Master's Thesis Reflection Paper:

Improving the Expression repository prototype for handling updates to SNOMED CT.

By

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The lack of data standards such as SNOMED CT terminologies has been a key barrier to improved electronic communication in healthcare. A standard electronic health record (EHR) require the use of such uniform health information standards. This thesis project was aimed at extending and improving a module in an electronic health record (EHR) for storing and handling both precoordinated and postcoordinated expressions from the ontology SNOMED CT in database and with description logic reasoner.

This thesis work has been an important journey for me in which I have developed my independent learning. I have been dealing with all possible roles of software development life cycle such as, the project management, project modeling and designing, development of source codes, testing an application and assuring the quality of the product. It has, on the other hand, been challenging at times. It has been a time consuming process requiring much focus and commitment. At first, I thought that everything would be straightforward and that I could manage my to deliver the work in a less time, but later I found it demanding which requires a serious of attention and commitment.

Once I decided to work in this project and got accepted by the department, I build up a serious of action plans containing several phases and tasks in order to keep my work flow on track. At the beginning of each of the respective phases I made a more detailed plan containing a list of tasks to be accomplished and of what I hoped to achieve and how I would do it. I then ticked off each task as achieved. This helped me to achieve smaller goals during the project work. In such manner, throughout all process, I have learned to be self-disciplined, organized and become better at time management as well as managing a project work. I believe that, these all are clearly important in a future endeavor.

As I have mentioned earlier, this thesis work was an extension to an already existing system thus understanding the existing work was the first important part of the work more specifically to the implementation phase. During the pre-study phase of the work flow, I had to spend several weeks just to understand how the current system is working, learning how to execute the test cases as well as integrating. Understanding the existing code was a bit difficult and time taking, however, through discussion with both supervisor and examiner and also putting a lot of effort, I managed to understand the relevant aspects of the existing system.

One I got myself familiar with the existing system and other relevant points, I found myself ready to think about the prototype of the new system which is update management of the SNOMED CT terminologies. Based on this I was able to prepare possible update rules. At first the update rules that I prepared was not good enough to handle the required component changes and my supervisor found them to cause some mistakes but through several feedbacks, getting comments from both supervisor and examiners I become able to find the right update rules for the specific demands.

The implementation phase was the most interesting part of the entire work. It was straight forward and easy to follow. I would say this was because I spent enough time understanding the objectivity of the work and spent plenty of time in the design and construction of the prototype. Learning the tools and technologies was the pre-study phase of the implementation phase, even if most of the technologies which I have used were not new for me, but I still had to spend considerable amount of time to get myself familiar to most of the frameworks and tools which are important in order to implement the prototype. Data Management were one of the areas of computer science that had applications in almost every phases of my work. The database technology and data mining courses which emphasizes on the effective storage, retrieval and protection of information was a great help. Moreover, the course software engineering and software testing had also a great impact both during the design and implementation as well as testing the implemented prototype.

I also had to spent considerable amount of time in the testing and evaluation of the system. I believe that testing the implemented system was really important, because faults can possibly occur during any phase of the development and this will affect the final product not to work as expected and can create a negative impact in later use. Having understood this, it was important to overcome this and related problem using a proper planning and testing process. Thus, the testing process helped me in identifying the root cause of the error and to find the defect and bugs before we deliver the product and the system is in use.

Writing and documenting a report of my work was another major task during my work. It was one of the major phases of the work which I planned to get an improvement in the entire quality of my writing ability. I was not simply focused in the content that I was putting out but I also had to focus on the grammatical and mechanical organization that I used in my works. Since the beginning of the work, I was continually challenged to increase the quality of content of my work and to make few, if any, grammatical and technical errors. Through hard work and dedication, I feel that my documentation work has surly increased since the beginning of the project. Although I have not achieved a writing style that is anywhere near perfect, I am much satisfied with the final version of documentation that I produce now, and I can certainly say that my grammatical usage and mechanical errors have both become much less problematic than when I first started my work.

Generally during the development of this thesis project I expanded my knowledge of the field and of computing in general. In the early stages of the project I learned a lot about how plan a project and how to read research papers efficiently. The design process was enjoyable as it was my first real opportunity that I have had to design something based on an already existing system. During the implementation stages of the system my knowledge of java programming and SQL increased massively whilst I also learned database design and the software testing both planning and

implementing. Overall this thesis project has been extremely beneficial to me both in technical research and project management terms.