Written Homework #2
CS 162: Introduction to Computer Science

Submit your assignment to the <mark>D2L Dropbox</mark>

1. **Create an Algorithm** for the **process** of checking your pdx gmail. *Give your algorithm to a friend (someone who has never used PSU's gmail!) and see if they are actually able to perform the tasks without asking!*

   Some thoughts about writing algorithms:
   - An algorithm must be detailed enough to show the steps needed to solve the problem if implemented with a computer program
   - It should handle all possible situations that might arise
   - Algorithms may be expressed in terms of English or diagrams!
   - It should be clear to the user how to accomplish the tasks without requiring to research additional information
   - It should be written in a manner that is clear and without ambiguity

2. **Terminology –** explain what the following terms mean and give an example of how it is used in your own words.
   - Loop invariant
   - Side effects
   - Arrays in C++

3. *Testing.* Testing software is a vital component to creating comprehensive software that users can rely upon. Research three different approaches for testing software and discuss them here (write a paragraph). Compare and contrast the 3 approach and discuss when they might be most useful. Include **unit testing** as one of the approaches!

4. *Ethics and Security.* Computer ethics involves the security of data. As we become more of a mobile society with the advent of smart phones and cloud computing, do you ever wonder how secure your credit card information is? When people use computer software, they may gain access to sensitive or secure information, such as your bank account balance, account number, or credit card number. As a software designer, what could be done to limit someone's exposure to sensitive data - limiting the risk of identify theft? *Write 5 complete sentences with your thoughts.*