

CSE1502 Spring 2009 Exam #3  
Open book, open notes, no computers.

1. What does the following print? (3 points each)

```
char a[3][5] = {"ABCD", "EFGH", "IJKL"};
char *p = a[1];
```

```
ANSWERS
cout << p;           EFGH
cout << *p;          E
cout << p + 1;       FGH
cout << *(p + 1);    F
cout << p[1];        F

cout << p - a[1];    0
cout << a[1];        EFGH
cout << a[2][3];     L
cout << *a;          ABCD
cout << *(a + 1);    EFGH
```

2. Write a function **largest** that takes pointers to the beginning and end of an array of int and returns (not prints) the value of the largest element. For example, (30 points).

```
int b[5] = {4, 2, 7, 8, 3};
int x = largest(b, b+5);
cout << x; // 8
```

```
// ANSWER 1
int largest(int* begin, int* end)
{
    int result;
    for (result = *begin; begin != end;
         ++begin)
        if (*begin > result)
            result = *begin;
    return result;
}
```

```
// ANSWER 2 (modifies input array)
int largest(int* begin, int* end)
{
    sort(begin, end);
    return end[-1];
}
```

Name \_\_\_\_\_

3. Write a declaration for an object **x** of type Rectangle and statements that set its members **width** to 5 and **height** to 10. (10 points).

```
struct Rectangle
{
    double width, height;
};

// ANSWER
Rectangle x;
x.width = 5;
x.height = 10;
```

4. Write a program that outputs the number of printable characters on the command line, not counting spaces or the name of the program itself. For example, if the program compiles to **a.exe**, then

**a hello world**

would print 10. (30 points).

```
// ANSWER 1
#include <iostream>
using namespace std;
int main(int argc, char* argv[])
{
    int count = 0;
    for (int i=1; i<argc; ++i)
        for (int j=0; argv[i][j]; ++j)
            ++count;
    cout << count << endl;
    return 0;
}
```

```
// ANSWER 2
#include <iostream>
#include <string>
using namespace std;
int main(int argc, char** argv)
{
    int count = 0;
    for (int i=1; i<argc; ++i)
        count+=int(string(argv[i]).size());
    cout << count << endl;
    return 0;
}
```