# README

**File**: hw5_axm180023.py

**Arguments**: <file name> <k value (optional)>

File name must be an image file and be in the same directory as the python file.

If no K value is given then it will do K means algorithm with the following K values in a single run: 2, 5, 10, 15, 20.

**Output**: Compressed Image File

The image will be saved in the same directory as the python program.

If the output is more than one image, then all images will be saved to the same directory.

**How to Run:**

On the terminal, change directory until you are in the appropriate directory with the python file. Then run:

python hw5_axm180023.py <file name> <k value (optional)>

Examples:

python hw5_axm180023.py Koala.jpg 2

python hw5_axm180023.py Penguins.jpg 15

python hw5_axm180023.py Koala.jpg

python hw5_axm180023.py Penguins.jpg

**Note**:

Execution time may vary between K value and image size, however, note that it will take a LONG-time running K means algorithm.

For example, if no K value is specified then the time needed to complete the K-means algorithm for K = 2, 5, 15, and 20 will take over an hour.

I timed the execution time individually for different K values with the Koala image. My results are shown below:

K = 20 -- 22 minutes

K = 10 -- 9 minutes

K = 5  --- 5 minutes

K = 2  --- 2 minutes

Finally, the output produces an overflow warning, however, this isn’t an issue as numpy takes care of this for us.