University of Arizona, Department of Computer Science

CSc 620 — Security Through Obscurity — Assignment 3

Christian Collberg
January 23, 2002

1 Introduction

The purpose of this assignment is for you to learn how to use the BCEL Java bytecode editor.

Make sure that you have downloaded the `smark2`, `smextern`, and `smbcel2` directories from the `cvs` server:

```
cvs -d :ext:YourLogin@cvs.cs.arizona.edu:/cvs/cvs/wmark \
     checkout smark2 smextern smbcel2
```

`smextern` contains the `BCEL.jar` library that you will need to compile and run any program that uses `BCEL`. `smbcel2` only contains one file, `List.java`, that reads in a Java class file, parses it using BCEL, and prints out the contents in a very simple format. `smark2/doc` contains the most recent version of the SandMark documentation. Build `manual.ps` by typing

```
make
make again
make again
```

Up-to-date information on `BCEL` should be in one of the appendices.

2 Assignment

For this assignment you will write a program that does the following:

1. Open a Java class file using `BCEL`. The name of the file should be given on the command line.
2. Add a new method

   ```
   public static void sm$method() {
    ...
   }
   ```

   to the class file.
3. Pick a random method already in the class and add a call from the beginning of this method to `sm$method`:

```
public ... foo( ... ) {
  sm$method();
  ...
}
```

4. Add some random code to the body of `sm$method`. The generated code should pass the verifier and should execute without causing an error. It doesn't have to do anything intelligent.
5. Write out the modified class file. If the original was named `x.class`, then the modified one should be named `x_new.class`.

You decide yourself how complex the new, random, code should be. For example, you might generate a method as simple as the following

```
public static void sm$method() {
   int x = <some random value>;
   int y = <some random value>;
   int z = x <some random binary operator> y;
   System.out.println(z);
}
```

or you could do something much more creative.

3 Adminstrivia

This assignment is due Thursday, February 1. It is worth 5% of your final grade. To submit, you should add the code to the `smbcel2 cvs` directory. Assume your login is `carl`. Do the following:

```
cd smbcel2
mkdir carl
cvs add carl
cd carl
cp <wherever>/Carl.java, <wherever>/Test.java, <wherever>/Makefile , <wherever>/README .
cvs add Carl.java, Test.java, Makefile
cvs commit
```

`<wherever>/Carl.java, <wherever>/Test.java`, etc., are the files that you wrote for the assignment.

> **This is an individual assignment! Don't read the code already submitted by others! You may, of course, ask for assistance from other students.**
>
> **Please! Since all of you can read the `cvs` directory don't upload your code until the evening of February 1!**

Once the deadline is past you are, of course, free to read others' code. In fact, this is the whole idea with this assignment: the code you write will become part of the SandMark code-base for everyone to learn from.