```java
/**@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
 * File    : TeachJava
 * Date    : Feb 1, 2012
 * @author   mr Hanley
 * Purpose : Demonstrate simple java class
 * Print: Calibri Plain 8, No Header, Line Numbers, Wrap Lines Left .9
 * All other margins .5
 * Page 1: 1-60, Page 2: 61-124, Page 3:125-188, Page 4:189-252, Page 5:253-282
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@*/
import java.util.Scanner;  //for reading input from the keyboard

public class TeachJava {

   //Global variable can be used througout
   static Scanner input = new Scanner(System.in);

   //*************************************************************************
   //First method - main method
   //*************************************************************************
   public static void main(String[] args) {
      greetings();
      System.out.println("");

      while (true) {
         System.out.println("What to learn, 1 = Variables, 2 = Methods, 3 = quit");
         int choice;
         choice = input.nextInt();  //scan the keyboard for input


         if (choice == 1) {
            integerTypes();         //calling methods
            floatingPointTypes();
            charAndString();
            booleanInfo();  //orginally called boolean but got an error
            userDefined();
         }
         if (choice == 2) {
            whatAreMethods();
            callingInSameClass();
            callingAStaticMethod();
         }
         if (choice == 3){
            goodbye();
         }
      }

   }
   //*************************************************************************
   //2nd Method - Displays information about the integer types in java
   //*************************************************************************

   public static void integerTypes() {
      System.out.println("---------------------------------");
      System.out.println("        Integer Types           ");
      System.out.println("---------------------------------");

      System.out.println("Integers can hold whole numbers, + and -, ");
      System.out.println("But NOT numbers with decimals");
      System.out.println("byte     -128..127");
      System.out.println("short    -32768..32767");
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61      System.out.println("int     -2,147,483,648..2,147,483,647");
62      System.out.println("long    -9,223,372,036,854,775,808..9,223,372,036,854,775,807");
63      System.out.println("Yes, that is -9 sextillion to + 9 sextillion");
64      //Example
65      long worldPopulation = 6840507000L;  //source www.google.com/publicdata
66      //-> as of 2010
67      //L specifies a long variable
68      System.out.println("++++++++++++++++++++++++++++++++++++++++");
69      System.out.println("World POP ->" + worldPopulation);
70      System.out.println("++++++++++++++++++++++++++++++++++++++++");
71
72    } //end of integerTypes
73    //*************************************************************************
74    //3rd Method - Displays information about the floating point types in java
75    //*************************************************************************
76
77    public static void floatingPointTypes() {
78      System.out.println("---------------------------------");
79      System.out.println("        Floating Point Types     ");
80      System.out.println("---------------------------------");
81
82      System.out.println("Floating point types can hold numbers that are");
83      System.out.println("Integers and numbers that have decimals!!!");
84      System.out.println("Here are the ranges");
85      System.out.println("float  1.40129846432481707e-45 to 3.40282346638528860e+38 ");
86      System.out.println("double 4.94065645841246544e-324 to 1.79769313486231570e+308");
87      //Examples
88      float costHamburger = .99f;
89      final double EARTH_GRAVITY = 9.81;  //gravity accel in m / second second
90      System.out.println("\n\n$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$");
91      System.out.println("Hamburger $ " + costHamburger);
92      System.out.println("$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$\n\n");
93      System.out.println("!@#!@#!@#!@#!@#!@#!@#!@#!@#!@#!@#");
94      System.out.println("Earth's gravitational acceleration " + EARTH_GRAVITY);
95      System.out.println("!@#!@#!@#!@#!@#!@#!@#!@#!@#!@#!@#");
96    }
97
98    //*************************************************************************
99    //4th Method - Displays information about the char and String types
100    //*************************************************************************
101    public static void charAndString() {
102      System.out.println("---------------------------------");
103      System.out.println("        char and String Types    ");
104      System.out.println("---------------------------------");
105
106      System.out.println("chars can hold numbers that are ASCII codes");
107      System.out.println("ASCII is a system of representing the characters");
108      System.out.println("That a computer can display!!!!");
109      System.out.println("Example, ASCII 65 = A, while ASCII 66 = B");
110      System.out.println("ASCII 44 = , while ASCII 47 = /");
111
112      System.out.println("\n\nStrings");
113      System.out.println("Strings are awesome, any word or phrase can be");
114      System.out.println("Stored in a String");
115      System.out.println("See Example below");
116
117      //Examples
118      char choice = 'y';  //Used for someone choosing y at a command
119      String fullName = "John Jacob JingleHeimerSchmidt";
120      //Find the spaces
121      int firstSp, secondSp;
122      firstSp = fullName.indexOf(" ");
123      secondSp = fullName.indexOf(" ", firstSp + 1);
124      String first = fullName.substring(0, firstSp);
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125     String middle = fullName.substring(firstSp + 1, secondSp);
126     String last = fullName.substring(secondSp + 1);
127
128     System.out.println("\t^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^");
129     System.out.println("\t FULL NAME = " + fullName);
130     System.out.println("\t^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^");
131     System.out.println("\t%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%");
132     System.out.println("\t FIRST NAME = " + first);
133     System.out.println("\t###################################");
134     System.out.println("\t MIDDLE NAME = " + middle);
135     System.out.print("\t");
136     for (int i = 0; i < 21; i++) {
137        System.out.print("\u2592");
138     }
139     System.out.println("");
140     System.out.println("\t LAST NAME = " + last);
141
142  }
143  //************************************************************************
144  //4th Method - Displays a greeting
145  //************************************************************************
146
147  public static void greetings() {
148     System.out.println("&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&");
149     System.out.println("Hi");
150     System.out.println("Its mr H");
151     System.out.println("This is java");
152     System.out.println("Originally called Oak");
153     System.out.println("Bye for now!!!!!");
154     System.out.println("&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&*&");
155
156  }
157
158  //************************************************************************
159  //5th Method - Displays information about the boolean type
160  //************************************************************************
161  public static void booleanInfo() {
162     System.out.println("---------------------------------");
163     System.out.println("        boolean Type    ");
164     System.out.println("---------------------------------");
165
166     System.out.println("Charles Boole was a brit who studied logic!");
167     System.out.println("As a legacy to him, the boolean type exists");
168     System.out.println("boolean values can be true or false");
169     System.out.println("Useful for flags for when things are done");
170
171     //Example
172     boolean done = false;
173     int x = 1;
174     while (!done) {
175        System.out.println("X = " + x);
176        x++;
177        if (x == 10) {
178           done = true;  //when you are ready to leave
179        }
180     }
181  }
182
183
184
185
186
187
188
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```java


//**********************************************************************
//6th Method - Displays information about user defined types
//**********************************************************************
public static void userDefined() {
  System.out.println("----------------------------------");
  System.out.println("        user defined types       ");
  System.out.println("----------------------------------");

  System.out.println("Sometimes you need your own types");
  System.out.println("public class Course{");
  System.out.println("  String name, instructor");
  System.out.println("  int roomNum, period");
  System.out.println("}");
}

//**********************************************************************
//7th Method - introduces methods
//**********************************************************************
public static void whatAreMethods() {
  drawBar();
  System.out.println("        WHAT ARE METHODS????     ");
  drawBar();
  System.out.println("Methods are little programs within programs");
  System.out.println("Each one usually accomplishes a task");


  System.out.println("##############################################");
  System.out.println("\nMethods are similar to the functions a ");
  System.out.println("calculator would perform.  Find the square root,");
  System.out.println("find the area of a circle, post a message on fb, etc\n");

  System.out.println("##############################################");
  System.out.println("Methods must be defined inside the class but");
  System.out.println("OUTSIDE of any other method.");
  System.out.println("To activate a method, use the name of the method");
  System.out.println("then the ()");
}
//**********************************************************************
//8th Method - drawBar, draws a cool bar using unicode characters
//**********************************************************************

public static void drawBar() {
  for (int i = 0; i < 21; i++) {
    System.out.print("\u2592");
  }
  System.out.println("");
}

//**********************************************************************
//9th Method - voidcallingInSameClass shows how to call methods in same class
//**********************************************************************
public static void callingInSameClass() {
  drawBar();
  System.out.println("  CALLING METHODS IN SAME CLASS     ");
  drawBar();

  System.out.println("To call a method in the same class, use the");
  System.out.println("name of the method followed by the ()");
  System.out.println("Example, the method drawBar can be called by");
  System.out.println("drawBar();");
  System.out.println("MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM");
  System.out.println("Transfer is controlled to the method and");
```

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253       System.out.println("then transferred back to the original method");
254    }
255
256    //*************************************************************************
257    //10th Method - callingAStaticMethod() from another class
258    //*************************************************************************
259    public static void callingAStaticMethod() {
260       drawBar();
261       System.out.println("CALLING STATIC METHODS IN DIFFERENT CLASS");
262       drawBar();
263       System.out.println("Calling static methods in other classes is simple");
264       System.out.println("To Print to the screen, use System.out.println()");
265       System.out.println("To raise a number to a power, use Math.pow(2,5);");
266       System.out.println("That will raise 2 to the 5th power");
267       System.out.println("You can also quit a java program with");
268       System.out.println("System.exit(0);");
269    }
270
271    //*************************************************************************
272    //11th Method - goodbye
273    //*************************************************************************
274    public static void goodbye() {
275       System.out.println("&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&");
276       System.out.println("   Gotta Go, Hope you learned something!");
277       System.out.println("&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&");
278
279       System.exit(0);
280
281    }
282 }
```