Load metadata from image files (.bmp & .png)

We want to create a console application that takes a (path) filename as an argument. The program will then, by loading binary data, determine if the file you specified is a .bmp file or a .png file, and specify the height and width of the image in pixels. If the file you specified is neither a .bmp nor .png, so we write it.

Example output:

"File not found."

"This is not a valid .bmp or .png file!"

“This is a .png image. Resolution: 800x600 pixels. ”

PNG (Portable Network Graphics)

If you google and read the specification for the .png format, you will find that these files always start with an 8 byte signature, which is always the same and therefore can be used to identify png files.

The signature is then followed by an arbitrary number of "chunks" depending on the file content. One can find in the spec that each such chunk has a certain structure, among otherwise you can read out how long a chunk is, and thus find how many bytes forward you need to read in the file to find the next chunk (they are one after the other, but can be different lengths, and have different content).

The actual image data in a png file is compressed and can be divided over several chunks. Reading it out requires implementing complicated algorithms and is far beyond the level of ambition of this task. What we should do instead is to try to find and read out so-called meta-data (data about the data).

The task will be to try to read in the specification and try to find in which chunk information about the width and height of the image is located. It's a lot easier task, and that information along with the ID is all you need to solve the assignment.

The program should also be able to identify and print the resolution of .bmp files. See

if you can find the specification for the format using google.

.bmp files are simpler in structure and do not use chunks like png does, but

has a "header" instead. A header is a (according to spec.) Given number of bytes most often

tells you where in the file you will find the other parts you are looking for. Unlike

chunks, you can jump directly to what you are looking for instead of walking

through each chunk to find the next. Both headers and chunks occur in

different form also in many other file formats.

Try to read in the specification for the .bmp format how to identify that

it is a .bmp file, as well as where to find metadata about width and height.

When it has identified a .png, (in addition to printing resolution) also list all the chunks (type and size) in the order they appears in the file.

Tips & Help

Create images in mspaint in different sizes and save as .bmp or .png to have

files to test.

You can also download .bmp or .png from the web. To verify the resolution,

right-click on the file in windows, select properties and the tab "Information".

Use visual studios' built-in hexeditor to view binaries. There you can see

the contents of the files byte by byte and compare with the specification.

Offset usually refers to the position in number of bytes calculated from the beginning of the file (when you

reads specifications).

It is often mentioned in the spec in which order the byte is to be read to load, for example, a 32-bit

integer. We then talk about MSB (Most Significant Byte) and LSB (Least Significant

Change). MSB is thus the byte (of four) in a 32-bit number that is worth the most. LSB is

the change that is worth the least.

Use the FileStream class to load binary data from a file.