INTUITIVE
SURGICAL™

Job Description

Job Title: **SOFTWARE INTEGRATION ENGINEER**

Department: **Applied Research**

Reports to: **Manager, Medical Imaging**

Primary Function of Position:

The Software Integration Engineer is primarily responsible for integrating and testing new prototypes of products. The Software Integration Engineer will support the SW development group to test new software releases by developing software module tests (manual and automated), SW/HW integration tests and maintaining test protocol documentation. The focus is to ensure that new products/prototypes are safe and effective, and meet design and user requirements.

Roles and Responsibilities:

- Work with software engineering team to develop/ execute unit, component-level/ system-level test suites
- Work with build and release engineer to test new SW releases/prototypes
- Responsible for writing and executing software tests
    - Write and execute software verification of unit test software
    - Write and execute software verification of system integration
    - Conduct testing per released test protocols (SW and SW/HW integration)
    - Write and release test reports and maintain formal test protocols
- Conduct informal and formal testing and log/ verify issues in issue tracking system

Skills/Job Requirements:

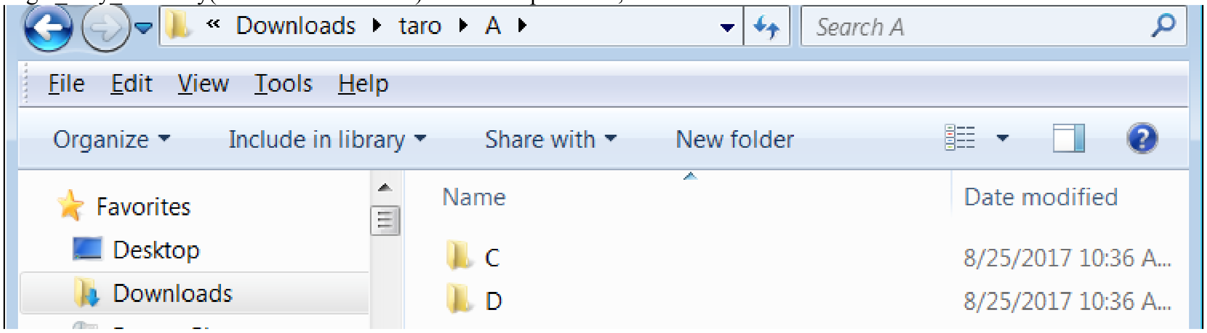
- **Bachelor’s degree in Computer Science, Software Engineering**, Electrical Engineering or a related degree, **with 1-2 years of relevant experience in programming.**
- **Strong scripting skills using python, command line and other scripting languages is required.**
- **Experience with testing and troubleshooting C/C++ applications is required.**
- **Strong understanding of software testing practices and QA fundamentals is required.**
- **Strong understanding of HW/SW integration testing is required.**
- Experience with unit testing is required.
- Experience with repository management solutions such as Git and Subversion is required.
- Experience with testing under Linux and Windows is required.
- Experience with issue tracking tools (such as JIRA) is a plus.
- Proficiency in testing Mac OS environment and iOS applications is a plus.
- Proficiency in testing web applications is a plus.
- Excellent communication skills, both written and verbal. Ability to present effectively.
- **Self-motivated to learn, test, find and resolve bugs with software development team**
- Have the ability to define goals and work independently in the face of ambiguity and complexity.
- Proven experience with development and testing of medical device, medical imaging and robotics products that have been successfully launched to market is a plus.

<u>Take Home Exam (Should be returned no more than 3 days, bonus questions are optional):</u>

1. In both python and in bash scripting language

# write a function called "get_only_dir(directory)" which given an input directory
# returns false, and an empty string if A has more than 1 child directory,
# returns true and the name of the child directory as a string if A has only 1 child directory,

Example:
a. get_only_directory(“Downloads\taro\A”) should output False, “”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Organize ▾ Include in library ▾ Share with ▾ New folder
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C	8/25/2017 10:36 A...
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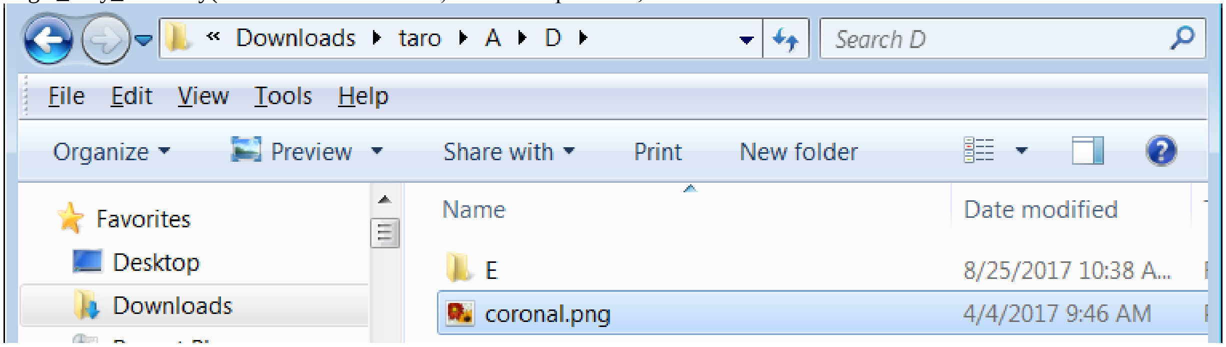
b. get_only_directory(“Downloads\taro\A\D”) should output True, “E”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E	8/25/2017 10:38 A...
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2. bash (bonus)

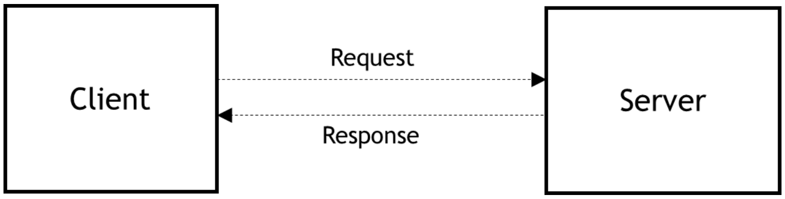
# Write a bash startup script with using supervisor for the following:
# 1a. checks that the OS is Ubunu
# 1b. checks for a required input option [either --min or --max]
# if non provided print options before exiting
# 1c. call supervisord using the input command and log file
# 1d. check/verify as much of the results as possible

# You are given: 'min_config_file', 'max_config_file' and log file 'foo.log'
# The environment is Ubuntu Linux and for background on review supervisor, http://supervisord.org

3. c++

// in C++ swap the elements in the array from back to front
// swap(int* array, int n)
// You are given an int* array[] and the number of elements 'n'

4. Let’s assume that we have a system that consists of a server and a client. The client sends a request to the server, the server receives and process the request, and the client receives a response from the server.



A typical scenario to use this system is as follows:

- Run the client to connect to the server.

- The client sends a request and receives a response (repeated).
- The client disconnects from the server and terminates.

In this setup,

1) Identify the possible failure modes of this system. If necessary, you can make an assumption about the details of the system (e.g., request frequency), but describe what your assumptions are and why those assumptions are needed.
2) Given your answers from 1), design a test plan for this system.
3) Given your answers from 2), design a test report (mock-up) for the developed test plan.

5. Please list all tools you have use for testing (debugging, code coverage, memory leak, unit test frameworks, others?)

6. Please list all languages you are proficient with in writing test scripts

7. When is your earliest availability to start?