WXES1116 Programming I
Semester 1 2014/2015
Lab 10: Polymorphism

1. Create an Employee Salary System. The system will display the employee name, employee type and total salary per month. A permanent employee is divided into three categories. The salary for category A is 4000, category B is 3000 and category C is 2000. A contract staff has a fixed monthly income of 500 and a commission of 50% of the total sales. A temporary staff is given 15 per hour work. Create one abstract base class and three derived class for the system. Create a Tester class to test the program.

2. Create an interface MessageEncoder that has a method encode(plainText) where plainText is the message to be encoded. The method returns the cipher text. Create another method decode(ciphertext). The method returns the plain text. Create a class SubstitutionCipher that implements the interface MessageEncoder. The constructor has parameters inputFileName, outputFileNam and shift. Define the method encode that shifted the letter by shifting the positive value and the method decode that shift the letter by shifting the negative value. The class read the plainText from inputFile and output the cipherText to outputFile. Besides, the class also can read the cipher text from inputFile and output the plain text to outputFile. Create a Tester class to test the program.

3. Create another class ShuffleCipher that implements the interface MessageEncoder. The constructor has parameters inputFileName, outputFileNam and N. Define the method encode that Shuffle the text by N times. Each shuffle split the message in half and then combine characters from each half alternately. Example if plain text is abcde, the cipher text will become acbde. Define the method decode that reverse the process of encoding. Create a Tester class to test the program.

4. Create an interface Searchable that has a single method search(dateStarttime, dateEndTime). The method return true if the date and time is available. Otherwise return false. Create an Appointment class. The appointment class has the day, month, year, startTime in hour and endTime in hour. The class has the method to save the appointment in text file. Define a method to search whether the appointment is available given the search date and time before adding new appointment. Create a Tester class to test the program.