

CS35 Data Structures and Algorithms
Practice Quiz 1, Fall 2015

1. What will the following program print?

```
#include <iostream>

using namespace std;

int main() {
    char a[5];
    a[1] = 'a';
    a[2] = 'b';
    cout << a[3] << endl;
}
```

Circle the correct answer:

- (a) 'a'
 - (b) 'b'
 - (c) 0
 - (d) Nothing
 - (e) It's impossible to know
2. Write a function called `arrayCutoff` that takes an array of `ints` and another integer value `max`, and sets all elements of the array greater than the provided number to `max`.
3. Show that $3n^5 + n + 8$ is $O(2n^5)$.
4. Consider the `Posn` class declared below:

```
class Posn {
private:
    float x, y;
public:
    Posn(float xVal, float yVal);
    void flip(); // negates both x and y
    float getX(); // returns current value of x
    float getY(); // returns current value of y
};
```

- (a) Be able to clearly identify each *field*, *method*, and *constructor* in the class.
- (b) Be able to implement `flip`.

- (c) Be able to draw a memory diagram for the following program, showing its status at the point immediately before `main` returns. Your diagram should show all data currently in memory and clearly delineate what is on the heap and what is on the stack.

```
#include "posn.h"

int main() {
    Posn p1(34.5, 22);
    Posn *p2 = new Posn(33.2, 41);

    float xvals[2];

    p1.flip();
    p2->flip();

    xvals[0] = p1.getX();
    xvals[1] = p2->getX();

    // Draw the stack and heap here

    return 0;
}
```