**import** java.util.\*; //import this class for the use of Scanner

**public** **class** CalculateTemp {

/\*\* Patricia Organ - 01110489 - Assignment 4 Q1

\* An application that allows the user to enter a Fahrenheit

\* temperature and displays the Celsius equivalent or enter

\* a Celsius temperature and displays the Fahrenheit equivalent.

\*/

**public** **static** **void** main(String[] args) {

// main method will call the two other methods when required

//based on choice made in the input from user

//declare the variables required choosing double for the temperature input to allow for decimal options

**double** value, result;

**int** choice;

//create a scanner object

Scanner input = **new** Scanner(System.*in*);

**do**{ // using a do while loop so the choice to the user will reappear for more entries

//output text choices and read in the number chosen

System.*out*.print( "1. Fahrenheit to Celsius\n"

+"2. Celsius to Fahrenheit\n"

+"3. Exit\n"

+"Choice: ");

choice = input.nextInt();

//use a switch to traverse the choices made by user

**switch** (choice){

// if 1 or 2 is chosen ask user for temprature value and then

//call the appropriate method to calculate temperature and output result

//allowing user to enter in a double and casting to an int to round the result

//to appear as displayed in required output

**case** 1: {

System.*out*.print("Enter temperature: ");

value = input.nextDouble();

result = *Celsius*(value);

System.*out*.println((**int**)value + " Fahrenheit is " +(**int**)result + " Celsius\n");

**break**;

}

**case** 2:{

System.*out*.print("Enter temperature: ");

value = input.nextDouble();

result = *Fahrenheit*(value);

System.*out*.println((**int**)value + " Celsius is " +(**int**)result + " Fahrenheit\n");

**break**;

}

**case** 3:{

System.*out*.println("Program Terminated");

**break**;

}

**default**:{

//this is to cater for if the user entered any other value other then requested

//but allows the user to loop again

System.*out*.println("Invalid Entry\n");

**break**;

}

}//end switch

}**while**(choice != 3); // only if the user chooses 3 does the program exit as suggested in output text

input.close();// close the scanner object

}//end main

//method to calculate fahrenheit when given a celsius value passed as double

**public** **static** **double** Celsius(**double** fahrenheit){

//declare and initialize local variable whilst calculating to keep short and neat

**double** result = 5.0/9.0 \* (fahrenheit - 32);

**return** result;

}

//method to calculate celsius when given a fahrenheit value passed as double

**public** **static** **double** Fahrenheit(**double** celsius){

//declare and initialize local variable whilst calculating to keep short and neat

**double** result = 9.0/5.0 \* celsius + 32;

**return** result;

}

}//end Class CalculateTemp

**OUTPUT:**

1. Fahrenheit to Celsius

2. Celsius to Fahrenheit

3. Exit

Choice: 1

Enter temperature: 82

82 Fahrenheit is 27 Celsius

1. Fahrenheit to Celsius

2. Celsius to Fahrenheit

3. Exit

Choice: 2

Enter temperature: 42

42 Celsius is 107 Fahrenheit

1. Fahrenheit to Celsius

2. Celsius to Fahrenheit

3. Exit

Choice: 3

Program Terminated

**import** java.util.\*; //import this class for the use of Scanner

**public** **class** carparkCharges {

/\*\*Patricia Organ - 01110489 - Assignment 4 Q2

\* A car park charges a €5.00 minimum to park for up to three hours.

\* The car park charges an additional €1.50 per hour for each hour or

\* part thereof in excess of three hours. The maximum for any given

\* 24-hour period is €25.00. Assume that no car parks for longer than

\* 24 hours at a time. Write an application that calculates and displays

\* the parking charges for each customer who parked in the garage yesterday.

\* You should enter the hours parked for each customer. The program should

\* display the charges for the current customer and should calculate and display

\* the running total of yesterday’s receipts. It should use a method calculateCharges

\* to determine the charges for each customer.

\*/

**public** **static** **void** main(String[] args) {

// declare variables and initializing them

// making assumption that the user can enter a double for the hours eg 5.5 hours

**double** total = 0.0;

**double** charge = 0.0;

**double** hoursD = 0.0;

**int** hours = 0;

//create a scanner object

Scanner input = **new** Scanner(System.*in*);

// using a do while loop to run through the code first time and then to continue

// until the exit option -1 is chosen

**do**{

//ask user to enter number of hours and store them in hoursD variable

System.*out*.print("Enter number of hours (-1 to quit): ");

hoursD = input.nextDouble();

// only calculate and output result if the choice was not -1

**if** (hoursD!= -1){

// based on assumption that double is allowed need to calculate

// or round up the value as any part of an hour is considered a full hour of charge

// I use the math class here to round up and cast the result to int to store in hours variable

hours = (**int**)Math.*ceil*(hoursD);

//call the method to calculate the charge

charge = *CalculateCharge*(hours);

//as the loop iterates we add the total of the charges each time

total += charge;

//output, using the printf to format the display, to user the current charge and current running total

System.*out*.printf("Current charge: €%.2f, Total receipts: €%.2f\n", charge,total);

}**else**{

// this condition means you break out of the loop no output required

**break**;

}

}**while** (hoursD != -1);

input.close(); // close the scanner object

}// end main

**public** **static** **double** CalculateCharge(**int** hours){

//local variable called charge will have a default initial value of 5

//also take in a local variable called hours

**double** charge = 5.0;

**if** (hours <= 3){

**return** charge;

}**else**{

//if hours greater than 3 then calculate the charge after 3 hours but add it to the already initialized charge of 5

charge += ((hours - 3) \* 1.5);

// but as the charge has a max we need to make sure to return only 25 if it goes over that value

**if** (charge > 25){

**return** 25.0;

}**else**{

**return** charge;

}//end inner if else

}// end if else

}// end method CalculateCharge

}//end Class carparkCharges

**OUTPUT:**

Enter number of hours (-1 to quit): 12

Current charge: €18.50, Total receipts: €18.50

Enter number of hours (-1 to quit): 23

Current charge: €25.00, Total receipts: €43.50

Enter number of hours (-1 to quit): 15

Current charge: €23.00, Total receipts: €66.50

Enter number of hours (-1 to quit): 3

Current charge: €5.00, Total receipts: €71.50

Enter number of hours (-1 to quit): -1