Answer the following Questions:
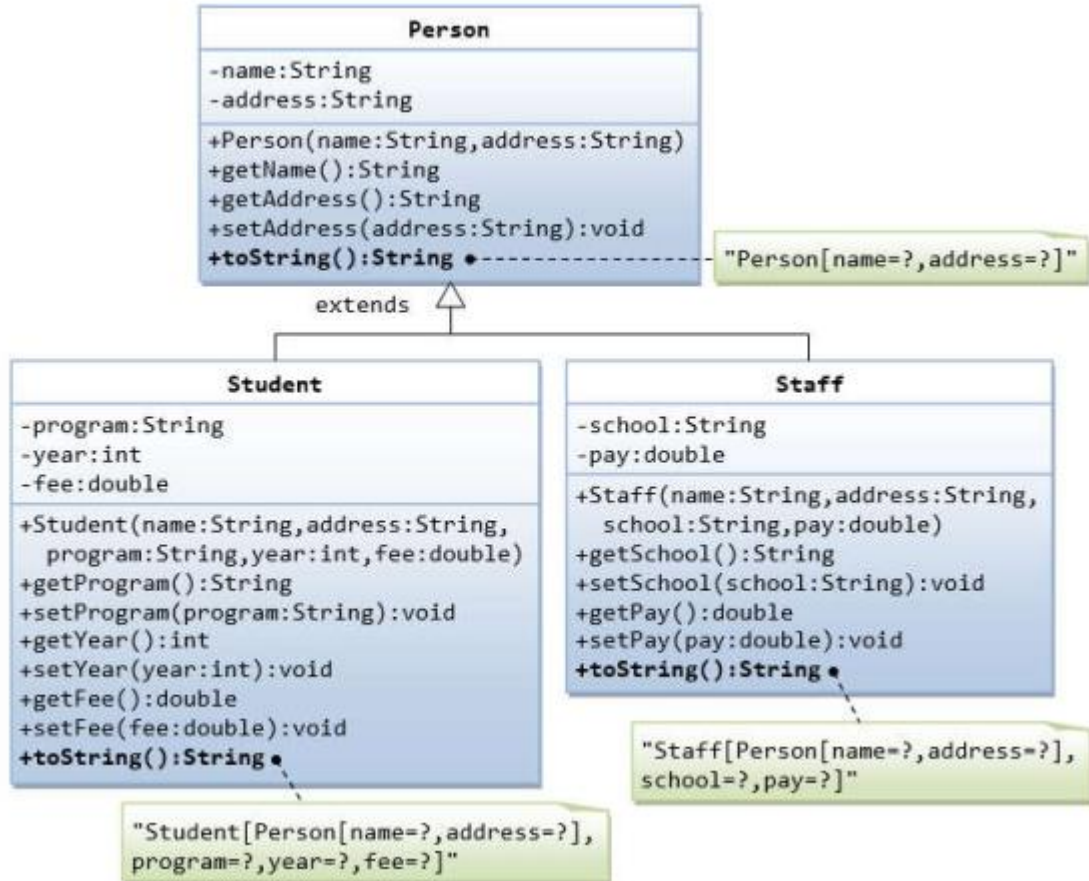
Question 1: True or False

1) When a class member is declared as protected it will be accessible to all other classes outside the same package
2) Every Java program requires at least one class.
3) Although methods and fields can be static, constructors cannot be static.
4) A nonstatic method cannot access a static member
5) A class cannot overload its constructors.
6) In class inheritance, a subclass inherits only the nonprivate members of the superclass.
7) Neither an abstract class nor an interface can be instantiated as an object
8) Even though a subclass may override a method in the superclass, superclass objects still can call the superclass version of the method
9) A static data member is a data member for the class not for an object.
10) When a class member is declared as default it will be accessible to all other classes inside the same package
11) Overloading is when a method has the same name as one or more other methods
12) When a method is declared with the final modifier, it cannot be overridden in a subclass
13) An abstract method has no body and must be overridden in a subclass..
14) Any abstract class can be final.
15) A superclass reference variable can reference an object of a subclass that extends the superclass and can access any method of the subclass

Question 2:

a) Write a class named **Date** that has three integer data members day (1-31), month (1-12) and year (1000-9999). and the following methods:
   1) Constructor: that takes three integers and puts them in day, month and year.
   2) Three setters for day, month and year
   3) Three getters for day, month and year
   4) tostring method that returns the information as a string.
   5) Equals method that takes an object and compares it with its object.
   6) Addday that adds 1 to the day.
   7) Subday that subtracts 1 from the day
   8) Ismagic that checks whether the date is magic or not. A magic date is such as 1/1/1111, 11/1/1111, 1/11/1111, 11/11/1111, 2/2/2222 and 22/2/2222 and so on. i.e the date consists of exactly one digit.

b) Write a class named **Number** that has an integer data member num and static data member even_count to count the even numbers and the following methods:
   1) Constructor: that takes an integer a and puts it in num and modifies even_count
   2) Setnum: that takes an integer a and puts it in num. and changes even_num (if the chang is required).
   3) Getnum: that returns the value of num.
   4) Sumofdigits that returns the sum of digits of num.

Question 3: Define the following classes

Person
-name:String
-address:String
+Person(name:String,address:String)
+getName():String
+getAddress():String
+setAddress(address:String):void
+toString():String ●--------------- "Person[name=?,address=?]"

extends △

Student
-program:String
-year:int
-fee:double
+Student(name:String,address:String, program:String,year:int,fee:double)
+getProgram():String
+setProgram(program:String):void
+getYear():int
+setYear(year:int):void
+getFee():double
+setFee(fee:double):void
+toString():String ●

"Student[Person[name=?,address=?], program=?,year=?,fee=?]"

Staff
-school:String
-pay:double
+Staff(name:String,address:String, school:String,pay:double)
+getSchool():String
+setSchool(school:String):void
+getPay():double
+setPay(pay:double):void
+toString():String ●

"Staff[Person[name=?,address=?], school=?,pay=?]"

Question 4:

a) Write a program to read a file of integers and compute the average.
b) Write a program to read a text file and count the sentences.
c) Write a recursive method that takes two strings s1 and s2 and returns the number of occurrences of s2 in s1.

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