Software Studio Assignment 3

1. **Unlock the Tower of Babel (100%)**

   Google is known to be proud of its translation service – Google Translate. Google translate is well-known and popularly used, however, the sort of machine translation (MT) is still imperfect. And one common problem of MT is the issue of word ordering. MT tends to generate results with inappropriate and thus confusing orders of words or phrases of a sentence, which can influence the interpretation, and even change the meaning, of the sentence.

   Ordering words or phrases of a sentence appropriately can be difficult to machines, yet tend to be quite easy to people. However, this word ordering work can be quite boring to people, so that no one would like to do it. Imagine that you're responsible to solve the problem for Google through gamification. The particular tool you build will use the notion of GWAP (game with a purpose), which converts boring tasks to enjoyable games in order to motivate people to complete the work.

   In this assignment, you will build a game that aims to improve the quality of translation from English to Chinese by reordering the phrases of machine translated Chinese sentences. This game asks the players to get to the top of a tower, called the Tower of Babel, to get the treasure. To achieve this goal, they have to unlock the door to go upstairs.

   Two types of information are provided to a player on the game interface. First, on top of the interface, the player will see the original English sentence. And second, phrases of the corresponding Chinese translation, produced either by Google translate or human experts, are available at the bottom of the interface. These phrases are keys to the lock. The player will have to choose one phrase at a time until all the phrases are ordered. When a sentence is completed, the game will present another sentence to the player.

   Although the goal of the game is to let people complete the word ordering task when they're having fun with the game, the game won't be able to give scores to a player if we don't know whether the input provided by the player is good (correct) or not. To verify the correctness of player input, the game has two types of translations for people to play. One type is machine translation results, consisting of Chinese translations produced by Google translate. Another is human translation results, consisting of translations produced by human experts. The system will randomly choose sentences and translations from one of the two types during the game. When human-translated sentences are used, the orders of phrases of the translations will serve as the reference answers. When playing with these sentences, the player will fail the game when giving the wrong order three times. However, when playing with machine-translated sentences, all the player inputs will

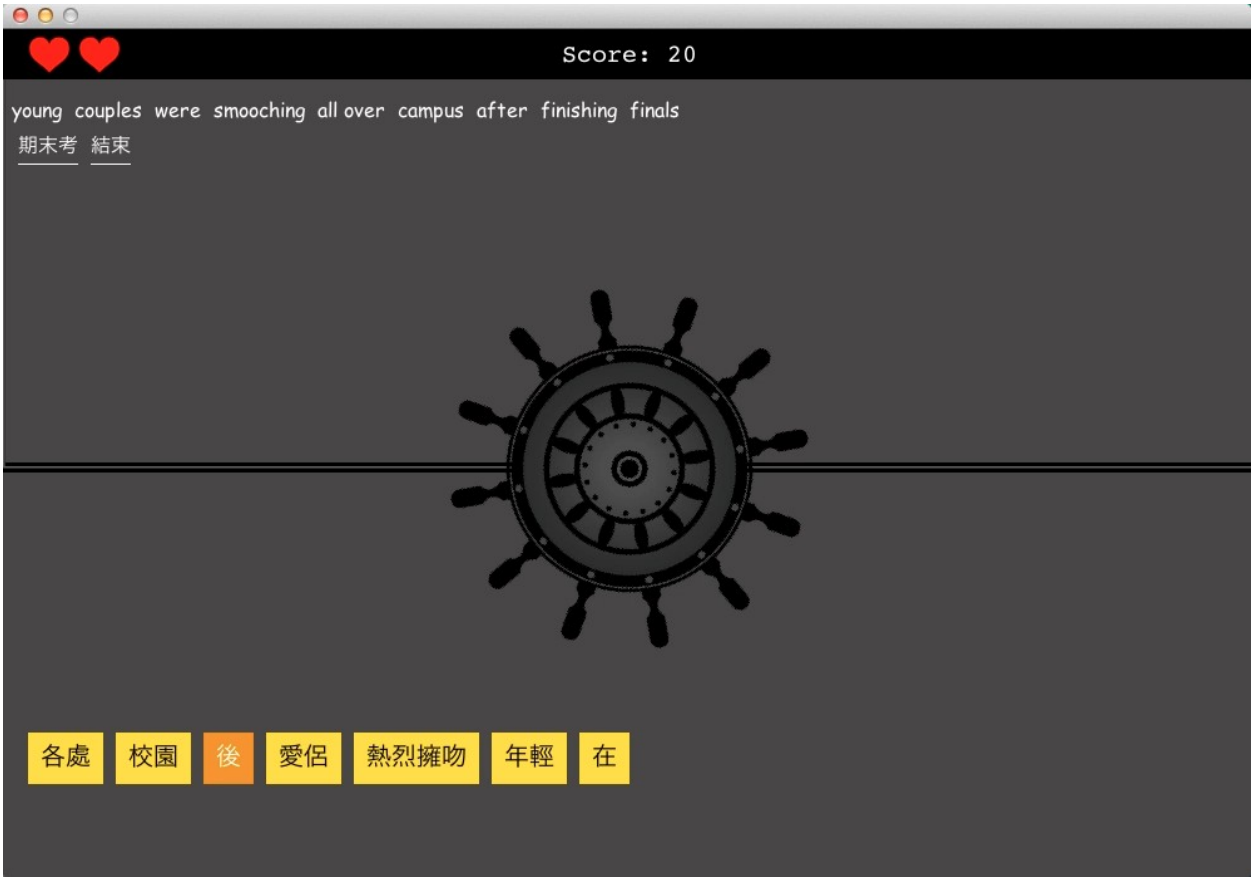
be accepted and recorded without scoring. The player will win the game after completing 10 rounds (10 sentences) in the game.

Your team members have implemented several parts of this game, and you have to finish the rest of the software.

Requirements:

1. Implement two different classes to inherit the class `AbstractSentence` for dealing with different types of sentences/translations, either produced by machine translation (MT) or produced by human experts (or known as parallel corpus, PC). (10%)
2. Complete the class `Model` to deal with your file input and output. (30%)
3. Complete the class `GameStage` to implement your UI. (35%)
4. Complete the class `Game` to manipulate the classes `Model` and `GameStage` to complete your game. (25%)

A sample user interface of this game:



A sample of the test input data:
There are two kinds of input data, one is from machine translation and the other is from human experts or known as parallel corpus. Both types of data are provided in the same file format. The format is described below:

1. Each record or row has three fields, including a value of order, the original English phrase, and the Chinese translation.
2. Records or rows are ordered based on the order of phrases in the original English sentence.
3. The order value of each record (the first column of a record) refers to the order of the Chinese phrase in the translation, no matter it's produced by MT or PC.
4. "-1" is a flag referring to the end of a sentence.

Google Translate test data

```
0 The speaker 揚聲器
1 has been accused 被指控
8 of 的
2 whipping 煽動
3 crowds 群眾
4 up into 成
7 frenzies 熱火朝天
5 of violent 暴力
6 hatred 仇恨
-1
4 young 的年輕
5 couples 夫婦
7 were 了
6 smooching 接吻
8 all 所有
3 over campus 在校園裡
2 after 後
1 finishing 結束
0 finals 總決賽
-1
```

The test data with reference answers

```
2 A scheme 計劃
1 of which 的
0 every part promises delight 十全十美
3 can never be 總不會
4 successful 成功
-1
0 I 我
1 have never 從沒有
2 been good at 擅長過
3 mathematics 數學
4 which I have always attributed to 我總是歸因於
7 missing 缺了
8 several years of school 幾年學
5 when 當
6 I was a child 我小的時候
-1
```

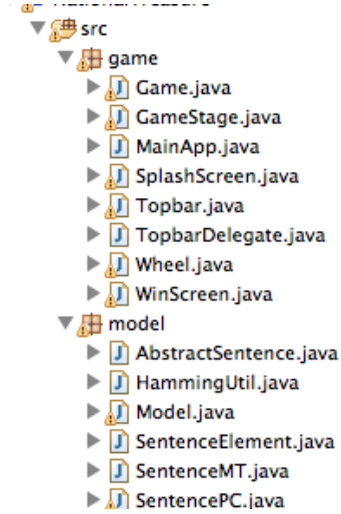
The video demonstration can be found at: http://youtu.be/UQtvno3Gero

You're encouraged to bring out your creativity to enhance the game mechanism. If you come up with a new idea, describe your design clearly in the readme.txt. Extra credits may be given for impressive work.

Notice:

1. Deadline**: 2014/10/26(Sun) 23:59** (If you submit the assignment in 10/27 00:00~23:59, you will get partial credits (80% of the original score. No credits if it's submitted afterward.)

2. To submit your work, create two packages, including the “model” package that deals with File I/O and the “game” package that deals with the game itself, like the following picture:



3. For each source file, you should add some comments to explain your code.
4. Zip the source code(with the whole project in a folder) to a zip file, the file name is “ID_Assignment3” and uploads to iLMS. If you don’t send the whole project but just the java files, you will loose 10 points for the assignment.

Honor Code:

Any cheating will be handled seriously in compliance with the university rules. All assigned work is expected to be individual, except where explicitly written otherwise (e.g., term project). You are encouraged to discuss with your classmates; however, what you hand in should be your own work.