**TEMPERATURE MEASUREMENT UNIT CONVERTER**

**Introduction**

Conversion of units is the conversion between different units of measurement for the same quantity, typically through multiplicative conversion factor. Units conversion was relevant because the conversion will adapt the measurement to a unit that was being used in a particular location to avoid confusion. People also used International System of Units (SI) when they were doing calculations. Temperature measurements also involved in the unit conversion. The units in temperature measurements are Kelvin(K), Celsius(oC) and Fahrenheit(oF). Figure 1.1 shows the formula used in unit conversion of temperature.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fahrenheit | Celsius | Kelvin |
| F | x |  |  |
| C |  | x |  |
| K |  |  | x |

Figure 1.1

**Scope**

System

The system can convert the measurements of temperature from Fahrenheit to Celsius and Kelvin, from Celsius to Fahrenheit and Kelvin and from Kelvin to Celsius and Fahrenheit. The system will display the initial number and unit along with final number and unit once the conversion is complete

User

First the users are required to choose the unit of the number that are to be converted. Then user choose the unit of the number to be converted to. Next, user will enter the number that will undergo the unit conversion. The system will display the initial number and unit along with final number and unit for comparison. Later, user can choose whether to repeat the conversion with another conversion.

Diagram

Description automatically generated

**Source Code**

App.java

|  |
| --- |
| import java.util.Scanner;  public class App{  public static void main(String[] args){  Scanner scan = new Scanner(System.in);  fahrenhite f = new fahrenhite();  celcius c=new celcius();  kelvin k=new kelvin();    System.out.println("Welcome");  boolean repeat=true;  while(repeat==true)  {  System.out.println("Choose conversion:");  String choose = scan.nextLine();  switch(choose)  {  case "f":  repeat=f.Fahrenhite();  break;  case "c":  repeat=c.Celcius();  break;  case "k":  repeat=k.Kelvin();  break;  default:  break;  }  }        scan.close();  }  } |

fahrenhite.java

|  |
| --- |
| import java.util.Scanner;  public class fahrenhite {  public boolean Fahrenhite()  {  double d1=0,d2=0;  Scanner s = new Scanner(System.in);//scanner  System.out.println("Convert to:");  String convertTo = s.nextLine();//scan convert choice  System.out.println("Input [double] to be converted:");  d1 = s.nextDouble();//double to be converted  String buff = s.nextLine();//read 'end of line' in d1 inputt  String conv="";//initialize strinig conv  String u="";//initialize string u  switch (convertTo){  case "c":  d2=toC(d1);  conv="Celcius";  u="C";  break;  case "k":  d2=toK(d1);  conv="Kelvin";  u="K";  break;  default:  break;  }  System.out.println("Fahrenhite to " + conv);  System.out.println(d1 + "C ="+ d2 + u);  System.out.println("Continue with other conversion? [y:YES//n:NO]");  String another = s.nextLine();  s.close();  switch(another)  {  case "y":  return true;  case "n":  return false;  default:  return false;  }  }  public double toC(double f)  {  double c;  c=(5/9)\*(f-32);  return c;  }  public double toK(double f)  {  double k;  k=(5/9)\*(f-32)+273;  return k;  }  } |

celsius.java

|  |
| --- |
| import java.util.Scanner;  public class celcius {    public boolean Celcius()  {  double d1=0,d2=0;  Scanner s = new Scanner(System.in);//scanner  System.out.println("Convert to:");  String convertTo = s.nextLine();//scan convert choice  System.out.println("Input [double] to be converted:");  d1 = s.nextDouble();//double to be converted  String buff = s.nextLine();//read 'end of line' in d1 inputt  String conv="";//initialize strinig conv  String u="";//initialize string u  switch (convertTo){  case "f":  d2=toF(d1);  conv="Fahrenhite";  u="F";  break;  case "k":  d2=toK(d1);  conv="Kelvin";  u="K";  break;  default:  break;  }  System.out.println("Celcius to " + conv);  System.out.println(d1 + "C ="+ d2 + u);  System.out.println("Continue with other conversion? [y:YES//n:NO]");  String another = s.nextLine();  s.close();  switch(another)  {  case "y":  return true;  case "n":  return false;  default:  return false;  }  }  public double toF(double c)  {  double f;  f=(9/5)\*c+32;  return f;  }  public double toK(double c)  {  double k;  k=c+273;  return k;  }  } |

kelvin.java

|  |
| --- |
| import java.util.Scanner;  public class kelvin {  public boolean Kelvin()  {  double d1=0,d2=0;  Scanner s = new Scanner(System.in);//scanner  System.out.println("Convert to:");  String convertTo = s.nextLine();//scan convert choice  System.out.println("Input [double] to be converted:");  d1 = s.nextDouble();//double to be converted  String buff = s.nextLine();//read 'end of line' in d1 inputt  String conv="";//initialize strinig conv  String u="";//initialize string u  switch (convertTo){  case "f":  d2=toF(d1);  conv="Fahrenhite";  u="F";  break;  case "k":  d2=toC(d1);  conv="Celcius";  u="C";  break;  default:  break;  }  System.out.println("Kelvin to " + conv);  System.out.println(d1 + "K = "+ d2 + u);  System.out.println("Continue with other conversion? [y:YES//n:NO]");  String another = s.nextLine();  s.close();  switch(another)  {  case "y":  return true;  case "n":  return false;  default:  return false;  }  }  public double toF(double k)  {  double f;  f=(9/5)\*(k-273)+32;  return f;  }  public double toC(double k)  {  double c;  c=k-273;  return c;  }  } |

**Reference**

<https://www.thoughtco.com/temperature-conversion-formulas-609324>