

Midterm Two C++ / EC602 Design by Software / Fall 2019

Name/Email:

Debug/Comprehension (10%)

The following program is called inttest.cpp

```
// Copyright 2019 Less, Klu klules@bu.edu
// $? in unix is the last program's return code
struct A { };

class Int128 public A {
    double h
    Int128(int v) { h = v; return h==v; }
public:
    double mult(double s) {
        h *= s; return h;
    }
}

int main(int argc)
{
    Int128 i(argc);
    for (int j = 0; j<4; j++)
        Int128 i(j);
        i.mult(2);

    Int128* pi = i&;
    return 100*(*pi.mult(2) < 12) +
        *pi.mult(2);
}
```

What happens when this is run in terminal

```
g++ inttest.cpp 2>/dev/null
a.out one two; echo $?
```

If there are syntax errors, circle them in the code above with an explanation like “missing {”. What would be printed if the syntax errors (if any) are removed?

Debug/Comprehension (10%)

The following program is called shrinker.cpp

```
// the back method of vector returns the last element
#include <vector>
#include <iostream>
using std::vector;
using std::cout;
typedef vector<int> Poly;

void shrink(Poly *p) {
    while ((p->back() == 1) and p->size() > 1) p->pop_back();
}

Poly shrink(Poly p) {
    while ((p.back() == 1) and p.size() > 1) p.pop_back();
    return p;
}

int main() {
    Poly v{5,2,0,0,12,1,1}, w{4,1,1};
    shrink(&v);
    for (auto e : v) cout << e << " ";
    for (auto e : shrink(w)) cout << e << " ";
    for (auto e : w) cout << e << " ";
    cout << "\n";
}
```

What happens when this is run in terminal

```
g++ shrinker.cpp 2>/dev/null
a.out one two; echo $?
```

If there are syntax errors, circle them in the code above with an explanation like “missing {”. What would be printed if the syntax errors (if any) are removed?

Code on Paper (20%)

Given two vectors of integers which are re-arrangements of each other, write a C++17 function to find the distance between the locations (ie. the difference of their index values) of the matching elements.

Example:

`distance({3,9,5},{5,3,9}) = 4`

because 3 has been moved 1 spot, 9 moved 1 spot , and 5 moved 2 spots. You may assume that the elements are unique and that the vectors *are* re-arrangements of each other.

Computer Test (60%)

When you are done, turn this paper in to get the password to the computer-based test zip file.