# Cambia Take Home Exercise – Jim Knowlton

## Programming

See attached Python files. I set it up so the input file can be loaded from the command line via a parameter. I’m not really that familiar with Docker, so I didn’t include a Dockerfile, but I believe anything that can be loaded directly via a command-line parameter should work.

## Gherkin

Here are some example Gherkin scenarios. I didn’t include a “When” column simply because everything is triggered off the command being run. The first entry is the “smoke test” – this should always be the first test run. The others will check for edge cases and error conditions, which will be valuable as time goes on and development proceeds.

|  |  |  |
| --- | --- | --- |
| Scenario | Given | Then |
| Basic operation | The input file has three alpha entries  And the command is entered correctly | The output file should be created  And the three entries should be sorted in descending order |
| 1. Long list | 1. The input file has 1,000 alpha entries 2. And the command is entered correctly | 1. The output file should be created 2. And the three entries should be sorted in descending order |
| No file indicated | The command is run without indicating an input file | The user should get an appropriate error message |
| Non-existent file indicated | The command is run with a non-existent filename | The user should get an appropriate error message |
| Numeric characters | The input file has at least one entry which starts with a number | The output file generated should sort correctly, with the numeric entry at the bottom. |
| Special characters | The input file has at least one entry which starts with a special character | The output file generated should sort correctly, with the special character entry at the bottom. |

## Tools

1. **In your opinion, what’s helpful about version control systems? What’s annoying about them?**The biggest value of version control systems is that they enable teams to work together. You can have multiple people, in different locations, working on the same files. You also have the ability to create branches of code and experiment without worrying about messing up the system. In addition, it provides you an audit log of all changes against a repository.
2. **What are some pros and cons of using Docker to develop, test, and deploy software?**I don’t have much experience with Docker….but the main difference as I understand it is that unlike with virtual machines, a Docker container does not have its own version of the operating system. This makes Docker images smaller and more lightweight, and also more scalable (Docker images can import other images into their Dockerfile). The disadvantage is that if you truly want a completely isolated environment that doesn’t share anything, it would seem a virtual machine would be better.
3. **How do you choose which language to use for a given task? How did you choose the language for the programming exercise above?**For the above task, the document requested I use Python, but I probably would have chosen it anyway. I think when choosing a language, I would consider:  
   - the task at hand. For example, the above program is a very quick-dirty prototype program, and dynamic languages like Python and Ruby are excellent for that.  
   - the available skillset. If I was building out a new framework, and all the production applications in my organization are in Java, I’d have a huge wealth of Java knowledge in all the developers.  
   - existing technologies/tools – it’s often much easier to implement in a language that’s already being used in an organization and has mindshare.  
   - if there are any specific needs that are uniquely met by a language or environment

## Testing Methodology

1. **What’s the right role for QA in the software development process?**The best situation is one in which QA is involved every step of the way and where there is no separation between QA work and design work, development work, or any other work to get the product released. Ultimately, testing is about questioning and examining to provide valuable information, and that should be going on all the time.
2. **As a QA person, you have 2 weeks to prepare before your team starts writing software. What do you do?**I would first find out if we have at least enough clarity to begin our work and have a “big picture” understanding of what success looks like on the project. I would also find out if the designs and plans include testability, and if everyone is clear about how we’ll be testing, what will be tested and (more importantly) if we’ve decided not to test anything or to test it more lightly. I’d also make sure we have what we need concerning tools and access.
3. **When is it appropriate to use automated testing? When is it appropriate to use manual testing?**It’s important to understand that automation does not define a kind of test. It defines one of the methods for executing a test.

There are three main phases of testing - design, execution and reporting. The second two can be automated, but the first can never be automated. Therefore, there is a part of testing which will always require a skilled, creative human.

My philosophy of automation is to use computers to do what they are good for, and use people what they are good for. Humans are good for design, skill and creativity. Machines are good for repeatable execution of defined tasks. Both are needed.

1. **Your dev team has just modified an existing product by adding new features and refactoring the code for old features. The devs claim to have written unit tests; you’re in charge of integration testing. Dedicated teams are handling performance and security testing, so you don’t have to. As is always the case in the real world, you don’t have time to test everything. What factors do you think about as you decide where to focus your testing efforts? How do you decide what not to test?**I would do the following things:  
   - make sure it is communicated, understood and signed off on that performance and security testing will be managed and executed by another team. I would make sure that team also communicates with stakeholders so everyone knows they are on the hook. I would also ask to be kept up to date on the status of their testing.  
   - I’d want to talk to the dev lead about where the unit tests are feature-wise – are they just for the new features? Just the regression stuff? I’d also want to look at the tests themselves to get a sense for how good they are, and I’d ask if they are being run at every checkin, and if they are integrated with Jenkins or TeamCity. Are they checked in with the code? I’d want to see the test execution history to see how often they fail.  
   - Feature-wise, priorities would be new features, any critical workflows, and existing features that have been refactored or have had problems in the past. That’s quite a few areas, so I’d probably list the areas I see as high-risk and set up a meeting with stakeholders to try to rank areas for testing.