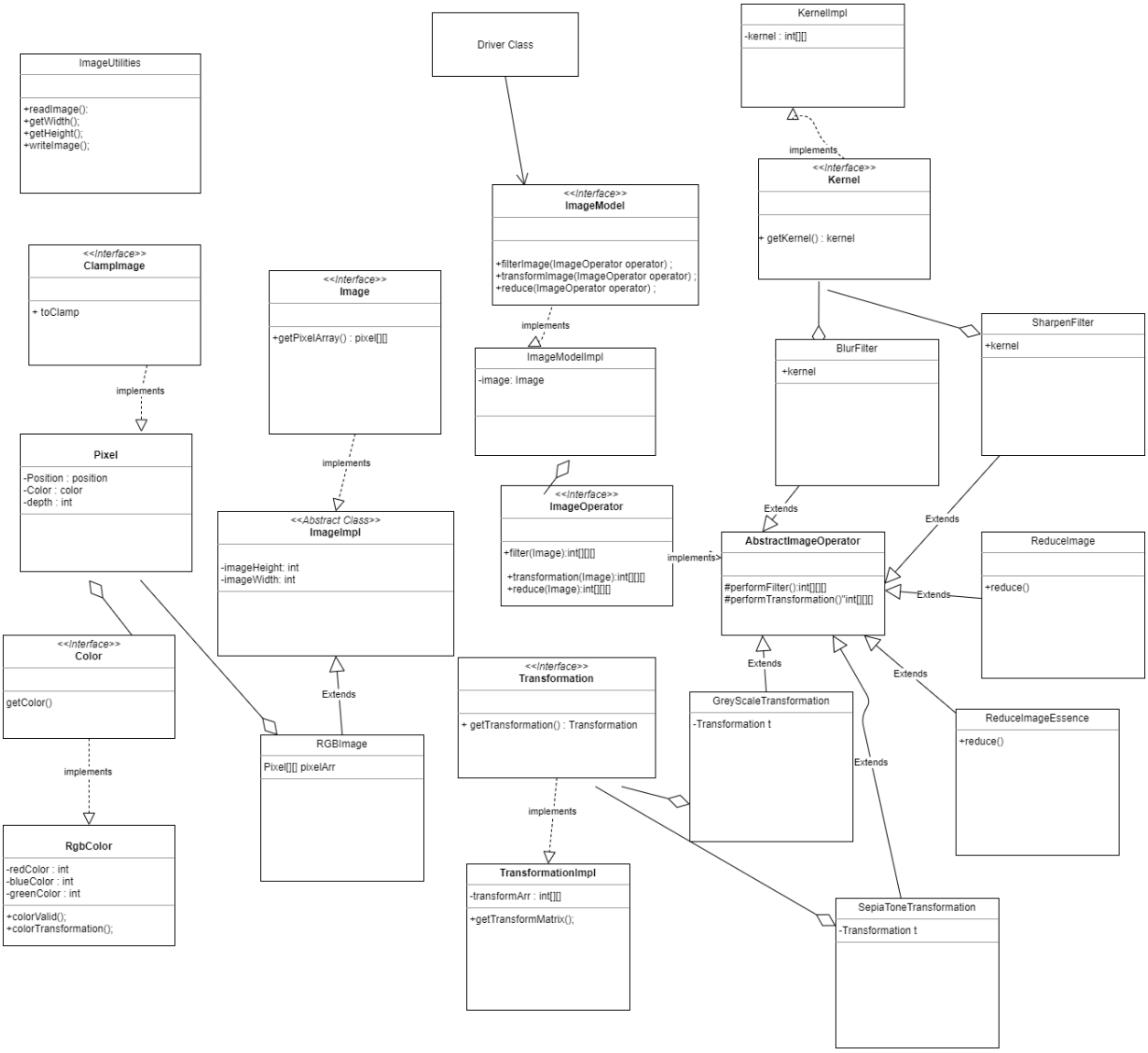
ImageUtilities
+readImage():
+getWidth();
+getHeight();
+writeImage();
Driver Class
KernelImpl
-kernel : int[][]
implements
<<Interface>>
Kernel
+ getKernel() : kernel
<<Interface>>
ImageModel
+filterImage(ImageOperator operator) ;
+transformImage(ImageOperator operator) ;
+reduce(ImageOperator operator) ;
<<Interface>>
ClampImage
+ toClamp
<<Interface>>
Image
+getPixelArray() : pixel[][]
implements
ImageModelImpl
-image: Image
SharpenFilter
+kernel
BlurFilter
+kernel
implements
Pixel
-Position : position
-Color : color
-depth : int
implements
<<Abstract Class>>
ImageImpl
-imageHeight: int
-imageWidth: int
<<Interface>>
ImageOperator
+filter(Image):int[][][]
+transformation(Image):int[][][]
+reduce(Image):int[][][]
implements
Extends
Extends
AbstractImageOperator
#performFilter():int[][][]
#performTransformation()"int[][][]
ReduceImage
+reduce()
Extends
<<Interface>>
Color
getColor()
Extends
RGBImage
Pixel[][] pixelArr
<<Interface>>
Transformation
+ getTransformation() : Transformation
Extends
GreyScaleTransformation
-Transformation t
Extends
Extends
ReduceImageEssence
+reduce()
implements
implements
RgbColor
-redColor : int
-blueColor : int
-greenColor : int
+colorValid();
+colorTransformation();
TransformationImpl
-transformArr : int[][]
+getTransformMatrix();
SepiaToneTransformation
-Transformation t

Assumption :

1) R,G, B values in RGB will be integer ranging between 0 to 255 and they cannot be decimal.

2) Filter will have a kernel of 3x3 or 5x5 or 1x1 size.

3) Filtering in general is applied on a pixel and a channel.

4) Pixel is a combination of 3 colors which red, green, blue.

5) RgbImage has array of Pixel for performing computation on images .

6) Two types of filter blur and sharpen differ's only in their kernel values.

7) Two types of transformation grayscale and sepia differ's only in their transformation matrix values.

8) Reduction parameter (8, 16 ..etc) will be provided by the user.

9) Transformation matrix can differ so have used as the input from the user.

10) Transformation matrix height and width will be three as we are dealing with the RBG images.

11) Image width and height cannot be less than transformation matrix width and height.

12) Kernel dimension is of type 3x3 and 5x5 and width of kernel should be equal to height of kernel.

Max kernel dimension (height , weight) can be 5. And dimension should be (height , weight) odd number.

13) Image width and height cannot be less than Kernel width and height.

14) Provide the valid file name in format like myimage.jpg to driver.

TestCases Scenarios :

1) Test whether image is getting converted from input image to 3D array i.e combination of channels
2) Test whether image is getting converted from 3D array to output image.
3) Test whether pixels are getting clamped.
4) Test whether image is getting blurred after applying blur filter.
5) Test whether image is getting sharpen after applying sharpen filter.
6) Test whether image is converted to greyscale after applying greyscale transformation.
7) Test whether image is converted to sepia after applying sepia transformation.
8) Test whether image is getting dithered after applying reduction.