```java
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
```

```java
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
```