

Design/Model Changes.

Following are the changes that are made:

- Concept of Inheritance is used properly; all the operations (e.g. Filtering, Color Transformation, Color Reduce, Image Chunking and Image Pattern Generation) drive from common abstract `AlmageOperation`.
- Create enums for:
 - Filtering type i.e. `EFilterType` (Blur Filter, Sharp Filter), in future if any new filter is introduced we can easily update our enum.
 - Color Transformation i.e. `EColorTransformation` (Grey Scale, Sepia Tone)
 - Chunking Image i.e. `EChunkingStrategy` (Mosaic, Pixelation)
 - Pattern Generation i.e. `EPatternGenStrategy` (Closest Color, Text Pattern)
- Created a separate interface for the functionality of controller i.e. `IEnhancedImageBuilder`.
- `EnhancedImageBuilder` drives from `IEnhancedImageBuilder`.
- `MockEnhancedImageBuilder` drives from `IEnhancedImageBuilder`.
- `EnhancedImageController` composed from `IEnhancedImageBuilder`.
- Make the entire field private final.
- Created a new Abstract class `ACommand`; all the commands e.g:
 - `BlurCommand`
 - `PatternCommand`
 - `PixelateCommand`
 - `MosaicCommand`
 - `SaveCommand`
 - `LoadCommand`
 - `SharpCommand`
 - `DitherCommand`
 - `GreyCommand`
 - `SepiaCommand`

extends the common abstract ACommand.

- Use open close principle to avoid any modification in future and encourage extension.

Testing Plan

Mock model MockEnhancedImageBuilder drives from the interface i.e IEnhancedImageBuilder

The batch controller i.e. EnhancedImageController composed from IEnhancedImageBuilder Interface that performs image operations:

- 1- Image Filter
- 2- Color Transformation
- 3- Color Density
- 4- Image Mosaic
- 5- Image Pixelation
- 6- Pattern Generation

Following are the testing plan of the batch Controller

Filters are applied on two images:

Image 1: Lenna.png

Image 2: birds.png

Example Run:

```
upload Lenna.png
blur
save Lenna_blur.png
q
```

Note: q is 'Quit'

| Input | Operations | Output | Quit |
|------------------|------------------|---------------------------------|------|
| upload Lenna.png | blur | save Lenna_blur.png | q |
| upload Lenna.png | sharp | save Lenna_sharp.png | q |
| upload Lenna.png | sepia | save Lenna_sepia.png | q |
| upload Lenna.png | dither 2 essence | save Lenna_dither_2_essence.png | q |
| upload Lenna.png | mosaic 6600 | save Lenna_mosaic_6600.png | q |
| upload birds.png | sepia | save birds__sepia_sharp.png | q |

| | | | |
|------------------|------------------|---------------------------------|---|
| | sharp | | |
| upload birds.png | Mosaic 570 | save birds_mosaic_570.png | q |
| upload birds.png | Mosaic 1650 | save birds_mosaic_1650.png | q |
| upload birds.png | dither 2 essence | save birds_dither_2_essence.png | q |
| upload birds.png | blur | save birds_blur.png | q |

