

Introduction of Software Test Discipline at University

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Abstract:

This paper describes the experience of the authors, Brazilian software test specialists, and the process used by them to first at all, disseminate the software test matter inside the academic circle, its specificity and importance in the nowadays software developing market. The paper also shows how they are achieving the main goal which is the software test discipline insertion in some college graduation and post-graduations programs into Brazilian universities. Besides, highlights the software test area discussions in order to increase the expertise of test engineers.

Keywords:

Software, Test, University, Graduation, Post-Graduation, Discipline, Engineer.

1 Introduction

Nowadays, with the increase on the complexity of developed software, besides the extremely competitive world software market, software testing became essential for the software developer companies in order to contribute to the quality assurance of products developed. For those reasons, it becomes fundamental to invest in software test professional training, so that they can supply the market demand which needs engineers with a high and specific expertise.

Nevertheless, Brazilian universities still do not give the proper emphasis to the testing issue in the graduation and post-graduation program of the computer science courses. Thus, the testing process is commonly treated as just the last phase of the software development life cycle. In this way, in general the professionals recently graduated are not prepared enough to carry out testing activities, such as: planning, design, execution and testing management.

This paper presents a practical experience on how to insert software test as a discipline at the graduation and pos-graduation programs into Brazilian universities. Besides,

highlights the software test area discussions in order to increase the expertise of test engineers.

2 Motivation

During the development life cycle of software, many defects may come up along all the steps of the development process due to several factors such as miswritten and misinterpreted specifications, lack of understanding of customer's necessities, defects in modeling, and even bad quality of the produced code. All this will certainly interfere over the quality of the product to be used by the client.

The ability for reproducing precisely occurred situations, attention to details, clear writing, diplomacy in communication, and identification of default systems are only some of the characteristics which are intended to enrich the professionals on focus.

In order to fulfill this market need, the Software Residence Program was created in 2003 in the city of Recife-PE. This course model is used as an inspiration of the Medical Residence Program. In the Medical Residence Program the students have the opportunity of getting a theoretical graduation from the University as well as performing practical activities, as a way to consolidate the concepts learnt at the hospital. Analogously, in this Software Residence Program, the students get a theoretical graduation with professors from UFPE-Universidade Federal de Pernambuco and perform activities in real testing environment. [1]

This course, which is considered a post-graduation course by Universidade Federal de Pernambuco, is part of the Technological Immersion Program, and has its main goal to encourage the formation of human resources with a high level of specialization in software areas inlaid to testing and applications in computing system, attracting companies and the creation of a proficiency basic software center in Recife, with the incentives and benefits guaranteed by Computing law. [2]

There are advantages in having a course with the similarity of a residence course, with full timetable, but this creates limitations as well, mainly regarding the participation of people who are already inserted in the job market.

Although the course focuses on testing area, it does not fully supply the market claiming, because it has the main focus at mobile telephone systems. For that reason, it is fundamental the existence of other formal professional graduation possibilities by renowned educational institutes.

3 An understanding of how to initialize the insertion of software testing discipline in college graduation and post-graduations programs

In 2005, a complementary formation, focused on software testing, was still being missed in Computer Science courses. In order to execute daily activities as a testing engineer, a group carried out a survey within C.E.S.A.R – Centro de Estudos e Sistemas Avançados do Recife, which was shown that that feeling was mutual, and in order to develop world class projects, it was necessary to expand test area knowledge.

Once it was already noticed a great amount of interested people in this complementary formation, the group carried out the first contact with the academy. The objective was the formation of a Software Engineering post-graduation group in one of the universities from the state of Pernambuco. This course should approach software testing subject with a different emphasis, since the majority of participants were expert test engineers. The group had already been formed even before the course existed, and the college had to adapt its software engineering course to attend that demand.

In the first meetings between the interested group and the institution, it could have been noticed that a software test timetable already existed, however, very short, and totally inlaid Quality subject. It is certain that software test contributes to the product's quality, but what the group searched was an exclusive dedication on the matter, mainly due to the increasing market demand.

The agreement dealt with the institution was that the group would make the course viable, in exchange of an increase in the software test subject timetable, and that it would be unbounded from Quality subject, both complementing each other.

This was the first step given by the group to popularize software test as a subject from the academy. Some Brazilian colleges had already discussed about the topic, thus with little emphasis, it has always been part of other subjects, such as, Software Engineering discipline, or even Requirements discipline.

One second attempt which was successful was presenting a curriculum to the graduation course coordinator from the same college, not only to the post-graduation course be updated, but start to prepare its students for the market tendency as well, still in graduation course. At first, the insertion of Test as an optional subject as a part of Quality Assurance discipline was achieved, with great expectations to popularize the topic.

Another strategy that has been carried out is creating curiosity and interest on people on the topic. The group decided to carry out workshops and test events within academic community, so graduation students, professors and coordinators get started to be in touch with the topic.



The workshops always talk about testing as a creative activity, and not as a bureaucratic process. They make it clear that is not any person that can assume that kind of activity and there is the need of a capable professional, who has also the necessary profile. They show the importance of testing a software, which sort of damage an organization may face in case of having badly conduct application testing or no testing at all. They also talk a little bit of the technical part, showing the importance of a well established and executed process. Market tendencies are also mentioned, showing that investing in that area is a great job opportunity, because despite market's demand, the area is still not explored enough. The result of these workshops are students interested on the topic , sending several emails in order to have their questions answered, including about where they can take a testing course, how to certificate themselves and mainly, wishing to do their course concluding projects in the area.

Yet as part of the strategy of generating interest in the academic community, the group have been looking forward to carrying out the EBTS – Brazilian Software Testing Meeting (*Encontro Brasileiro de Testes de Software*), which is already in its third edition, in partnership with universities, and so, take the testing art to be discussed by expert professionals in the area, and students who are beginning in their professional career, and who are still having their first contact with the matter. The event gathers about 180 people from Brazil and other countries every year, and each year the number of students' participants increase, students who are still at university and have already started to get to know the topic.

Extension courses are also been formed to be offered to university students, as a way to stimulate the exchange of knowledge between academy and industry.

4 Conclusion

Once the academy is touched by the importance of a software testing subject and the deficit of capable testing engineers in the Brazilian information technology community, the group initially achieved to insert Software Test subject in two specialization courses. Furthermore, they also achieved that an optional subject was inserted in the timetable of two graduation courses.

So, all effort taken to the promotion of software test in the state of Pernambuco, sometimes through workshops, sometimes through the creation of courses and subject insertion, has obtained great feedback mainly regarding technology market growth and the increasing need of good testing professionals. These initiatives open the eyes of the academic community and the industry for them to see the opportunities, specializing themselves and exploring software testing area which is still little known.



It is notorious that the market of Pernambuco and Brazil start to awake to the particularity and expertise which the test professional need in order to develop testing activities efficiently. Lately, the state of Pernambuco has already exported specialized workmanship to other great states in the country, such as São Paulo, Paraná and Rio Grande do Sul, increasing the proficiency level of the teams and the delivered product quality. Furthermore, specialized software testing services have also been provided to other countries like: China, England, India, Italy, Portugal, Russia, Spain and the USA

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Biography



Luiz Carlos da Silva has an MSc degree in Neural Networks at the Federal University of Pernambuco - Brazil in 1995. He specialized on Test Analysis at the Technologic Immersion Program from Informatics Center / Motorola in 2003. For four years, he is working as Test Engineer at CESAR. He has papers published in quality and testing conferences in the United States. He also had been a Test Team Leader at Motorola Libertyville (Illinois-USA) in 2005. Has been ministering the Software Testing course at Boa Viagem Faculty in the Pos-graduation program and at the Professional Master course at CESAR.

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