```java
/**
 * @(#)BhaktaBonnerScarsella003PA2.java
 * @author Jay Bhakta, Braden Bonner, and Avery Scarsella
 * version 1.00 2023/10/19 4:00 PM
 *
 * PROGRAM PURPOSE: Create a program for calculating the cost of
 * intended stock purchases for multiple people who trade stocks.
 *
 * Collaboration Tools: GroupMe chat, Discord call, and Zoom video call.
 */

import java.util.Scanner;    //By Braden: Class to access keyboard entries.
import java.util.Calendar;   //By Avery: Class to access the system's date.

public class BhaktaBonnerScarsella003PA2
{
  /**
   * Investers can choose to proceed with the stock calculator
   * or not. If not, a thank you message is displayed; otherwise,
   * investors are asked to enter their name. Data pertaining to
   * the calculation is requested. The stock cost is calculated
   * and added to the respective totals. An online fee or commission
   * is calculated and added to their respective totals unless the
   * trade type is invalid. Investors can assess the costs for multiple
   * stocks. Multiple Investors can calculate stocks.
   * Once there are no more stock costs, the final output is
   * printed and a thank you message is displayed.
   */
  private static Scanner input = new Scanner(System.in);  //By Jay: REF variable or object to read input
from

  //the keyboard


  private static int shares = 0;  //By Avery: Initialize shares to the default value. Stores the number of
shares.


  private static double sharePrice = 0.0;  //By Avery: Initialize sharePrice to the default value. Stores
sharePrice.


  private static char anotherTrader = ' ';  //By Braden: Initialize anotherTrader to the default value.

  private static char anotherStock = ' ';  //By Braden: Initialize anotherStock to the default value.


  private static String stockCostRpt = String.format("%n%nSTOCK COST REPORT%n");  //By Jay: Initialize
stockCostRpt

  //with “%n%nSTOCK COST REPORT%n” using String.format()



  /**

   * Main method body containing logic for program and method calls

   * calculating the cost of intended stock purchases for multiple people who

   * trade stocks.

   */

  public static void main (String[] args)

  {

    String customerName = "";  //By Jay: Object for a customer's name.


    int noStocks = 0;  //By Avery: Variable to track the number of stocks in the calculation.


    double stockCost = 0.0, //By Avery: Initialize stockCost to the default value. Stores stock cost.
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```
      commission = 0.0,  //By Avery: Initialize commission to the default value. Stores commission.
      totalCost = 0.0,  //By Braden: Initialize totalCost to the default value. Stores totalCost.
      onlineFee = 0.0,   //By Braden:Initialize onlineFee to the default value. Stores onlineFee.
      totalStockCost = 0.0,  //By Jay: Initialize totalStockCost to the default value. Stores totalStockCost.
      totalCommissions = 0.0,  //By Jay: Initialize totalCommissions to the default value. Stores
totalCommissions.
      totalOnlineFees = 0.0;  //By Jay: Initialize totalOnlineFees to the default value. Stores totalOnlineFees.

    boolean alpha = false;  //By Braden: Initialize alpha to false.

    char onlineTrade = ' ';        //By Avery: Initialize onlineTrade to the default value. Stores onlineTrade.
    char brokerAssisted = ' ';      //By Jay: Initialize brokerAssisted to the default value. Stores
brokerAssisted.

    promptAnotherTrader();

    while (anotherTrader == 'Y')
    {
      noStocks = 0;
      totalCommissions = 0.0;
      totalOnlineFees = 0.0;
      totalStockCost = 0.0;
      totalCost = 0.0;

      String name = setCustomerName();

      do
      {
        alpha = isAlpha(name);
```

```
  if(alpha)
  {
    customerName = capitalize(name);
    alpha = true;
  }//By Jay: END if(alpha)
  else
  {
    System.out.printf("%n%s is not alphabetic.%n", name);
    name = setCustomerName();
    alpha = isAlpha(name);
    customerName = (alpha) ? capitalize(name) : "";
  }//By Jay: END else if(alpha)
} while (!alpha);
//By Jay: END do... while !alpha

promptAnotherStock();

while(Character.toUpperCase(anotherStock) == 'Y')
{
  ++noStocks;
  setShares();
  setSharePrice();

  input.nextLine();

  stockCost = calcStockCost();

  totalStockCost += stockCost;
```

```
totalCost += stockCost;


onlineTrade = promptOnlineTrade();


if(Character.toUpperCase(onlineTrade) == 'Y')
{
  onlineFee = 5.95;
  totalOnlineFees += onlineFee;
  totalCost += onlineFee;
}//By Avery: END if onlineTrade == 'Y'
else
{
  brokerAssisted = promptBrokerAssisted();


  if(Character.toUpperCase(brokerAssisted) == 'Y')
  {
    commission = calcCommission(stockCost);


    input.nextLine();


    totalCommissions += commission;
    totalCost += commission;
  }//By Jay: END else onlineTrade = 'Y'
  else
  {
    System.out.printf("%nINVALID TRADE TYPE!%n"); //By Jay: Displaying INVALID TRADE TYPE
    noStocks--;
    totalStockCost -= stockCost;
    totalCost -= stockCost;
```

```
        }//By Avery: END else brokerAssisted = 'Y'
      }//By Braden: END else onlineTrade = 'Y'
      repromptAnotherStock();
    }//By Jay: END while anotherStock == 'Y'
    if(noStocks > 0)
    {
      stockCostRpt += formatFinalOutput(customerName, totalStockCost, totalOnlineFees,
                                  totalCommissions, totalCost);

    }//By Braden: END if noStocks > 0

    repromptAnotherTrader();
  }//By Avery: END while anotherTrader == 'Y'
  if(noStocks > 0)
  {
    System.out.printf(stockCostRpt);  //By Jay: Displaying stockCostRpt
  }//By Avery: END noStocks > 0

  printThankYouMessage();

  System.exit(0);  //By Jay: Exits the program
}//By Avery: END main(args: String[]): static void

/**
 * Prints the company header and welcome message.
 * This primes the sentinel-loop control variable anotherTrader before entering the
 * outer while that controls each trader. Prompts and reads as uppercase.
 */
public static void promptAnotherTrader()
```

```
{
  System.out.printf("%nYEE-TRADE, INC.  The Wild West of Electronic Trading%n"
                    + "%nWelcome to Yee-Trade\'s stock cost calculator.%n");

  System.out.printf("%nReady to generate a stock cost report? Enter \'Y\' or \'N\' to exit:  ");
  anotherTrader = input.nextLine().toUpperCase().charAt(0);
}//By Jay: END promptAnotherTrader(): static void

/**
 * Prompts for the customer’s name and returns it from the keyboard.
 */
public static String setCustomerName()
{
  System.out.printf("%nWhat is your name?  ");
  return input.nextLine();
}//By Jay: END etCustomerName(): static String

/**
 * Tests whether a value is an alpha.
 */
public static final boolean isAlpha(String word)
{
  /* Strip non-alpha characters commonly found in names. */
  word = new String(word).replace(".", "");
  word = new String(word).replace(",", "");
  word = new String(word).replaceAll("\\s+", "");
  /* Test to see if the word is not empty AND if each letter
   * in a word is an alphabetic character.
   */
  return word != null && word.chars().allMatch(Character ::
                                             isLetter);
}//By Jay: END isAlpha(word: String): static final boolean



/**
 * Capitalizes the first letter in a name.
 */
public static final String capitalize(String str)
{
  String words[] = str.split("\\s");  //Each word in str is an
  //element in the array.
  String capitalized = "",   //Stores what came in the str
    //with the correct capitalization.
    firstWord = "",          //Stores 1st letter of the str.
    wordAfter = "";          //Stores the remaining letters in the str.

  for(String aWord : words)
  {
    firstWord = aWord.substring(0, 1);
    wordAfter = aWord.substring(1);
    capitalized += firstWord.toUpperCase() + wordAfter.toLowerCase()
      + " ";
  }//for each word from a String in the words array, capitalize the
  //first letter

  return capitalized.trim();  //Return the string with the first
  //letters all capitalized.
```

```
}//By Jay: END capitalize(str: String): static final String


/**
 * Prompts anotherStock and reads as uppercase.
 */
public static void promptAnotherStock()
{
  System.out.printf("%nEnter \'Y\' to begin stock cost calculations or \'N\' to exit:  ");
  anotherStock = input.nextLine().toUpperCase().charAt(0);
}//By Jay: END promptAnotherStock(): static void



/**
 * Prompts and reads input.hasNextInt() as the argument for call to
 * validateInteger() which is assigned to shares.
 */
public static void setShares()
{
  System.out.printf("%nHow many shares do you want to purchase?  ");
  shares = validateInteger(input.hasNextInt());
}//By Avery: END setShares(): static void


/**
 * Prompts and reads input.hasNextDouble() as the argument
 * for call to validateDouble() which is assigned to sharePrice.
 */
public static void setSharePrice()
{
  System.out.printf("%nWhat is the price per share?  ");
  sharePrice = validateDouble(input.hasNextDouble());
}//By Avery: END setSharePrice(): static void

/**
 * Calculates and returns the value of the stock cost.
 */
public static double calcStockCost()
{
  return shares * sharePrice;
}//By Avery: END calcStockCost(): static double

/**
 * Prompts for whether there is an online trade and
 * returns it uppercased from the keyboard.
 */
public static char promptOnlineTrade()
{
  System.out.printf("%nIs this an online trade? Enter \'Y\' or \'N\':  ");
  return input.nextLine().toUpperCase().charAt(0);
}//By Avery: END promptOnlineTrade(): static char

/**
 * Prompts for whether there is a broker assisted trade
 * and returns it uppercased from the keyboard.
 */
public static char promptBrokerAssisted()
{
  System.out.printf("%nIs this a broker assisted trade? Enter \'Y\' or \'N\':  ");
  return input.nextLine().toUpperCase().charAt(0);
```

```
}//By Avery: END promptBrokerAssisted(): static char


/**
 * Prompts and reads input.hasNextDouble() as the argument for call to
 * validateDouble() which is assigned to commissionRate.
 * Return the commission from the calculation of stockCost and commissionRate.
 */
public static double calcCommission(double stockCost)
{
  double commissionRate = 0.0;//NEW
  System.out.printf("%nEnter the commission rate as a decimal:  ");
  commissionRate = validateDouble(input.hasNextDouble());


  return stockCost * commissionRate;
}//By Jay: END calcCommission(stockCost: double): static double


/**
 * Prompts to calculate for another stock. Assign input uppercased to the correct field.
 */
public static void repromptAnotherStock()
{
  System.out.printf("%nEnter 'Y' to calculate the cost for another stock or 'N' to exit:  ");
  anotherStock = input.nextLine().toUpperCase().charAt(0);
}//By Braden: END repromptAnotherStock(): static void


/**
 * Prompts to continue with another trader. Assign input uppercased to the correct field.
 */
public static void repromptAnotherTrader()
```

```
 {
   System.out.printf("%nEnter \'Y\' to continue with another trader or \'N\' to exit:  ");
   anotherTrader = input.nextLine().toUpperCase().charAt(0);
 }//By Braden: END repromptAnotherTrader(): static void


 /**
  * Formats the final output using String.format() and returns the output per the final output
specifications.
  */
 public static String formatFinalOutput(String customerName, double totalStockCost, double
totalOnlineFees,
                                   double totalCommissions, double totalCost)
 {
   Calendar dateTime = Calendar.getInstance();  //Object to obtain the system's date.
   String date = String.format("%1$TB %1$td, %1$tY", dateTime);  //Object to format the system's date.


   return String.format("%nYEE-TRADE, INC."
                  + "%nTOTAL COST OF INTENDED STOCK PURCHASES "
                  + "%nFOR %s"
                  + "%nAS OF %s"
                  + "%n%nTotal Stock Cost:   $%,14.2f"
                  + "%nTotal Online Fees:   %14s"
                  + "%nTotal Commissions:   %14s"
                  + "%n%nTOTAL COST:        $%,14.2f%n", customerName,
                 date, totalStockCost, String.format("%,.2f", totalOnlineFees),
                 String.format("%,.2f", totalCommissions), totalCost);
 }//By Braden: END formatFinalOutput(customerName: String, totalStockCost, totalOnlineFees,
 //totalCommissions, totalCost: double): static String
```

```
/**
 * Prints the thank you message.
 */
public static void printThankYouMessage()
{
  System.out.printf("%nThank you for using Yee-Trade\'s stock cost calculator!%n");
}//By Braden: END printThankYouMessage(): static void

/**
 * While the parameter variable is not valid clear the buffer using next().
 * Read into the parameter variable using Scanner’s hasNextInt().
 * Return the integer from the keyboard.
 */
public static final int validateInteger(boolean validInteger)
{
  while(!validInteger)
  {
    input.next();
    System.out.printf("%nNot an integer! Enter a valid integer:  ");
    validInteger = input.hasNextInt();
  }//By Avery: END while !validInteger
  return input.nextInt();
}//By Braden: END validateInteger(validInteger: boolean): static final int

/**
 * While the parameter variable is not valid clear the buffer using next().
 * Read into the parameter variable using Scanner’s hasNextDouble().
 * Return the double from the keyboard.
 */
 public static final double validateDouble(boolean validDouble)

 {

   while(!validDouble)

   {

     input.next();

     System.out.printf("%nNot a floating-point! Enter a valid float:  ");

     validDouble = input.hasNextDouble();

   }//By Braden: END while !validDouble

   return input.nextDouble();

 }//By Braden: END validateDouble(validDouble: boolean): static final double


}//By Jay: END APPLICATION CLASS BhaktaBonnerScarsella003PA2


/*

 YEE-TRADE, INC.  The Wild West of Electronic Trading


 Welcome to Yee-Trade's stock cost calculator.


 Ready to generate a stock cost report? Enter 'Y' or 'N' to exit:  y


 What is your name?  haw#ye pierce


 haw#ye pierce is not alphabetic.


 What is your name?  hawkeye pierce


 Enter 'Y' to begin stock cost calculations or 'N' to exit:  y


 How many shares do you want to purchase?  !000
```

```
Not an integer! Enter a valid integer:  1000

What is the price per share?  15

Is this an online trade? Enter 'Y' or 'N':  y

Enter 'Y' to calculate the cost for another stock or 'N' to exit:  y

How many shares do you want to purchase?  500

What is the price per share?  52

Is this an online trade? Enter 'Y' or 'N':  n

Is this a broker assisted trade? Enter 'Y' or 'N':  y

Enter the commission rate as a decimal:  .02

Enter 'Y' to calculate the cost for another stock or 'N' to exit:  n

Enter 'Y' to continue with another trader or 'N' to exit:  y

What is your name?  Mannie j. quinn

Enter 'Y' to begin stock cost calculations or 'N' to exit:  y

How many shares do you want to purchase?  300
```

```
What is the price per share?  l0.50

Not a floating-point! Enter a valid float:  10.50

Is this an online trade? Enter 'Y' or 'N':  y

Enter 'Y' to calculate the cost for another stock or 'N' to exit:  n

Enter 'Y' to continue with another trader or 'N' to exit:  n


STOCK COST REPORT


YEE-TRADE, INC.
TOTAL COST OF INTENDED STOCK PURCHASES
FOR Hawkeye Pierce
AS OF OCTOBER 22, 2023

Total Stock Cost:   $     41,000.00
Total Online Fees:             5.95
Total Commissions:           520.00

TOTAL COST:         $     41,525.95

YEE-TRADE, INC.
TOTAL COST OF INTENDED STOCK PURCHASES
FOR Mannie J. Quinn
AS OF OCTOBER 22, 2023
```

```
Total Stock Cost:   $      3,150.00

Total Online Fees:            5.95

Total Commissions:            0.00


TOTAL COST:         $      3,155.95


Thank you for using Yee-Trade's stock cost calculator!


*/
```