CS 2510 Exam 2 – Spring 2010

Name: _____

Student Id (last 4 digits): _____

• Write down the answers in the space provided.
• You may use all parts of the Java language we have learned. If you need a method and you don't know whether it is provided, define it. You do not need to include the curly braces for every `if` or every `else`, as long as the statements you write are correct in standard Java.
• For tests you only need to provide the expression that computes the actual value, connecting it with an arrow to the expected value. For example `s.method() -> true` is sufficient.
• This exam focuses on problem solving. The **design recipe** is your key to success. Feel free to add plain English comments explaining what you are trying to do, or what would be the next step as you solve the problem.
• You are *not* required to provide a method template unless the problem specifically asks for one. However, be prepared to struggle if you choose to skip the template step.
• We will not answer *any* questions during the exam.

Good luck.

Problem	Points	/
1		/27
Total		/27

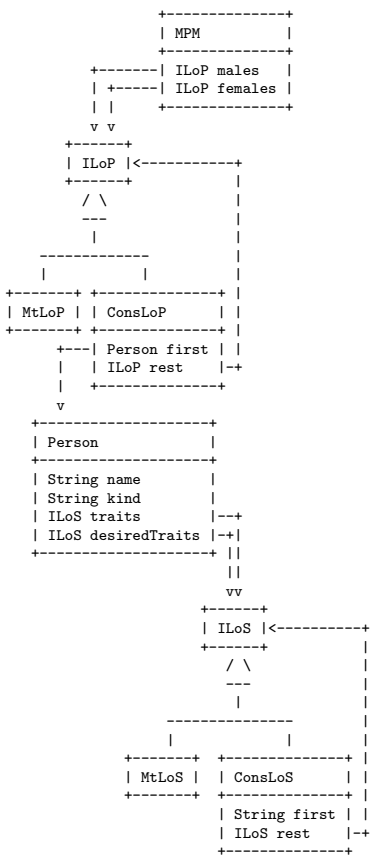
27 Points

Problem 1

We are writing a program for the Meet Perfect Match match-making service. They match heterosexual couples, with a guarantee of a perfect match for every customer.

To make sure each person is matched with a compatible person, they would like us to design a program that generates the possible partners for a given customer.

The class diagram shown here describes how the Meet Perfect Match (MPM) keeps track of the people. A person wanting to find a match has to wait until a suitable person becomes available.



A. **Problem analysis and data definition part. [7 points]**

- Make examples of males, females, lists of males, lists of females, and the `MPM` class. The `traits` field describes the traits of this person, the `desiredTraits` field describes the traits desired of the matched partner.

  Here is an example of the Meet Perfect Partner records for today. Turn them into examples.

  Traits recorded:

  extrovert, introvert, vegan, carnivore, nature lover, sports lover, avid reader, party person

  Males waiting for partners:

  - Bob - is extrovert, nature lover, vegan, wants a partner who is extrovert, nature lover, vegan and a party person.
  - Dan - is introvert and avid reader and is looking for a partner who is introvert and a carnivore.
  - Ted - is extrovert and sports lover, looking for an extrovert who is an avid reader.

  Females waiting for partners:

  - Kay - is extrovert, nature lover, sports lover, vegan and a party person, looking for an extrovert, nature lover, vegan partner.
  - Bea - is introvert, nature lover, carnivore, looking for an introvert partner who is an avid reader.
  - Meg - is extrovert and sports lover, looking for an extrovert who is an avid reader.

- Make one more example of a male and one more example of a female that are compatible with each other, i.e. the male has the female's desired traits and the female has the traits the male desires of the female.

Note:

You may use the following notation for defining `ConsLo?` lists:

```
ILo?  mylist = new ConsLo?(item1, item2, ..., item-n, mtlo?)
```

B. **Method definition part. [20 points]**

Design the method `findMatch` for the class MPM that consumes person's name and produces a list of compatible persons available for at this time.

Note: You may need several helper methods. Work through the problem one step at a time, completing a step carefully. You may add a simple comment in English, explaining why you need a helper method, or what is it you are trying to do next. Make sure for each method you design it is clear in which class is the method defined.

Make sure we can see how you have worked towards the solution. A well designed couple of first steps count for more than disorganized guess at 'almost correct' answer.

The Design Recipe is your friend here.