BMP a 24 bit per pixel

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The BMP (Windows Bitmap) image format is an old Microsoft format for storing raster images. The format has been progressively extended over the years and allows to store different types of color representations of each pixel, from black and white, to gray levels, to palettes, to RGB. All multi-byte values are stored in Little Endian.

The format begins with a *Bitmap File Header*, composed as follows:

Offset	Size	Purpose
0	2 bytes	the header field used to identify the BMP file is `0x42` `0x4D` in hexadecimal, same as BM in ASCII.
2	4 bytes	the size of the BMP file in bytes
6	2 bytes	reserved; actual value depends on the application that creates the image
8	2 bytes	reserved; actual value depends on the application that creates the image
10	4 bytes	the offset, i.e. starting address, of the byte where the bitmap image data (pixel array) can be found.

This is then followed by a *Bitmap Info Header*, composed as follows:

Offset	Size	Windows BITMAPINFOHEADER
14	4	the size of this header (40 bytes)
18	4	the bitmap width in pixels (signed integer)
22	4	the bitmap height in pixels (signed integer)
26	2	the number of color planes (must be 1)
28	2	the number of bits per pixel, which is the color depth of the image. Typical values are 1, 4, 8, 16, 24 and 32. (bpp)
30	4	the compression method being used. See the next table for a list of possible values
34	4	the image size. This is the size of the raw bitmap data; a dummy 0 can be given for BI_RGB bitmaps.
38	4	the horizontal resolution of the image. (pixel per meter, signed integer)
42	4	the vertical resolution of the image. (pixel per meter, signed integer)
46	4	(`num_colors`) the number of colors in the color palette, or 0 to indicate 2^n, with *n* the numeber of bits per pixel
50	4	the number of important colors used, or 0 when every color is important; generally ignored

The possible compression method values are as follows:

Value	Identified by	Compression method	Comments
0	BI_RGB	none	Most common
1	BI_RLE8	RLE 8-bit/pixel	Can be used only with 8-bit/pixel bitmaps
2	BI_RLE4	RLE 4-bit/pixel	Can be used only with 4-bit/pixel bitmaps

In this exam, only the uncompressed (BI_RGB) mode will be used.

Then the *Color Table* follows, i.e. a list of *num_colors* quadruples of bytes B,G,R,0 for each color. The first corresponds to index 0, the second to index 1 and so on.

Then the pixels data of the image follow. These are stored on the file with *bpp* bits for each pixel.
Pay attention to the fact that:
1) each row of the image is padded with 0, so that its length is multiple of 32 bits;
2) the lines are stored from left to right and **from bottom to top**.

Write a C++ command line program that accepts the following options:

```
1. bmp2pam <input file .BMP> <output file .PAM>
```

The program must manage the command line, load a file in BMP format and save it in PAM format.

The program must support BMPs at 24 bits per pixel. These do not have a color table and directly contain BGR triples for each pixel (test with `rana24.bmp`).