

BMP File Format

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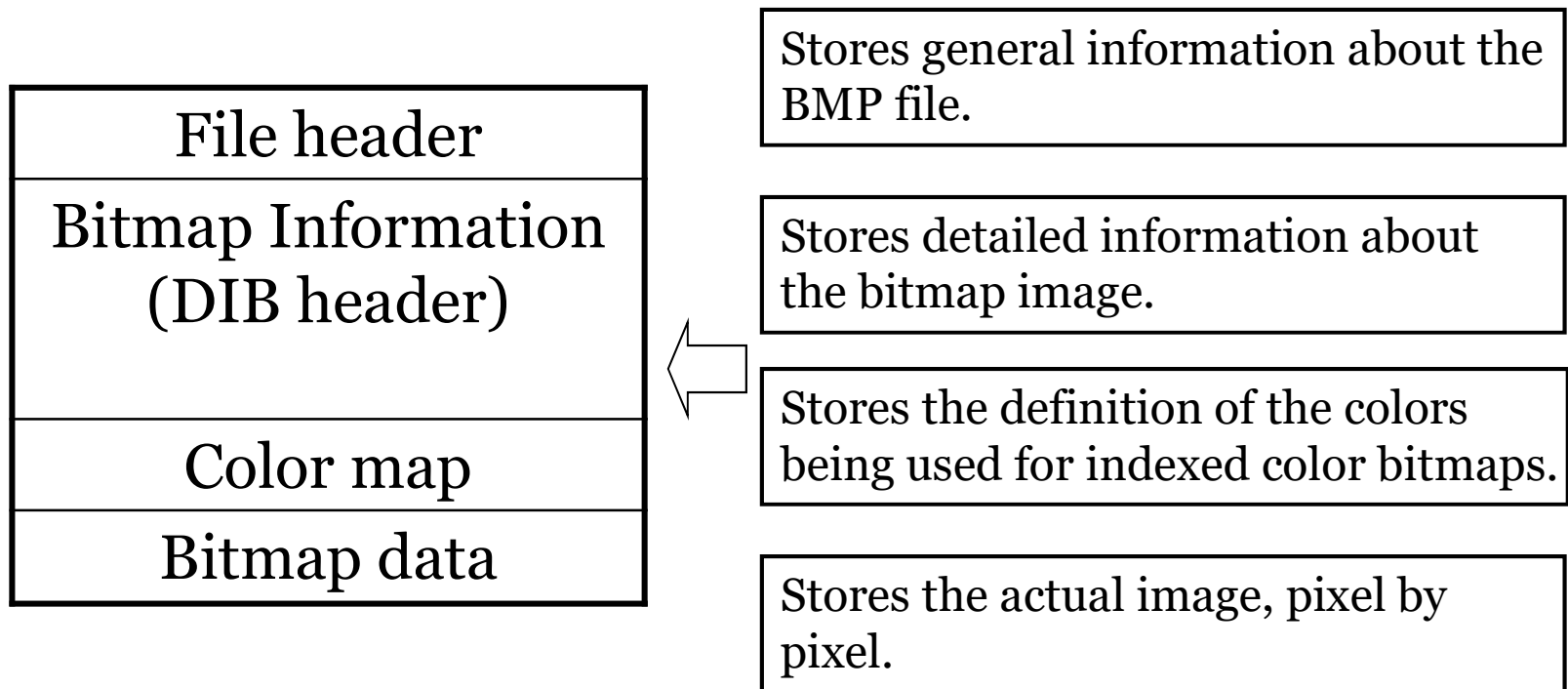
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BMP Structure



File header

Offset#	Size	Purpose
0000h	2 bytes	the magic number used to identify the BMP file: 0x42 0x4D (Hex code points for B and M). The following entries are possible: <ul style="list-style-type: none">▪ BM - Windows 3.1x, 95, NT, ... etc▪ BA - OS/2 Bitmap Array▪ CI - OS/2 Color Icon▪ CP - OS/2 Color Pointer▪ IC - OS/2 Icon▪ PT - OS/2 Pointer
0002h	4 bytes	the size of the BMP file in bytes
0006h	2 bytes	reserved; actual value depends on the application that creates the image
0008h	2 bytes	reserved; actual value depends on the application that creates the image
000Ah	4 bytes	the offset , i.e. starting address, of the byte where the bitmap data can be found.

File header

Bitmap Information (DIB header)

Color map

Bitmap data



File header-file information

```
typedef struct                /**** BMP file header structure ****/
{
    unsigned short bfType;    /* Magic number for file */
    unsigned int  bfSize;     /* Size of file */
    unsigned short bfReserved1; /* Reserved */
    unsigned short bfReserved2; /* ... */
    unsigned int  bfOffBits;  /* Offset to bitmap data */
} BITMAPFILEHEADER;
```



File header-file information

```
00000000h: 42 4D 36 04 01 00 00 00 00 00 36 04 00 00 28 00 ; BM6.....6...{.
00000010h: 00 00 00 01 00 00 00 01 00 00 01 00 08 00 00 00 ; .....
00000020h: 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 01 ; .....
00000030h: 00 00 00 00 00 00 00 00 00 00 01 01 01 00 02 02 ; .....
```

bfType=BM

00010436H
bfSize=66614

bfReserved1=0

bfReserved2=0

00000436H
bfOffBits=1078



Lena256.bmp
ACDSee BMP 圖像
維度: 256 x 256
大小: 65.0 KB
修改日期: 1998年7月15日, 上午 11:01

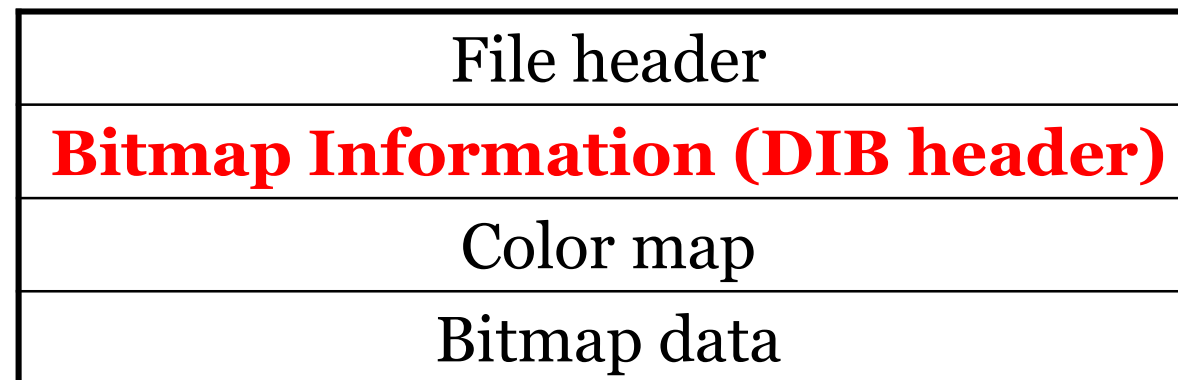


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File header-image information

Offset #	Size	Purpose
Eh	4	the size of this header (40 bytes)
12h	4	the bitmap width in pixels (signed integer).
16h	4	the bitmap height in pixels (signed integer).
1Ah	2	the number of color planes being used. Must be set to 1.
1Ch	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.
1Eh	4	the compression method being used. See the next table for a list of possible values.
22h	4	the image size. This is the size of the raw bitmap data (see below), and should not be confused with the file size.
26h	4	the horizontal resolution of the image. (pixel per meter, signed integer)
2Ah	4	the vertical resolution of the image. (pixel per meter, signed integer)
2Eh	4	the number of colors in the color palette, or 0 to default to 2^n .
32h	4	the number of important colors used, or 0 when every color is important; generally ignored.



File header-image information

```
typedef struct                /**** BMP file info structure ****/
{
    unsigned int  biSize;      /* Size of info header */
    int           biWidth;     /* Width of image */
    int           biHeight;    /* Height of image */
    unsigned short biPlanes;   /* Number of color planes */
    unsigned short biBitCount; /* Number of bits per pixel */
    unsigned int  biCompression; /* Type of compression to use */
    unsigned int  biSizeImage;  /* Size of image data */
    int           biXPelsPerMeter; /* X pixels per meter */
    int           biYPelsPerMeter; /* Y pixels per meter */
    unsigned int  biClrUsed;    /* Number of colors used */
    unsigned int  biClrImportant; /* Number of important colors */
} BITMAPINFOHEADER;
```



File header-image information

```
00000000h: 42 4D 36 04 01 00 00 00 00 00 36 04 00 00 28 00 ; BM6.....6... (. .. (.
00000010h: 00 00 00 01 00 00 00 01 00 00 01 00 08 00 00 00 ; .....
00000020h: 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 01 ; .....
00000030h: 00 00 00 00 00 00 00 00 00 00 01 01 01 00 02 02 ; .....

```

00000028H
biSize=40

00000100H
biWidth=256

00000100H
biHeight=256

0001H
biPlanes=1

0008H
biBitCount=8



File header-image information

```
00000000h: 42 4D 36 04 01 00 00 00 00 00 36 04 00 00 28 07 ; BM6.....6... (.
00000010h: 00 00 00 01 00 00 00 01 00 00 01 00 08 00 00 00 ; .....
00000020h: 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 01 ; .....
00000030h: 00 00 00 00 00 00 00 00 00 00 01 01 01 00 02 02 ; .....

```

00000000H
biCompression

00000000H
biClrImportant

00010000H
biSizeImage=65536

00000000H
biXPelsPerMeter=0

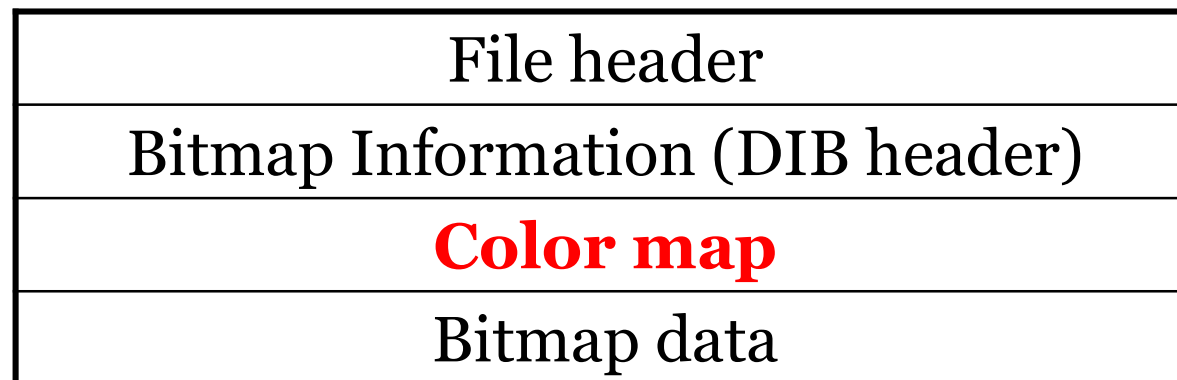
00000100H
biClrUsed=256

00000000H
biYPelsPerMeter=0



Color map

```
typedef struct                /***** Colormap entry structure *****/
{
    unsigned char rgbBlue;    /* Blue value */
    unsigned char rgbGreen;   /* Green value */
    unsigned char rgbRed;     /* Red value */
    unsigned char rgbReserved; /* Reserved */
} RGBQUAD;
```



Bitmap Data

File header
Bitmap Information (DIB header)
Color map
Bitmap data

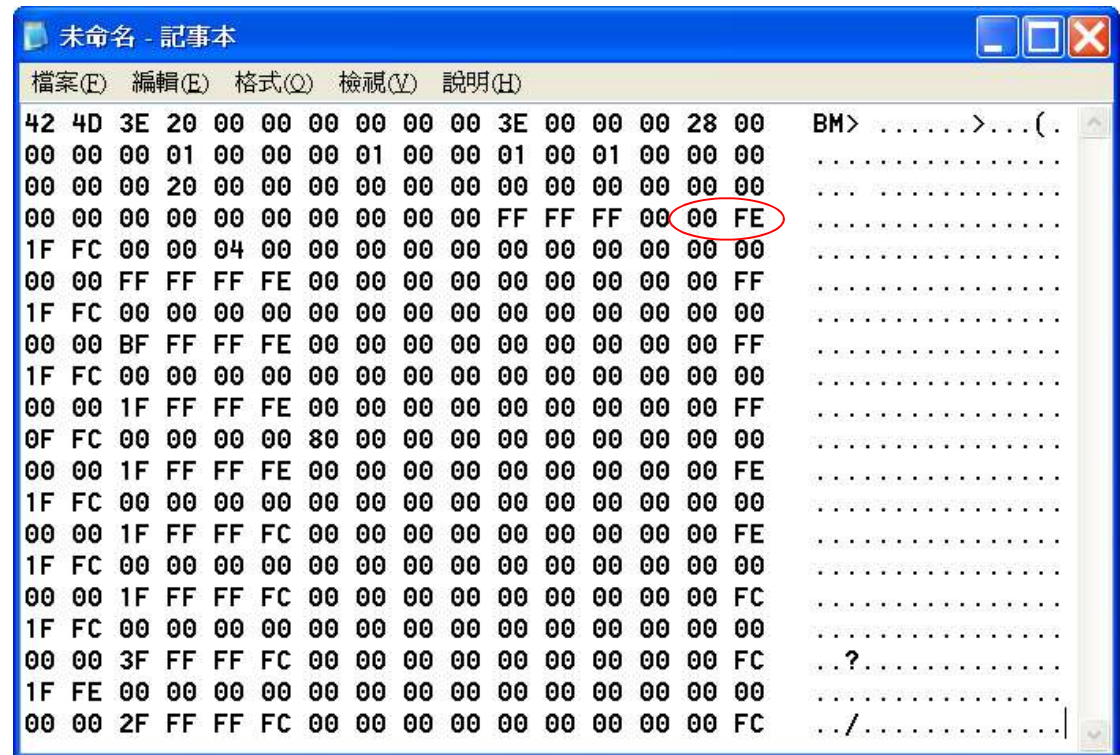


Summary

	Shift	Name	Size (bytes)	Content
Bitmap File Header	0000h	Identifier (ID)	2	'BM'【註1】
	0002h	File Size	4	整個點陣圖檔案的大小（單位：byte）
	0006h	Reserved	4	保留欄位
	000Ah	Bitmap Data Offset	4	點陣圖資料開始之前的偏移量（單位：byte）
Bitmap Info Header	000Eh	Bitmap Header Size	4	Bitmap Info Header 的長度【註2】
	0012h	Width	4	點陣圖的寬度，以像素（pixel）為單位
	0016h	Height	4	點陣圖的高度，以像素（pixel）為單位【註3】
	001Ah	Planes	2	點陣圖的位元圖層數【註4】
	001Ch	Bits Per Pixel	2	每個像素的位元數 1：單色點陣圖（使用 2 色調色盤） 4：4 位元點陣圖（使用 16 色調色盤） 8：8 位元點陣圖（使用 256 色調色盤） 16：16 位元高彩點陣圖（不一定使用調色盤） 24：24 位元全彩點陣圖（不使用調色盤） 32：32 位元全彩點陣圖（不一定使用調色盤） 【註5】
	001Eh	Compression	4	壓縮方式【註6】： 0：未壓縮 1：RLE 8-bit/pixel 2：RLE 4-bit/pixel 3：BitFields
	0022h	Bitmap Data Size	4	點陣圖資料的大小（單位：byte）【註7】。
	0026h	H-Resolution	4	水平解析度（單位：像素/公尺）【註8】
	002Ah	V-Resolution	4	垂直解析度（單位：像素/公尺）
	002Eh	Used Colors	4	點陣圖使用的調色盤顏色數【註9】
	0032h	Important Colors	4	重要的顏色數【註10】
Palette	0036h	Palette	N*4	調色盤資料。 每個索引值指定一種顏色：0x00RRGGBB 其中最高位元組保留為零
Bitmap Array	-	Bitmap Data	-	點陣圖資料【註11】



1-bit



00000000111111100001111111...



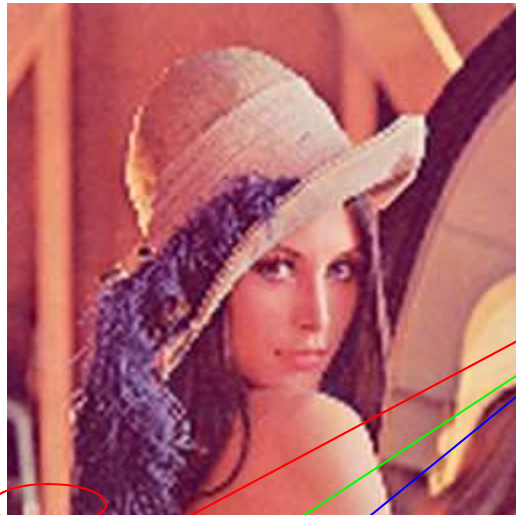


0 0 0 0 0 0 0 8 7 11 12 11 11 11 12 7 8...



22 30 25 27 31 23 27 72 153 188 190 190 189 186 172

24-bits



未命名 - 記事本

檔案(F)	編輯(E)	格式(O)	檢視(V)	說明(H)	
42	4D	36	00	03 00 00 00 00 00 00 00 00 36 00 00 00 28 00	BM6.....6...(. .
00	00	00	01	00 00 00 01 00 00 00 01 00 00 01 00 18 00 00 00
00	00	00	00	03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00	00	00	00	00 00 00 38 13 51 3A 17 55 3F 1F 5F 468.Q:..U?.._F
25	68	49	26	69 40 16 5B 3E 14 57 59 41 7B 8B 8F	%hI&i@.[>..WYA{..
BC	AC	C0	E4	B2 C5 E7 AE BD DD AC BC DA A6 BC D8
9E	BA	D6	8D	A5 CF 71 7C C0 5D 5D BA 5E 63 CA 6Aq .]]..^c.j
7C	E1	6E	8A	E7 6D 8D E3 74 94 E3 7E 9F E9 83 A3	.n..m..t..~....
EA	82	A1	E7	7F A1 E9 7C A1 EE 7F A4 F4 84 A1 F0
7F	89	04	69	57 9E 52 2C 6E 45 1E 5B 41 1F 5C 3C	...iW.R,nE.[A.\<
15	55	3A	0B	4F 43 17 5A 50 2D 6C 58 37 73 59 33	.U:..OC.ZP-1X7sY3
70	59	2E	6D	59 2E 70 58 2D 70 54 2A 6E 50 27 6B	pY.mY.pX-pT*xnP'k
4C	23	69	4C	22 68 50 25 6A 56 29 6B 56 24 67 60	L#iL''hP'jU)kU\$g
2D	6B	84	56	84 A0 7B 9B 89 6B 90 52 33 6C 30 0A	-k.U..{...k.R310.
51	35	09	4F	57 29 68 7B 52 8B 7F 58 8F 5C 32 6B	Q5.0W)h{R..X.\2k
3B	0B	4B	3C	08 4F 60 2A 6F 93 5D 94 AC 77 A2 88	;.K<..0'xo..].w..
54	85	50	1F	5D 47 1F 5B 63 42 75 6C 48 7B 5A 2C	T.P.]G.[cBu1H{Z,
67	47	13	56	3F 0E 54 47 1C 60 5C 32 75 64 3A 7B	gG.U?.TG..\'2ud: {

81	85	95	104	105	91	87	123	188	228	231	221	218	216	214	207	192
19	23	31	37	38	22	20	65	143	192	197	189	188	188	186	165	124
56	58	63	70	73	64	62	89	139	172	178	174	172	166	158	141	113