

Introduction to Computer Science I
Fall 2014
Sample MID-TERM EXAM

1. Consider the following module of Python code...

```
def thing_one (x):
    y = 0
    if x == 1:
        y = x
        x = 2
    if x == 2:
        y = -x
        x = 3
    elif x == 3:
        y = 2 * x
        x = 2 * y
    else:
        y = x
    print('x = ' + str(x))
    print('y = ' + str(y))

def thing_two (l, v):
    for i in range(len(l)):
        l[i] += v
        v = v - 1

def main ():
    thing_one(7)
    thing_one(3)
    thing_one(1)
    l = [20, 40, 30]
    v = 6
    thing_two(l, v)
    print('l = ' + str(l))
    print('v = ' + str(v))

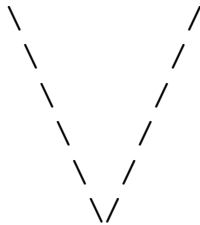
if __name__ == '__main__':
    main()
```

What output is printed when this module is run?

2. Provide short answers (no more than a few sentences) to each of the following questions:

- (a) In Python, strings are *immutable* while lists are *mutable*. What is the difference?
- (b) How does the `//` operator differ from the `/` operator? Give an example of where `//` would be needed.
- (c) United Airlines will only allow carry-on bags that are no more than 22 inches long, 14 inches wide, and 9 inches deep. Assuming that variables named `length`, `width`, and `depth` have already been assigned values, **write an expression** combining the three that evaluates to `True` if bag fits within those limits, and `False` otherwise.

3. **Write a function** named `print_big_v (size)`, where `size` indicates the size of the pattern that the function will print. Specifically, this function is called with 6 as the argument for `size`, then it should print the following:



That is, the “big V”, made up of forward and backward slash characters, should be 6 rows tall.

4. **Write a function** named `extract_lesser (l, v)` that, from a list of numbers `l` finds all of the values less than `v`, puts them into a new list, and returns that new list.