

## Lab 02: Integer Overflows

### Goals

- Identify vulnerabilities of a specified type in an application
- Remediate identified vulnerabilities using specified method

### Notes

The lab is available in the Learn org of Dakota State University's Information Assurance Lab within the vApp <username>\_CSC234\_Zwach\_Base. It is accessible at <https://ialab.dsu.edu>. You can start the vApp by double clicking on it and then clicking the play button in the Flash client or clicking Actions and Start in the HTML5 client.

The code that comprises the entire application is available within the `/home/student/course_files/_assignments/integer_overflow/` directory. Make your changes there using a text editor of your choosing. Compile using `gcc`. Remember, you can permanently revert your changes to the codebase at anytime with the command `revertall`.

The username is **student** and the password is **Password1!**.

### Discovery

This program has several flaws including some which could result in integer overflows. Identify changes you would make and why.

1. Review the source code for the application of interest (`apples.c`).
  - a. Provide screenshots of vulnerable or otherwise flawed code segments.
  - b. Explain each issue in your own words.
2. Compile and run the program
  - a. Provide a screenshot demonstrating each of the vulnerabilities using a method of your choice

### Remediation

After confirming the vulnerability, use your knowledge and available resources to modify the source to follow best practices and avoid integer overflows.

3. Modify the source code of `apples.c` to gracefully handle overflows.
  - a. Document your resulting source code with a screenshot
4. Test your changes
  - a. Are your attempts at entering further malicious input successful? Why or why not?
  - b. Provide screenshots documenting proper handling of invalid / malicious input.

## Scoring

The rubric will be published at scoring time. Each portion of the assignment has the following points assigned.

Section	Points
<b>1</b>	6
<b>2</b>	2
<b>3</b>	6
<b>4</b>	6
<b>Total</b>	<b>20</b>