

## Security Injections @Towson

## Security Injections, Java CS1 - Integer Error

1. Background

2. Code Responsibly

3. Laboratory Assignment

4. Security Checklist

5. Discussion Questions

## Discussion Questions (To be graded by your instructor)

(Note: refer Background and Code Responsibly sections to answer the Discussion Questions.)

## Question 1

In your own words, describe an integer error.

an integer error is where an error occurs when the value of the integer is greater than the maximum allowed number.



## Question 2

How could an integer overflow error occur in your program?

Value from a mathematical operation that causes the overflow error.



## Question 3

What happens when an integer error occurs?

It can cause a crash, lead to incorrect behavior, throw an exception, or even allow for malicious intent in your program.



## Question 4

Why is multiplication particularly risky?

Multiplication can easily cause the size of integers to increase outside of the data range.



## Question 5

Overflow can also occur when the dividend is equal to the minimum (negative) value for the signed integer type and the divisor is equal to -1. Demonstrate this problem adding the following lines to the end of the above program.

```
1 = Integer.MIN_VALUE/-1;  
  
System.out.println("Integer Overflow: " + Integer.MIN_VALUE + "/-1 = " + i);
```

Integer Overflow: -2147483648/-1 = -2147483648 ✓

### Question 6

For each of the following give the appropriate Java declaration:

Number of students at your college

int ✓

Population of Baltimore 637,455

int ✓

Population of Maryland 5.6 million

int ✓

the world population (6.6 billion)

long ✓

### Question 7:

Name three things you might do in your next program to prevent an integer error from occurring.

Know your limits  
Choose your data types carefully  
Validate your input ✓

Complete! Finish



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