

CSI 32 Final Exam, Additional Questions

1. Suppose x and y are integer variables and we form the sum $x + y$. Next, suppose a and b are decimal numbers (and we are using the type `double` for them) and we form the sum $a + b$. The two `+` operators here are clearly being used for different types.

This is an example of _____.

Choose from the following options:

- (a) inheritance
- (b) operator overloading
- (c) operator nesting
- (d) type inconsistency

2. Assume that `myArray` is a non-empty built-in array of *integers* (not the C++ style array when we include the header `<array>`). How can I find its size, i.e. the number of elements in it?

Put the one-line statement:

3. When deriving a class with public inheritance, public members of the class become _____ members of the derived/child class and protected members of the class become _____ members of the derived/child class.

Fill in the blanks.

4. When working with classes and virtual functions, what is the keyword `final` used for?

5. Write a C++ statement what will output/display the address stored in the variable `myPtr` of type `int *`.

6. Consider the definition of the class `myClass` and the definition of the function `main`:

```
class myClass {
public:
    myClass(string n = "") : na{ n } { c++; }
    ~myClass() { c--; }
private:
    string na;
    static int c;
};

int myClass::c{ 0 };

int main() {
    myClass *a1 = new myClass{ "Mary" }, *a2 = new myClass{ "Alice" };
    myClass *a3 = new myClass{ "John" };

    cout << "stage 1" << endl;

    delete a2;
    delete a2;

    cout << "stage 2" << endl;
}
```

How does the value of *static class attribute C* change?
(state *C*'s values after stage 1, and after stage 2)

7. Consider a vector **myV** filled with integer values. And the definition of the function **myFunction**:

```
bool myFunction(int n) {  
    if (n % 3 == 0) { return true; }  
    else { return false; }  
}
```

(a) What does the following code do?

```
int count = count_if(myV.begin(), myV.end(), myFunction);  
cout << count << endl;
```

(b) What would be a value of **count** variable if the vector **myV** is filled with integers from 1 to 13?