

Project Report

Web based XACML Graphical User Interface Policy Editor

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Document Description

The purpose of this document is to briefly describe the project and review the project outcomes. What went well, What I would do differently if I was doing the project again. This document will also highlight my plan for the project if I was given more time with it.

This document will also provide an overview of the skills I have learnt both technical and personal skills. I will also give advice to a reader who may be planning on doing the Final Year Project in the future. Advice such as what to do and what not to do.

Project Description

XACML aims to regulate the way evaluation rules, authorization requests and responses should be written and managed. However it forces security officers to learn a new language. For this reason, I have been asked to write a web based application that provides a user interface for creating XACML files. In this interface the security officer simply navigates to the user interface, chooses their XACML version (version 2 / version 3) and file type (Policy, Request, Response). Using this interface the security officer is able to create XACML Policies, Requests and Responses without learning how to code in XACML. This is achieved through a series of inputs from text boxes and combo boxes being parsed into XACML tags and stored in a XML file by means of the Document Object Model parser mentioned in the research documentation.

I was also tasked with developing a code editor for the more advanced user with experience coding in XACML. In this interface the security officer simply navigates to the code editor, chooses their required XACML version (version 2 / version 3) and file type (Policy, Request, Response). The security officer then enters the required code and saves it or opens an existing file and modifies it.

Technical Skills Gained

Throughout the duration of this project I gained great exposure to the ZK Framework. Prior to working on this project I had never heard of this framework. As a result I also improved my ability to research an unfamiliar technology and perform unsupervised learning.

I also gained a greater understanding of the Java programming language through it's use on this project working with 2d and 3d arrays and the Document Object Model Parser mentioned in the research documentation.

The Document Object Model parser is an aspect of the Java libraries that prior to working on this project I had never used before, therefore it has been a great learning experience in both theory and practice. I have enjoyed learning about the Tree structure used by the Document Object Model parser for reading and writing XML files such as creating nodes, traversing nodes, searching for nodes, obtaining node content, creating attributes, inserting nodes.

Another great learning experience throughout the duration this project has been the ability to extend my knowledge about the Apache TomCat servlet container and Netbeans debugging systems. I have gained a great understanding as to the meaning of many errors that were confusing at the beginning of this project.

Personal Skills Gained and Improved

Throughout the duration of this project I have had countless opportunities to improve many aspects of my personal skills. I have had the opportunity to improve my presentation preparation skills and my ability to present through the three, end of sprint presentations, my project demonstrations to the company Primeur who have provided the specification for my project, via a virtual meeting through the desktop application “Skype” and desktop sharing software “Teamviewer” and finally the industry showcase where I was required to demonstrate my project to potential employers.

I have also had a great opportunity to improve my time management, communication and scheduling abilities through many emails and virtual meetings with the company Primeur to discuss the progress of my project and possible changes from the beginning of Sprint One of my project to the end of Sprint Three and weekly meetings with my project supervisor Joseph Kehoe.

Communicating with Primeur, a respected and well established company with international offices and employees has been a great confidence boost for me. I have spent most of my life in school and college, as a result I had very little experience communicating with the people and companies in the software industry. Frequent emailing and virtual meetings and project updates with Primeur has helped me improve many skills that are necessary for everyday working life.

What advice would I give?

If I was asked to give advice to another student planning on undertaking the final year project, I would tell them to choose the project based on their interest and programming ability, not based on the type of project you think is going to get you a job. The software industry is constantly changing, the skills and technology in demand at the beginning of your project may be yesterdays news by the end of your project.

If you choose a certain technology or language because you think that's what companies in the software industry are looking for, you may also choose the wrong technology for your project making it a lot more difficult to complete and implement.

Another major aspect of your final year project will be time management. Planning each task from Sprint to Sprint is essential in completing your project on time. There are many aspects of the project that will contribute to your overall grade such as documents, presentations and general amount achieved. If you feel that you are spending too long on a certain aspect of your project, you probably are.

My advice is make a plan at the start of every Sprint and stick to it. In every Sprint plan you make, it is vital that you make time to document do not leave your documentation until the end, having up to date documentation at the end of every Sprint will make it much easier to see the direction your project is going in and highlight any overlooked aspects. Having up to date documentation will also allow you to be a much better presenter when the time comes.

What would I do differently if I had to do it again?

If I was doing my final year project again, I would do a lot more research into the project when choosing it as my decisions this year were based mainly on the technologies involved in the projects and not the projects themselves. As a result of this technique the learning curve in Sprint One was very steep, I was required to learn a lot about XACML and the ZK Framework before I could even consider documenting or coding.

Planning has also been an issue on this project, general Sprint planning has not been as smooth as I would have liked. If I were to do this project again I would dedicate more time to the documentation and the project in general.

One of the most beneficial and enjoyable aspects of my project has been communication and feedback from the company Primeur, If I was given this project to do again I would try to communicate with them to a much greater extent and I would try to receive a lot more project feedback.

Future plan if given more time

- To add edit functionality to the display list boxes on the user interface.
- To implement the ability to change between the user interface and the code editor while at the same time retaining the data entered.
- To add tool tips to the user interface which would assist the user in creating Policies, Requests and Responses.

Test Results

Code Editor (create/save)

Sprint 1:

Failed - If the save box is empty, the message "Enter a filename!" is not displayed and the file is saved with a blank file name.

Sprint 2:

Passed

Sprint 3:

Passed

Code Editor (open/amend)

Sprint 1:

Failed - Open is a text box not a combo box.

Failed - Radio buttons only function if they are selected in a certain order version / file type. If the user selects file type / version nothing happens.

Sprint 2:

Passed

Sprint 3:

Passed

User Interface (radio buttons)

Sprint 1:

Failed - Radio buttons only function if they are selected in a certain order version / file type. If the user selects file type / version nothing happens.

Sprint 2:

Passed

Sprint 3:

Passed

User Interface (save text box and buttons appear)

Sprint 1:

Failed - New button does not appear.

Sprint 2:

Passed

Sprint 3:

Passed

User Interface (save button functionality)

Sprint 1:

Failed - Warning "Enter a filename!" does not appear and the file is saved with an empty filename.

Failed - Warning "File name already exists are you sure you want to overwrite?" does not appear and the file is overwritten.

Sprint 2:

Passed

Sprint 3:

Passed

User Interface (new button functionality)

Sprint 1:

Failed - New button does not appear.

Sprint 2:

Failed - Warning "Are you sure you want to clear everything?" does not appear and everything is cleared.

Sprint 3:

Passed

User Interface (drop down box, open and populate buttons functionality)

Sprint 1:

Failed - Combo box, open button and populate button do not appear.

Sprint 2:

Passed

Sprint 3:

Passed

User Interface (Correct labels and list boxes are populated)

Sprint 1:

Failed - Labels are incorrect and no list boxes are present.

Sprint 2:

Failed - List boxes do not populate correctly.

Sprint 3:

Passed

Conclusion

In conclusion with this project and the help of Primeur and my supervisor Joseph Kehoe I have gained a lot of technical knowledge about XACML, the ZK Framework and Java. I have gained this experience from researching XACML, working with the ZK Framework for the first time and using aspects of the Java repositories that I had never used before.

I have also gained a great deal of experience in documenting a project from start to finish and working on a project using agile methodologies. The project consisted of three sprints, each requiring a code implementation, documentation and a presentation.

This project has been a great learning experience for me on both a professional and personal level. I feel have gained great personal experience as my time management skills have been greatly improved as well as my confidence, communication skills and ability to work under pressure.

I constantly seek out opportunities to boost my confidence and communication skills. I feel that the three end of sprint presentations as well as communication with the company Primeur have provided my with an excellent opportunity to improve these skills.

This project has afforded me the opportunity to practice the essential skill of clearly articulating the progress I have made and the work I have completed. I feel this skill is essential because it is a skill that I will need throughout the rest of my professional life, in daily stand ups, sprint meetings and general progress reports.

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