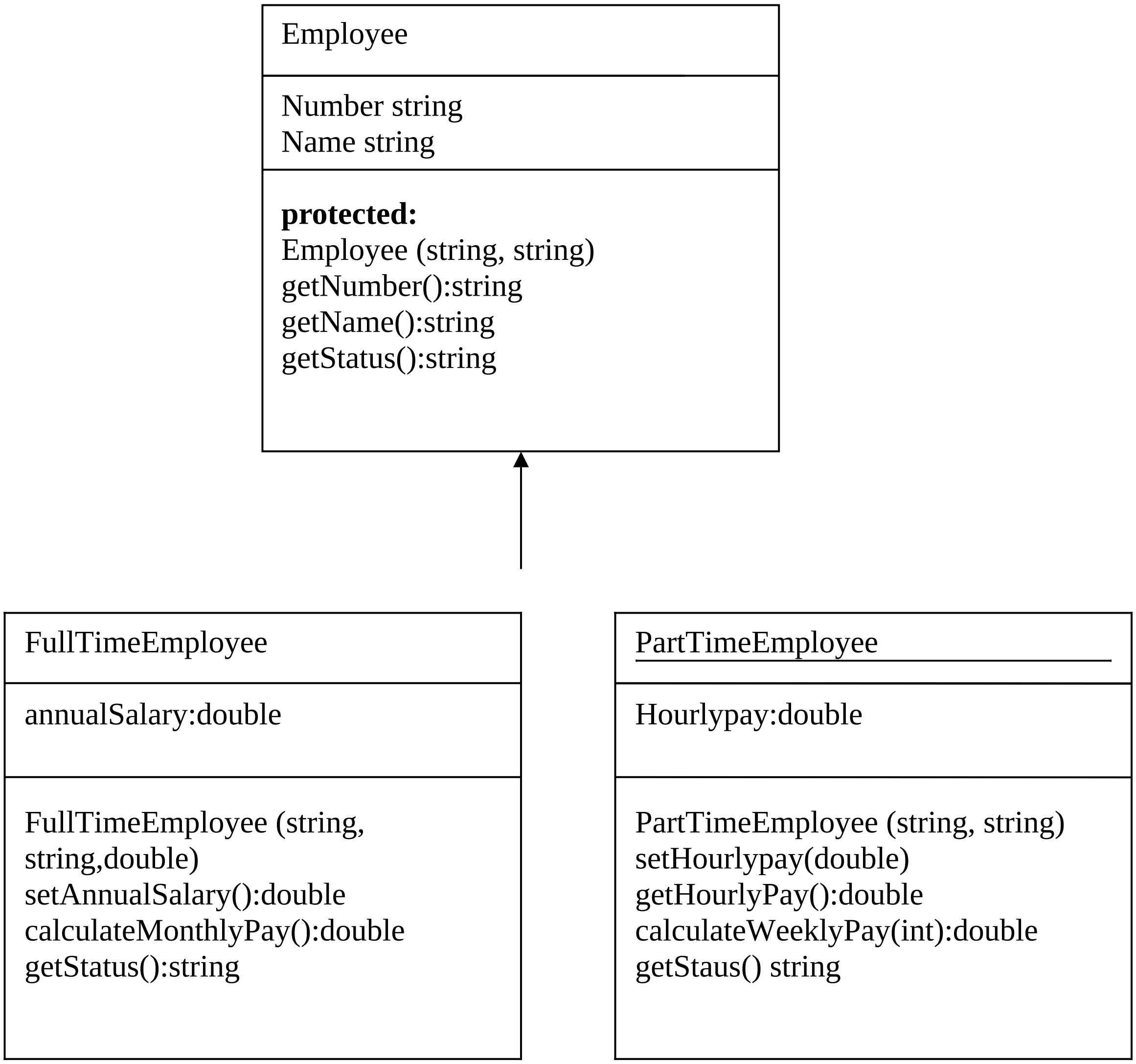
Warm Up Exercises Week 9

1. Here is a UML diagram representing inheritance



Employee

Number string
Name string

protected:
Employee (string, string)
getNumber():string
getName():string
getStatus():string

FullTimeEmployee

annualSalary:double

FullTimeEmployee (string, string,double)
setAnnualSalary():double
calculateMonthlyPay():double
getStatus():string

PartTimeEmployee

Hourlypay:double

PartTimeEmployee (string, string)
setHourlypay(double)
getHourlyPay():double
calculateWeeklyPay(int):double
getStaus() string

Code each class and create a main to test your program

2.Write a BankAccount class that has the following data

(i) string name
(ii) string IDNumber
(iii) double amount

and methods
deposit(double amount, string account)
withdraw(double amount, string account)
transfer(double amount, string account)
print_balance(double amount, string account)

double calc_interest(double amount, double percent)

Write a driver program i.e. one with a main function that runs this class. You may write the code for each method as you think appropriate for the task.

3. A rational number is of the form a/b where a and b are both integers and b□0. Write a program with a class (or classes if you wish) that does rational arithmetic, storing the numerator and the denominator of each rational number. The program should read and display all rational numbers in the form a/b or simply a if the denominator b=1. The following examples illustrate the menu of commands that the user should be allowed to enter

Input	Method Name	Output	Comments
3/8+1/6	Add_ Fraction	13/24	a/b+c/d =(ad+bc)/bd don’t worry about lowest form
3/8-1/6	Sub_Fraction	5/24	a/b-c/d =(ad-bc)/bd don’t worry about lowest form
3/8*1/6	Mult_Fraction	1/16	a/b*c/d
3/8 / 1/6	Div_Fraction	9/4	a/b/c/d = ad/bc
3/8	Reciprocal	8/3	find reciprocal
8/3	Mixed	2+2/3	a/b written as mixed number
1/6 < 3/8	LessThan	true	a/b < c/d?
1/6 <= 3/8	LessEqTo	true	a/b □ c/d?
1/6 > 3/8	GreatThan	true	a/b > c/d?
1/6 >= 3/8	GreatEqTo	true	a/b □ c/d?
3/8 = 9/24	EqualTo	true	a/b = c/d?
2/3 X +2 = 4/5	Solve	x=-9/5	solution to (a/b)X + c/d =e/f

4. Write a the Sportsperson class below. Treating this class as a Base class derive a TennisPlayer class and FootballPlayer class which inherit publically from the Sportsperson. Add a data field to each of your child classes and also add a method to each of the derived classes. Create objects of each. Try to overide the definition of methods of the Base class in the Derived classes.

SportsPerson

String name;
int Age;
int wins;

protected: SportsPerson (string, int) getAge():integer getWins():integer getStatus():string