Lab Test 01

Question 1: Error Detection [50]

A **palindrome** is a word, phrase, number, or other sequence of characters which reads the same backward as forward, such as madam or racecar. Below is a program that is used to find if the input String is a palindrome or not. The program takes a String input from the user, then converts the input String into a character array and finally passes the character array to the function **istPalindrome** as an argument. The function **istPalindrome** receives the character array**,** then check if the input is a palindrome or not. If the input is a palindrome, the functions returns **true**, else **false**.

The program contains some errors. Your task is to find the error, correct it and make the give code an executable program.

Note: You are not required to add any extra lines of code.

```
import java.util.Scanner;

public class Palindrome {
	public static void main (String [] args) {
		System.out.print("Please Enter a string: ");
		Scanner keyboard = new Scanner(System.out);
		String input = keyboard.toString();
		char [] str = input.toCharArray();
		boolean status = istPalindrom(str);

		if(status) {
			System.out.println("The entered String is not a palindrome");
		} else {
			System.out.println("The entered String is a palindrome");
		}
	}
	public static String istPalindrom (char [] word) {
	   int i1 = 0;
	   int i2 = word.length - 1;
	   while (i2 > i1) {
	      if (word[i1] != word[i2]) {
	         return false;
	      }
	      ++i1;
	      ++i2;
	   }
	   return true;
	}
}
```

Test cases: `anna, computer, 5885, madam, racecar.`

Question 2: Programming [50]

Here is a program which reads the input from a file employee.txt and parses the file line-by-line which contains the information in the format **Employee_Name/Salary**. Finally, the program prints out the information of the employee (name and salary).

```
public class MainClass {

   public static void main(String[] args) throws Exception {
      // TODO Auto-generated method stub
      File address = new File ("/home/subik/Desktop/employee.txt");
      Scanner reader = new Scanner(address);
      Employee[] employeeList = new Employee[5];
      String[] info;
      int i=0;
      while(reader.hasNextLine()) {
         String line = reader.nextLine();
         info = line.split("/");
         employeeList[i] = new Employee(info[0], Integer.parseInt(info[1]));
         i++;
      }
      for(int j = 0; j<i; j++) {
         System.out.println(employeeList[j].toString());
      }
   }
}

public class Employee {

   private String name;
   private int salary;
   public Employee(String name, int salary) {
      this.name = name;
      this.salary = salary;
   }
   public String getName() {
      return name;
   }
   public void setName(String name) {
      this.name = name;
   }
   public int getSalary() {
      return salary;
   }
   public void setSalary(int salary) {
      this.salary = salary;
   }
   public String toString() {
      return "Employee [name=" + name + ", salary=" + salary + "]";
   }
}
```

Your task is to modify the above program to do the following:

- Add another field to the Employee object to contain experience that is of type Float.
- The program will then read through the file "employee.txt" and will parse the file line-by-line which will contains the information regarding the employee in the format of **Employee_Name/Salary/Experience**.
- Your program should then calculate the salary of the employees after the payroll bonus.
- Finally print out the details of the employee in the format:0
    - (Employee_Name) / (Salary) / (Years of experience) / (Salary after the payroll bonus)

BONUS: [Doesn't exceed the max points]: Parse through the given employeeList file to determine the amount of the employee that will be in the array prior to making the employee array.

NOTE: The salary of the employee given is the text file is what they get **per Paycheck** and the employee receives paycheck twice a month.

The grouping of salaries of the employees for Payroll bonus is as follows:

S1: $ 0 p.a. to $ 39,999 p.a.

S2: $ 40,000 p.a. to $ 69,999 p.a.

S3: $ 70,000 p.a. and above.

p.a.: Per Annum

The employees who fall under **S1** receives a bonus of **30%** of their annual gross income, **S2** receives **23%** and **S3** receives **17%**.

Formula for Bonus calculation:

$$\boldsymbol{Tolat\ bonus} = \frac{\boldsymbol{x} * \boldsymbol{y}}{\mathbf{100}}$$

$$\boldsymbol{where\ x \rightarrow annual\ gross\ income\ of\ the\ employee,}$$
$$\boldsymbol{y \rightarrow bonus\ percent\ for\ that\ salary\ group.}$$

Input for the file:

```
Slime/2000/1.5
Chocobo/1200/0.5
Murlocs/78000/2.3
Daedra/1666/1.2
Eggman/145999/5.8
```