**QUESTION 1**

1. You are working as the IT support person for an electrician. The electrician has asked you to create a program that generates a report to show the month’s customers, the total number of customers, and the amount owed across all customers. Each customer record contains a customer number, customer name, number of kilowatt hours used (up to, but not including 1000.0) and the amount owed.

The amount owed is based on the number of kilowatt hours used based on the following rate schedule:

|  |  |
| --- | --- |
| **Number of Kilowatts Used** | **Cost** |
| 0.0 -199.9 | $0.11 per kilowatt |
| 200.0+ | $0.08 per kilowatt |

Your program should gather the input data from the user. Then your program should calculate and print the each customer’s record and amount owed on a weekly payroll report. All input data and calculated amounts should appear on the report. The total amount owed and total number of customers should appear at the end of the report. When there are no customers, an error message should appear instead of a report. You may assume the customer number and customer name have already been validated and will never included an empty value.

To arrive at a solution you have decided to follow the problem solving process and have created an IPO chart as follows:

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
| Customer Record Details:                 customerNumber                 customerName                 kilowattsUsed | Print report heading Print report subheading Prompt for customerNumber Read customerNumber Prompt for customerName Read customerName Prompt for kilowattsUsed Read kilowattsUsed Validate kilowattsUsed Calculate amount owed Print customer record details Calculate total amount owed Print total number of customers  Print total amount owed  Determine whether to print report or error message | Report Heading Report Subheading Customer Record Details:                 customerNumber                 customerName                 kilowattsUsed                  amountOwed totalNumCustomers  totalOwed |

Then, you decide on what control structures might be needed to show how each of the processes will be performed to give you a high level of understanding of what you may want to put in your solution algorithm. You decide on the following:

* + A DOWHILE loop to control running through each customer since you do not know how many customers will be entered
  + A REPEAT UNTIL loop to control ensuring a valid kilowattsUsed value is entered to ensure the loop contents run at least once
  + An IF statement to determine if a valid kilowattsUsed value was entered
  + An IF statement to calculate the amount owed
  + An IF statement to determine if the report body should be printed or if an error message should be printed

Next, you create a solution algorithm, based on the IPO chart and high level control structures you identified

**Hints:**

* + Remember to use constants as appropriate, along with other good design practices you have learned in the course
  + Remember the use of try/catch to validate numeric input
  + Remember to use String.format to format a String for output

**Note:** For input/output, you must use the JOptionPane class.