Bitmap Reader

Create a class that reads a bitmap file. You can easily read a bitmap by using the System.Drawing.Bitmap class, but this exercise asks you to create your own class to read a bitmap image binary file. To accomplish this, you must understand the bitmap file format, use a stream to read bytes from the bitmap file, and then use bitwise operators to convert bytes into the appropriate integer types.

The Bitmap Header Class

Your Bitmap class should define a nested class named BitmapFileHeader. It exposes the following public, read-only properties:

string Signature	// The signature found at the start of the .bmp file.
uint ImageSize	// The size of the pixel data (NOT the file size)
uint Width	// The width of the image
uint Height	// The height of the image
ushort BitsPerPixel	// The number of bits per pixel
HorizontalResolution	// The horizontal image resolution (pixels per meter)
VerticalResolution	// The vertical image resolution (pixels per meter)
NumberOfColors	// The number of colors in the image's palette
DataStart	// The byte offset in the file where the pixel data begins.

The Bitmap Class

Your Bitmap class has just 3 public, readonly properties:

FilePath	// the path to the bitmap file.
Header	// A BitmapFileHeader object, as described above
Data	// A two-dimensional array of values corresponding to horizontal and // vertical pixels of the image.

Since bitmap data can be huge, the Data property should be implemented solely through code, not using a field or automatic property.

It should be evident that the Bitmap class will need a constructor which takes a string argument. Use the provide "ball.bmp" to test your code.