

CSE 142 Section Handout #4

Debugging Sheet

The following is code for a program that asks the user for an integer to exponentiate and what power to that number to take. The current implementation has at least one bug in it.

```
import java.util.*;

public class DebugSection4 {
    public static void main(String[] args) {
        Scanner console = new Scanner(System.in);
        System.out.print("what integer to exponentiate? ");
        int base = console.nextInt();
        System.out.print("what integer power of " + base + "? ");
        int power = console.nextInt();
        power(base, power);
        System.out.println(base + " ^ " + power + " = " + product);
    }

    public static int power(int base, int power) {
        int product = 1;
        for (int i = 1; i <= power; i++) {
            product *= base;
        }
        return product;
    }
}
```

The expected output is:

```
what integer to exponentiate? 2
what integer power of 2? 3
2 ^ 3 = 8
```

Currently the code does not compile. In practice, the compiler errors that would be displayed would give you a very good idea as to what the bugs in the code are. For this exercise, we would like you to identify them without the compiler messages. Additionally, there may be other bugs in the code that would not be caught by the compiler.

Modify the existing code to compile and produce the correct output.

CSE 142 Section Handout #4

Solutions

```
import java.util.*;

public class DebugSection4 {
    public static void main(String[] args) {
        Scanner console = new Scanner(System.in);

        System.out.print("what integer to exponentiate? ");
        int base = console.nextInt();
        System.out.print("what integer power of " + base + "? ");
        int power = console.nextInt();

        int product = power(base, power);
        System.out.println(base + " ^ " + power + " = " + product);
    }

    public static int power(int base, int power) {
        int product = 1;
        for (int i = 1; i <= power; i++) {
            product *= base;
        }
        return product;
    }
}
```

These are the compiler messages that are produced compiling the buggy code:

```
DebugSection4.java:8: error: incompatible types: String cannot be converted
to int
```

```
    int base = console.next();
                        ^
```

```
DebugSection4.java:10: error: incompatible types: String cannot be converted
to int
```

```
    int power = console.next();
                        ^
```

```
DebugSection4.java:13: error: cannot find symbol
```

```
    System.out.println(base + " ^ " + power + " = " + product);
                                                    ^
```

```
symbol:   variable product
```

```
location: class DebugSection4
```

```
3 errors
```