The Ethics of "Bob's" Outsourcing

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Abstract

In May 2012, a software engineer from a US-based company was found to have outsourced his work to a Chinese consulting firm by granting them access to his company's VPN. [22] The software engineer, dubbed as "Bob," paid less than twenty percent of his salary to the outsourced firm. [22] Some view that Bob was not in the wrong since the consulting firm agreed to do the work for the amount of money Bob was giving them, and that the code was of high quality. [22] However, Bob passed the consulting firm's work off as his own, paid less than one fifth of his salary to those who were doing his work, and allowed an unauthorized third party access to his company's VPN. [22] Was Bob behaving ethically when he allowed the firm to use his credentials and when he passed off their work as his own? Bob was acting in violation of three sections of the SE Code of Ethics; thus, he was unethical in outsourcing his work.

Contents

1 Facts

For at least six months up to as long as two years, a software engineer dubbed as "Bob" from an unnamed US-based company outsourced his work to a Chinese consulting firm in Shenyang, China without notifying his company. [22]

In early May 2012, Bob's company noticed suspicious activity on their Virtual Private Network (VPN) logs: "an open and active" connection from China. Bob's company contacted Verizon and asked them to investigate. [22]

Bob sent a physical copy of his RSA token to Shenyang via FedEx so the firm he hired could log in using his credentials. [22]

Bob would go to work, sit at his desk, browse the Internet for the majority of the day, then send out an "end of day update e-mail to management" with the progress that was made. [22]

Verizon's investigators found "hundreds of .pdf invoices from a third party contractor/developer [located] in Shenyang" on his hard drive. [22]

Bob paid the outsourced firm approximately one fifth of his six-figure salary to do his work for him. The firm would work nights so Bob's credentials would be signed in during normal business hours in the United States. [22]

Bob's performance reviews for the previous several years leading to the investigation noted that his code was "clean, well written, and submitted in a timely fashion." His performance reviews also named him as being the "best developer in the building." [22]

2 Research Question

Was it ethical for Bob to outsource his job?

2.1 Relevance

Outsourcing in the United States is more prevalent now than ever. In 2013, the "total number of U.S. jobs...outsourced" was 2,637,239. [21] Programming firms in other countries, like the one Bob contacted in Shenyang, China, are becoming more professional and producing higher quality work than previously. Passing off an outsourced worker's code as one's own is something that any software engineer could encounter in the industry. [18]

Although outsourcing can easily fit within the parameters of the SE Code of Ethics, Bob's outsourcing methods were not. Having specific case studies like this gives software engineers a quick reference to determine when an outsourcing situation is ethically acceptable.

3 Arguments

3.1 Arguments Affirmative

3.1.1 Everyone involved provided the agreed-upon work product.

The company Bob worked for agreed to pay Bob a salary for the code he provided. Bob was asked to produce code for his company in order to receive this compensation. He not only did so, but his performance reviews were outstanding. It "was clean, well written, and submitted on time." The firm Bob outsourced to agreed to provide code for the amount Bob paid them. The Verizon investigators found numerous invoices from

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the firm located in Shenyang detailing that Bob paid the amount requested. [22]

3.1.2 Bob did what companies do.

Bob contracted code that needed to be written to a development firm. [22] Companies that need code to be written either hire salaried employees or contract the work outside the company. [8] Bob's choice was the latter. His decision to do so resulted in some people thinking that not only was his company being hypocritical in punishing him, but that "he appears to be management material." [19]

3.2 Arguments Negative

3.2.1 Granting an unauthorized third party access to a company's VPN is dangerous.

A VPN is a virtual *private* network. Bob's employer, being a critical infrastructure company, had a direct impact on the "nation's economy, security, [or] health." [10]. Thus, the potential for harm was great. Bob could not guarantee the security of the firm which he had allowed to access his company's VPN, let alone the integrity of the firm. [9]

3.2.2 Taking credit for other people's work is wrong.

Bob passed off the firm's code as his own. He did not write that code, yet received all the praise and the vast majority of the money that the code generated. [22]

3.2.3 Not offering fair payment for work done is unethical.

Bob paid one fifth of his salary to the firm that performed the work. [22] What Bob utilized was "essentially slave labor." [17] Although a stretch, the argument still stands - Bob paid far under fair market value for the code he received from the firm.

4 Analysis

4.1 Why is the SE Code of Ethics applicable to this problem?

Consulting the SE Code of Ethics in a warranted situation provides a result: ethical or unethical. The SE Code of Ethics does so by having individual rules grouped into eight different principles that software engineers should follow in order to act ethically in their profession. [5]

The SE Code of Ethics defines software engineers as "those who contribute by direct participation or by teaching, to the analysis, specification, design, development, certification, maintenance and testing of software systems." [5] Bob analyzed the code every day in order to send updates to his boss. [22] Verizon claims that Bob's job for his company is that of a software developer, and that he developed code before outsourcing his work. [22] Bob submitted the code as his own, and in doing so, he certified that it was ready for deployment. [22] Thus, Bob is a software engineer.

Software engineers should follow the SE Code of Ethics primarily because they have the ability "to do good or cause harm," and they need to ensure "that their efforts will be used for good." [5] Because Bob is a software

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engineer, he has the ability to both do good or cause harm, which is shown when he allowed an unauthorized third party access to his company's VPN by sending his physical RSA token to a consulting firm in Shenyang, China. [22] The SE Code of Ethics exists in order to obligate software engineers to do good, and to refrain from causing harm. Ultimately, the SE Code of Ethics does apply to Bob as a software engineer.

4.2 "5.07. Offer fair and just remuneration."

SE Code 5.07 addresses the software engineer's responsibility to monetarily compensate other software engineers for their work. Remuneration is defined as "pay" for one's services. [3] Money was changing hands twice in Bob's situation: from Bob's superiors to Bob, and from Bob to the Chinese consulting firm to which he outsourced. [22]

Bob's employer paid him a certain salary for the code that he provided. According to the Verizon Security Blog, as a senior developer, Bob was being compensated at a rate of "...several hundred thousand dollars a year..." "...across multiple companies in the area." [22] Bob was given competitive pay for the code that he provided. Therefore, Bob's employer deemed Bob's salary valid based on his work. However, Bob paid "...the Chinese consulting firm about fifty grand annually," or "...less than one fifth of his six-figure salary..." [22]

Bob was doing no actual coding, and was receiving eighty percent of the profits. However, the SE Code of Ethics does not address anything about receiving remuneration; it only discusses offering remuneration.

[5] Therefore, Bob did not violate SE Code provision 5.07 when he accepted his salary.

Bob's employer, a US critical infrastructure company, deemed the code provided by the Chinese consulting firm through Bob to be worth five times what Bob was offering the firm. [22] Just is defined as "given or awarded rightly; deserved." [2] Bob, being the hidden middle man between his own employer and the Chinese firm, offered an amount of twenty percent of the fair market value (as determined by his employer) for the work. [22] Therefore, compensation was not "awarded rightly" to those who actually did the work to write the code. [2]

Overall, Bob is found to be in violation of the Software Engineering Code of Ethics under provision 5.01 as he did not offer the Chinese firm "...fair and just remuneration" for their service, providing code for Bob to give to his employer as his own. [22]

4.3 "6.05. Not promote their own interest at the expense of the profession, client or employer."

In order to access the company's VPN, one must use both login credentials as well as a rotating RSA key that is sent to a physical token at the time of login. [22] Bob's employer entrusted him with the resources necessary to access the VPN. He FedExed the RSA key to the firm he was outsourcing to in Shenyang, China, allowing the firm to access the VPN. [22]

According to the Patriot Act of 2001, the incapacitation of a critical infrastructure company "would have a debilitating impact on security, national economic security, national public health or safety, or any com-

bination of those matters." [4] As stated in the Verizon investigation report, Bob's company is a "US based critical infrastructure company." [22] Harm could have come to whomever used the software Bob submitted if the firm had written in malicious code. Harm could have also occurred by exploitation of access to the company's VPN. Therefore, if Bob's company's security was compromised, potential harm to the nation would be great. With such a security risk, the company would lose trust and business.

As a "software developer versed in C, C++, perl, java, Ruby, php, python, etc." holding " long tenure with the company," Bob could not have been ignorant of the potential damage that could occur when giving access to a VPN or using code that someone else wrote. [22][14] Therefore, Bob promoted his interests, money and unwillingness to do work, at the expense of his employer, who could lose trust and business.

4.4 "7.03. Credit fully the work of others and refrain from taking undue credit."

SE Code 7.03 addresses the software engineer's responsibility to give credit where credit is due. Credit, as defined by Dictionary.com, is a "commendation or honor given for some action, quality, etc." [1] In this specific case study, the commendation or honor refers to Bob's employer's praise of him in his performance evaluations. The action for which they praised him is writing good code.

GitHub has a bug bounty program in which they pay users to find exploits in their website and document the bugs. [12] The current leader, as of February 2nd, 2014, is

Egor Homakov. [12] Egor Homakov charges up to four hundred dollars per hour for his contracted security consulting work. [15] Many users discussing Egor Homakov's most recently found GitHub exploit agree that even four hundred dollars per hour is relatively low given Egor's clout. [11] Because of his reputation, he is allowed to easily find work at approximately 9.5 times the average hourly salary of a software security consultant. [13] Thus, it follows that reputation has a direct impact on a software developer's salary - a good reputation can result in a much larger salary.

When Bob was submitting the work of the Chinese firm as his own, he did not attribute any of the code to the Chinese firm - Bob was gaining all of the credit for their work. Furthermore, Bob's employers commended Bob by acknowledging him as being "...the best developer in the building." [22] Intentions aside, Bob was indirectly increasing his salary at the expense of those working for the Chinese consulting firm. Because the code being praised by Bob's superiors was the work of the firm Bob outsourced to, those software developers were never given credit for their work.

Bob lacked the integrity to credit others' work. He literally submitted code that others wrote for him as his own, without citing any help. [22] The firm did not assist Bob in writing the code - they wrote all of the code Bob submitted. The only claim Bob has to the code is that he paid for it to be written.[17]

There is no question that Bob was in violation of section 7.03 of the SE Code of Ethics.

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5   Conclusion

Ultimately, it was unethical for Bob to outsource his job. Bob was in violation of three rules of the SE Code of Ethics. He risked harm to his company and to whatever end user implemented the code; he neglected to offer fair and just remuneration; and he failed to credit the work of others while simultaneously taking undue credit.

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