

## **The U.S. Steel Experience: Internship Fall 2003**

### **Durk Hutmacher**

I would like to thank Steve Lissan, Christa Gainar, everyone I work with in the tower, along with Jon Theis, Sean Detar, Sam Wright and everyone I work with in EC for an incredible work experience. I have been able to learn more in a short amount of time than I thought was possible. I have truly enjoyed it so far and hope that it only continues to improve as I complete the rest of my internship with U.S. Steel.

My classes at YSU so far have prepared me for the programming side of my job, but there is nothing like training in a work situation. The process of developing software for deployment live over the internet is truly an involved one and I have gained greatly from my work experience this year.

### **What I Do**

My job is rather unique at U.S. Steel. I work for the Pension department but in Electronic Commerce. Specifically this means I only work on projects related to the employee benefits website. For more information on the company as a whole, please see the [U.S. Steel homepage](#).

### **The Specifics**

Most of my daily activity involves Java coding to give users a front end graphical access to information from databases.

New applications keep the job fresh. I'm not pressing the same button over and over again. I like the fact that given enough time, I know I will be able to finish everything that is assigned to me. There are no problems that simply cannot be

solved.

One of the best aspects of my job is that when I have a specific question about a project that I am working on, all I have to do is walk down the hall and I know that someone will know how to solve it. Through this process, I have been able to make quick strides towards becoming better programmer. I personally work best in this field when someone gives me a project and sets me loose while at the same time giving me all of the help that I need along the way. I couldn't have asked for a better situation than what I have. More than simply busy work, I've been able to work through real problems and come up with my own solutions. This has helped my school work in turn by forcing me to work quickly through assignments and allowing me to develop a method for attacking a programming problem.

### **What I have learned**

Coding for many possible situations is so important! Just because I don't think that data can possibly be incorrect by the time it gets to my method doesn't mean that it really can't be. I am getting quite a bit better at using a debugger, but if I simply thought of more possibilities in the first place I wouldn't have to use it as much. It's just a matter of thinking through a few options before diving into the problem at hand.

Working in a large programming project has been a new experience. Not only does code have to be understandable to me, but everyone who ever has to fix or modify it in the future. The process of programming in a project such as this one is also very involved.

Overall, I have learned more about how I work in a business setting than anything else. I gain more confidence every day in my work. I have learned that if

I take everything in slowly without worrying about it I will quickly be able to get the job done.

## **The Tools of the Trade**

Java, Java, Java. It's not just coffee anymore. I've been reading anything about the language that I can possibly get my hands on. Scouring the Amazon for used O'Reilly books about Java for under \$5 has been like a second job. (Well, not really a second job, but it sounds more dramatic that way.) It is such an involved language that it feels like one person could never know all that it has to offer. I have been fortunate to get the opportunity to learn two Integrated Development Environments in my internship so far, WSAD 4.0 and Visual Age for Java 3.5. Despite the imposing names, the basic functionality of these IDEs isn't too difficult to get used to. It's very handy to be able to see your mistakes before even compiling your code and all of the methods in a class by simply pressing control and the space bar. I'll never be able to go back to a plain old text editor again!

I have also had the opportunity to work with the Oracle database from a Java coding perspective. I'm not involved with the development of the tables, but needing to be able to effectively pull the data that I need from those tables and into my code has taught me quite a bit about SQL in general.

## **The Process**

The most difficult thing to learn was the process that we have to go through before something that is built gets to be integrated into the final website. First, coding is done on the programmer's computer. If code needs to be modified, it is first checked out from source control. In this way, no two people are able to modify the same code at the same time. Also, changes can be undone if a mistake is made,

and a record is kept about which code is checked out for which project and any comments that the programmer may have. If you are building something new, it is just added to source control after programming is complete.

Once the programmer is finished, he checks his code back in and writes a test plan trying to come up with every possible scenario that a user will encounter when using this section of the site. The programmer then runs the test plan locally using the copy of the site that is on his computer. Once this is completed and the requirements of the work request have been met, the project lead integrates any code into the code base on his computer, builds a .jar file<sup>[1]</sup> and installs that .jar file along with any new or edited pages, images and properties files into what is called the development environment. In the development environment, the test plan is run through again. If everything is working, the test plan is added to an integration test plan that tests the entire site. The integration test plan is run by the programmer to make sure that the new code did not change anything that it wasn't supposed to change.

If the new items are working correctly in development, they are promoted to a quality assurance environment where the integration test plan is taken by the QA team and ran there. Testing by someone other than the person that built the site can show some interesting problems at times. If any problems are found, the changes are demoted back to the beginning of the process where the programmer checks them out of source control and starts over again.

If the integration test plan passes, the people who requested the changes to the site are informed and if the final product matches their specifications, it is installed into the live, final, production environment.

This process was the most confusing and often times frustrating part of the

job. Sometimes work requests that took me a few minutes or an hour at most take weeks to go through all of the environments, but it really is the only way that the site can be safely built and bug free. My code has been given a much more thorough work out than it ever has been before. Knowing that everything that I do is going to have to go through such an extensive testing process has made me a more cautious programmer as I try to get it all right the first time through.

This process, though vital to the job, is something that we just simply do not have time for in a school setting. How much extensive testing can be done in a month? How would the testing be divided between students? How would the entire process be graded? This has truly been an incredible lesson for my future development.

### **And What I Need to Learn**

In an effort to get my code right the first time, I want to delve deeper into what I am doing. I find myself needing to ask many, many questions about how some of the basic classes that we use work. I know that this knowledge will come with time.

In the future I need to continue work on the entire process of programming, not simply learning the languages and techniques. Even though everyone from school to work to the guy on the street says that pseudocode is such a good thing, I still like to jump into a problem without thoroughly thinking through a few different options. I know that the first solution to a problem isn't always the best one, but it is very difficult to know when to stop prototyping and get down to the business at hand. Programming by coincidence leaves me with code that works, but when the boss asks "So what does this line do?" I'm left to think back to what I was doing

that day. The next two projects that I will work on are to get my Java Programmer's certification and to put some serious time into learning UML. Being able to not only build a good program, but thoroughly plan it out in advance and explain it to the people who are requesting that it be built is very important.

### **For What It's Worth**

To anyone that would like to gain employment in web development, I would recommend diving into a widely used language farther than you would in class. Don't stop at the basics of the language, but dig in and learn what that particular language is good and bad at doing. From that point, you will have a good basic knowledge of programming in general and will be able to quickly learn how to implement your ideas in whatever language your company uses. The important point is to learn solutions to common problems and that will only come through practice. Specifically, I think that it would be good to learn Java and have a working knowledge of HTML, CSS, SQL, and the basics of networking. Different companies use different technologies, but I personally make some use of all of the above mentioned everyday.

### **The U.S. Steel Experience**

I have really enjoyed my experience at U.S. Steel so far. Getting a chance to work on real applications from beginning to end is fun. I get to develop everything from the look of the pages (albeit within a given framework) to working with the tables in the database that store the information for the applications. Working from eight to five, I have earned the skills that will take me through the rest of my programming life. With every work request, I have become more confident in my skills as a programmer. I am glad that I got my start in web development working with the people at U.S. Steel.

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## Durk A. Hutmacher

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**Objective:** A position where I can continue to build upon the IT skills that I have learned.

**Education:** **YOUNGSTOWN STATE UNIVERSITY – Youngstown , OH Bachelor of Science, Bachelor of Music – Projected graduation May 2005**

**Majors: Computer Science, Saxophone Performance**

**Overall GPA: 3.83**

**Honors:** Dean's List

YSU Scholar Honors Program

**Relevant Coursework:**

§ Java	§ Programming / Problem Solving
§ C++	§ Data Structures and Objects
§ Multimedia Authoring	§ Human Computer Interaction

**Computer Experience:** **Programming languages:** C++, Java, JSP, Perl, PHP, ActionScript, Lingo, HTML XML, JavaScript

**Software usage:** Microsoft Word, Excel, and PowerPoint

Macromedia Director, Flash. TOAD, VisualAge for Java 3.5, IBM WSAD 4.0.

**Career Related Experience:** United States Steel – Pittsburgh , PA

**Systems Development Student Employment Program** May 2003 – Present.

§ Web development for U.S. Steel's employee benefits website.

§ Experience with Java and JSP programming.

§ Work with HTML and JavaScript.

YSU FOUNDATION – Youngstown , OH

**Internship.** Summer 2002

- § First hand knowledge gained about the non-profit business world
- § Representation provided at meetings
- § Speeches given about the YSU honors program

**Music  
Related****Employment:**

FAME CONSERVATORY – Poland , OH

**Music instructor.** January 2001-present

Instruction given in classical and jazz saxophone studies, clarinet

**LEGACY – New Castle , PA**

**Saxophone Soloist.** July 200-July 2002

Skills developed include performing for large audiences

**YOUNGSTOWN SYMPHONY – Youngstown , OH**

**Pops Concert Performer.** Seasonal 1998-2002

**Proficient on all forms of the saxophone, clarinet, flute and piccolo**

**Musical****Activities:**

Music Teacher's National Association Ohio – State chamber music champion, with the Dana Saxophone Quartet: 2002

Semi-final round participant in the Fischhoff Chamber Winds competition 2001

YSU Jazz Ensemble Member 1998-2002

Performed with: Chuck Mangione, 2001 and Allen Vizzutti, 2002

YSU Wind Ensemble Member 1998-2002

**Activities/**

Lakeview School System, Music Masterclass for children with disabilities, 2001-2002

**Volunteer  
Experience:**

YSU Shantytown, Raising awareness of homelessness, 1998

YSU Thirty-Hour Famine, 2002

Two weeks of martial arts study in Beijing , Summer 2001

**References:** Available upon request

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[1] Very simplistically speaking, a jar file is a compressed bunch of Java classes. We build a jar file from all of the classes that make up our site and install that through the development environments. It's certainly easier than installing them one class at a time.