

ASSIGNMENT 3	Chapter 11 – Inheritance and Polymorphism
Due July 9 at 11:30 pm	Objectives <ul style="list-style-type: none"> ■ To define a subclass from a superclass through inheritance ■ To invoke the superclass's constructors and methods using the <code>super</code> keyword ■ To override instance methods in the subclass

11.2 (*The `Person`, `Student`, `Employee`, `Faculty`, and `Staff` classes*) Design a class named `Person` and its two subclasses named `Student` and `Employee`. Make `Faculty` and `Staff` subclasses of `Employee`. A person has a name, address, phone number, and email address. A student has a class status (freshman, sophomore, junior, or senior). Define the status as a constant. An employee has an office, salary, and date hired. Use the `MyDate` class defined in Programming Exercise 10.14 to create an object for date hired. A faculty member has office hours and a rank. A staff member has a title. Override the `toString` method in each class to display the class name and the person's name.

Draw the UML diagram for the classes and implement them. Write a test program that creates a `Person`, `Student`, `Employee`, `Faculty`, and `Staff`, and invokes their `toString()` methods.

11.3 (*Subclasses of `Account`*) In Programming Exercise 9.7, the `Account` class was defined to model a bank account. An account has the properties account number, balance, annual interest rate, and date created, and methods to deposit and withdraw funds. Create two subclasses for checking and saving accounts. A checking account has an overdraft limit, but a savings account cannot be overdrawn.

Draw the UML diagram for the classes and then implement them. Write a test program that creates objects of `Account`, `SavingsAccount`, and `CheckingAccount` and invokes their `toString()` methods.

11.5 (*The `Course` class*) Rewrite the `Course` class in Listing 10.6. Use an `ArrayList` to replace an array to store students. Draw the new UML diagram for the class. You should not change the original contract of the `Course` class (i.e., the definition of the constructors and methods should not be changed, but the private members may be changed.)

11.6 (*Use `ArrayList`*) Write a program that creates an `ArrayList` and adds a `Loan` object, a `Date` object, a string, and a `Circle` object to the list, and use a loop to display all the elements in the list by invoking the object's `toString()` method.

TASK LIST

You are required to complete the following activities by the deadlines specified and submit the appropriate *deliverables* through eLearning.

ACTIVITY	DEADLINE
Create Class Files having its own main method for each of the problems in this assignment. <hr/>	July 9
Compile, Execute and Test your program	
Zip the Java Files and submit on eLearning	

GUIDELINES

You will be graded according to the following guidelines:

- ⌚ You are required to submit files through eLearning by the specified deadline. You can earn a maximum of 100 points.
- ⌚ If the files do not compile, you will receive a 0 for the program.
- ⌚ You are graded primarily on the design of your class and the adequate testing of your class. Poor design or inadequate testing will result in loss of points.
- ⌚ Your files should be adequately commented. Up to -15 points will be deducted for poor indentation and documentation.