This quiz has 3 questions, for a total of 30 points.

1. **10 points** What is the output of the following Python program?

```python
A = []
A.append((1,2))
A.append(3)
print(A)
print(1 in A)
print(3 in A)
A[1] = 4
print(A)
```

**Solution:**

```python
[(1, 2), 3]
False
True
[(1, 2), 4]
```

2. **10 points** What code needs to be filled into the blanks labeled (a), (b), and (c) to finish this algorithm that rotates the elements in a non-empty array by one to the right?

```python
def swap(A, i, j):
    tmp = A[i]
    __(a)__ = A[j]
    A[j] = __(b)__

def rotate_1_swap_backwards(A):
    if len(A) <= 1:
        return
    for i in range(len(A)-1, 0, -1):
        swap(A, i, __(c)__)
```

**Solution:**

(a) A[i]
(b) tmp
(c) i-1

3. **10 points** Describe 1) what the git clone operation accomplishes, 2) what the git add/commit/push sequence of operations accomplish (or “sync” in the Windows interface for git), and 3) the purpose of version control systems.
Solution:

1. The git clone operation copies a repository from github to the local computer.

2. The git add/commit/push sequence (or sync) uploads changes from the local computer to github.

3. A version control system helps teams of software developers to manage their source code, detecting concurrent edits to the same file and providing access to prior versions of the software.