Number Conversion Documentation

### Full Name - Student ID

Along with the Vector and Matrix classes, your math library will contain a class that encapsulates an RGBA (red, green, blue, alpha) colour, stored as a 4-byte integer where each colour component is stored in a single byte.

Text

Description automatically generatedThe Colour class defines the following variables and functions:

# Questions

1. How many unique colour values can the *colour* variable contain?  
   4,294,967,296
2. What is the minimum value, maximum value, and range for each colour component?  
   Minimum: 0  
   Maximum: 255  
   Range: 256
3. Suppose the *red* component of the RGBA colour is to be stored in an 8-bit integer (char) variable and is set to the decimal: *char red = 94*. Write this value as a binary number:  
   0101 1110
4. The byte containing the red value (94) from question 3 is now to be stored in the RGBA colour value (in the left-most byte). Assuming all other colour bytes are initialized to 0, write the value of the 4-byte colour variable in binary:  
   0101 1110, 0000 0000, 0000 0000, 0000 0000
5. What is the decimal value of the binary number from question 4?  
   1,577,058,304
6. Write the bit shifting operation (in C#) that mill move all bits from the ‘R’ position in the colour variable to the ‘G’ position.  
   color >> 8
7. Our colour value now has the colour component set, and no red, blue, or alpha colour component values. What are the decimal and binary value of the *colour* variable now?  
   Decimal value: 6,160,384  
   Binary value: 0000 0000, 0101 1110, 0000 0000, 0000 0000
8. After you have created your Colour class and implemented all the functions listed in the class definition above, add at least 1 new unit test to the unit test program using your answers in the exercise to verify your code.