Colour Palette Extractor Programme

This programme was created to help artists extract colour palettes from images of reference art. I designed it while using Libresprite, an open source fork of Asperite, to create pixel art, and finding the in-built “create colour palette from image” feature often crashed the programme and generally did not work as expected. **Our programme is intended for use on reference images with limited colour palettes such as 16, 32, 64 or 128 colours,** where the amount of colours present may be too many to pick out individually in a reasonably short amount of time. **It is not advised for images of over 128 colours,** and the extracted colour palette image will not display more colours than this.

1. Technical Description

Our programme works by reading from the filepath of a user-input image, converting it to a BufferedImage, looping through every pixel of the image and storing the colour of each pixel as a hex-value string, populating an ArrayList with these values, creating a HashMap of these values mapped to how many times they occur in the image, and creating a TreeSet of these values for quick searching and comparison. We compare every pixel of our image against every other pixel, and by the user-specified “threshold” variable, we eliminate colours that are deemed too close to one another. This eliminates problems arising from reference images being compressed or anti-aliased, where storing every single unique colour could give rise to colour palettes containing hundreds or thousands of extracted unique colours, where really the image may have been initially created from a palette of only 16 colours or even fewer. After this process, the extracted colour palette is drawn to a .png image for the user, and also written to a .txt file, in case the user would rather copy and paste the hex values than using a colour picker from an image.

2. How to use the programme

Step 1: Download the .jar file from this repository.
Step 2: Inside a command prompt, (cmd on windows), navigate to the directory where you saved the .jar file, and enter the following command: **java -jar PaletteExtractor.jar**

(E.G., if we download the .jar file to folder called “Jar” on our desktop, we open the command prompt (by typing cmd in windows start Menu) and entering the following commands in the following order:

```
cd Desktop
cd Jar
java -jar PaletteExtractor.jar
```

Step 3: Follow the prompts displayed in the console to use the programme. The extracted colour palette will be saved to the same folder in which you downloaded the .jar file.

3. ***Example of Programme Functionality***

We demonstrate the programme by extracting two colour palettes from the following image:

When the user enters threshold values of 75 and 10, our programme generates the following palettes respectively, in descending order of how frequently the colours occur in each palette:

High Threshold Palette:

e7cf73
7b5931
ffffb5
000000
422808
9c9a73
103884
e7b608
ad69ad
6167b1
63d700
581651
be802b
a5ff42
458917
c3c5d6

Low Threshold Palette:

e7cf73	e1c670	a58e5a	635542	d59e56	918964
d6b66b	ebdc77	eab053	a58ed6	b68253	100904
efe77b	735942	94825a	08284a	b97e45	482812
7b5931	9c9a73	c39354	4a3c31	5b3411	a2696d
ad7952	293839	b2733f	d0934c	312c29	d8ae71
ad6939	103884	9c9a63	97582c	966235	23438e
f7be5a	7b386b	d1ac65	4a7121	ffefbd	6167b1
de9e4a	8a623b	bc864c	a5a684	7a4a28	a59665
ffcf63	9e7048	a16032	420039	331f11	965b6d
ffffb5	966a43	1069b5	5a654a	100018	7e794a
844921	212431	905228	71522f	313873	4f301a
8c8252	393021	292018	64482b	183839	cbb76d
847552	5a4931	ffdf73	dec57a	e7b65e	3c519c
000000	7b9663	ad69ad	e9d78d	b18449	92753e
8c6942	9c8e63	faf8a4	663a16	634f37	8c7521
94794a	425d29	f6ed9c	502f0d	805b3c	cda070
9c824a	395129	f4ee8c	7b6144	fac75f	beac6a
422808	181c18	ca9f5c	6b9a39	8d7248	a5a6a5
948e5a	e7b608	ecd981	713f1a	1b0f07	7975be
291800	e5a84f	4a8618	081821	c29d54	b2a168
735139	312818	f2e591	e1aa58	a97b40	304334
5a4129	a58652	7b6552	392205	7b519c	d7c270