Java – Variables and Data Types

2.01 Variables.java

Declare and assign a value to each of Java's 8 primitive data types (use anything that is appropriate).Use printf to display the variables to the console. Formatting is up to you and you are **not required** to print the ranges. Again, declare 8 variables and output the values.

Sample Execution

```
//////////////////////////////////////////////////////////////////
* Bryce Hulett                                          01/06/22 *
*                                                                 *
*                          Integer types                          *
*                                                                 *
* 8 bit - byte = -128 to 127                                      *
* 16 bit - short = -32768 to 32767                                *
* 32 bit - int = -2147483648 to 2147483647                        *
* 64 bit - long = -9223372036854775808 to 9223372036854775807     *
*                                                                 *
*                           Real types                            *
*                                                                 *
* 32 bit - float = 1.401298e-45 to 3.402823e+38                   *
* 64 bit - double = 4.900000e-324 to 1.797693e+308                *
*                                                                 *
*                         Character type                          *
*                                                                 *
* 16 bit - char = 0 to 65535                                      *
*                                                                 *
*                          Boolean type                           *
*                                                                 *
* 8 bit(typically) - boolean = false to true                      *
*                                                                 *
*                     Variables of each type                      *
* Byte variable: 127                                              *
* Short variable: -30121                                          *
* Integer variable: 90877                                         *
* Long variable: 999999999999                                     *
* Float variable: 38.567799                                       *
* Double variable: 923.234                                        *
* Character variable: A                                           *
* Boolean variable: true                                          *
*                                                                 *
//////////////////////////////////////////////////////////////////
```

2.02 Population.java

Write a program that displays the US population for each of the next five years. Assume one birth every 7 seconds, one death every 13 seconds, one new immigrant every 45 seconds and that the current population is 329.5 million. Use doubles to avoid integer truncation.

System.out.printf("%,d seconds in a year", 60*60*365); // outs 1,314,000 seconds in a year

%d is for integer data types(decimal integer) and %f is for real (floating-point) numbers.

Sample Execution

```
Population after year 1: 332,280,097
Population after year 2: 335,060,193
Population after year 3: 337,840,290
Population after year 4: 340,620,387
Population after year 5: 343,400,484
```

2.03 CarPoolSavings.java

Write an application that calculates how much money you can save by carpooling. Consider total miles driven per day, cost per gallon of gas, average miles per gallon, vehicle depreciation, tolls, parking fees and how many riders. Use your own data.

Sample Execution

```
2022 Toyota Tundra
mpg: 20
Cost per gallon of gas: $3.30
Miles driven: 32
Depreciation per mile: $0.08
Tolls: $2.50
Number of passengers 4

Cost per day to drive: $5.88
Savings with 4 drivers per day: $4.41
Yearly savings: $1146.60
```