

CS274, Winter 2001, Test 2

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

YOU MUST RETURN THIS PAGE. NAME _____

- 1 Implement a class for `Person` with `name` and `age` both private. `name` is `string` and `age` is `int`. Provide access function to get/set both `name` and `age`. Provide constructors to create w/o data, with some name, and with both name and age. If name is unknown, create a person with "No Name" and if age is unknown create a person with `age=0`;
- 2 Redo #1 with dynamic allocation. Show only constructors and the destructor.
- 3 For #1 show the copy constructor.
- 4 For #2 show the copy constructor.
- 5 Suppose `Male` inherits from `Person` and also has `int numGirlFriends` and has its own `getName` (this liar doesn't give his real name). Implement the class `Male`, with 3 constructors: no data, name, and both name and age. In construction, assume #1 `Person` and do not use the get/set methods (must use constructors only).
- 6 Is dynamic binding possible in #1 and #5? What is needed to provide dynamic binding?
- 7 Write a template function for deciding if any of the 3 arguments are the same. The template returns the number of arguments, out of 3, which are the same.
 - a) write the template, showing separately prototype and implementation
 - b) will it work for integers and doubles?
 - c) will it work for structures? If yes - why, if no -why
 - d) will it work for arrays? If yes - why, if no - why
- 8 Assume you have `class Person`.
 - a) Implement a function to dynamically allocate an array of default objects of that class. The number of elements to be allocated is passed on the interface. The function will return the array by whatever means you decide.
 - b) show a main function that calls that function to allocate an array of 5 `Person`, and then deletes the array.
- 9 For your #1 `Person`, implement a binary `*` operator that returns the product of both ages and does not modify the arguments.
- 10 For your #1 `Person`, implement the `>>` input operators that will prompt for name and age and the read them. Assume that you cannot use the set methods, so you must access private data. Can it be done and how?