing the new code is/are directly influenced by the original code.

Teaching students about copyrights is an important part of their education, whether it is learned through the academic curriculum or through practical real-world experience. While students might be able to argue that copying source code during the educational tenure is fair use, that argument disappears when the students leave the university. Knowledge about copyright infringement and how to avoid it is something students can use throughout their careers – for the benefit of themselves and their employers.

Working with students is both laudable and potentially worthwhile, but there are potential pitfalls a company should be aware of. Even though students might not be employees of the company, their actions can potentially open up the company to liability. A little careful planning and forethought can provide significant savings in the long run.

The above article is general information, not legal advice. Regarding a specific situation, seek competent intellectual property legal counsel.

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