

CS2260, Fall 2003, Test 1

Time 70 min. Use extra paper as needed, but make sure to identify each answer.

YOU MUST RETURN THIS PAGE. NAME _____

- 1 (10) Implement function `add()` that will add two integers and return the result by value. The two integers are to be passed by
 - a) value
 - b) reference
 - c) pointerFor case c), show the main program that will read two integers from the keyboard and then use the function to compute the sum and then print the result to the screen.
- 2 (5) What happens in 1a) if you try to send two float variables with values 3.1 and 3.8?
- 3 (5) Now extend 1b) so that you can call the function with either 2 or 3 integer arguments. Show the prototype and the implementation.
- 4 (5) For two functions to be overloading each other, what exactly must be true about
 - a) return type
 - b) name
 - c) parameters?
- 5 (5) Any two or maybe all three functions overload here?

```
int f(int a, int b) {  
    // some stuff  
}  
float f (int x, int y) {  
    // some stuff  
}  
int f(int& i, int j) {  
    // some stuff  
}
```
- 6 (10) Write a complete program to read float numbers from the keyboard until the user simulates the end of file. The program should then display the total.
- 7 (10) Write a function that receives three parameters: an array of integers (by address, like in C), the number of elements in the array (integer by copy), and then index (integer by copy). The function will throw exception "Bad Index" if the index is outside of the correct range. Otherwise, it will return the array element at that index, by reference.
- 8 (10) With 7), write the main function that will create a dynamic array of 5 integers, initialize with 1 through 5, and then use the function to
 - a) print the element at index 2, then
 - b) modify the element at index 1 to become 10. Make sure to catch any exception.

- 9 (10) A person has a name and age. Implement `Person` as a class, with the proper two files shown separately. Make sure to include constructor that can be called w/o arguments (name should be "No Name" and age should be 0), and with both name and age. Use `string` class for the name.
- 10 (15) Redo 9) when the name is allocated dynamically on the heap with just the needed size. Don't forget destructor and copy.
- 11 (10) Imagine
- ```
class C {
private:
 int pr;
public:
 int pu;
 const int cu;
 static int su;
};
```
- a) How can we initialize each of the four members if we are the implementators of the class `C`?
- b) How do we change any of the members to 100? If there is more than one way, show all different ways. If impossible, why?
- 12 Can you (just explain how or why not)
- a) disable copying of an object of class `C`?
- b) restrict the number of copies made from object of class `C`?
- c) prohibit anyone from creating objects of class `C`?