

# Classes/Objects Labs

## Part A.

The customer (The Censless Bureau) wants a program that will store information on cities.

(a) The object will be a class with the following information:

Variable	Data type	Range	Private/Public
Name of city	string variable	Can include spaces	Public
Name of state	string variable	2 letters (all upper case)	Private
Zip code of city	string variable	5 digits	Private
Rainfall	fractional number	0-300	Private
Relative Humidity	Fractional number	0-100%	Private
Temperature	Integer number	-100 to 150	Private

You will build functions for each variable to ensure that the input is in the valid range for that variable.

You will print the information in the following format:

City Name : XXXXXXXXXXXXXXXXXXXXXXXX    State : XX    Zip : XXXXX  
Rainfall    : XX.XX  
Relative Humidity : XXX %  
Temperature : XX

Email the lab to me after completing this section.

### Part B.

You will add the following fields to the class in part A.

Variable	Data type	Range	Public/Private
First Name	String	Can Include spaces	Public
Last Name	String	Can Include spaces	Public
Address	String	Can Include spaces	Public

Email the lab to me after completing this section.

### Part C.

Reference the Class Inheritance handout for help on this section. The link is at <http://www.ccpedagogy.com/cpp/class%20inheritance.pdf>

Add your parents as a class, one for your father and mother. If you want to pretend that you come from a dinosaur, you can make them your choice of dinosaurs. (T Rex, triSarahTopps, ....)

Email the lab to me after completing this section.

### Part D.

You will add the following field to the class with your name as specified in part B.

Variable	Data type	Range	Public/Private
bank account	Double		Private

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### Part E.

Reference the Class Inheritance handout for help on this section. The link is at <http://www.ccpedagogy.com/cpp/Classes%20Friend%20functions.pdf>

Add a function which will allow at least one of your parents to be a friend (friend function) of yours and deposit money in your bank account.

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### Part F.

Reference the Class Inheritance handout for help on this section. The link is at <http://www.ccpedagogy.com/cpp/class%20inheritance.pdf>

Add your grandparents as a class, one for your father's family and mother's family. If you want to pretend that they are also dinosaurs, you can make them your choice of dinosaurs. (T Rex, triSarahTopps, ....)

Email the lab to me after completing this section.

#### **Part G.**

Update your form in part **A** to include your name, one of your parent's name and name of at least one of the grandparents.

Reference the link at <http://www.ccpedagogy.com/cpp/class%20inheritance.pdf> for help on this section.

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#### **Part H.**

Write the class to a binary file.

Read the file back in and let your parent up your bank account by \$500.

Write the updated class to a binary file.

Reference the Binary handout for help on this section. The link is at <http://www.ccpedagogy.com/cpp/Binary%20files.pdf>

Email the lab to me after completing this section.