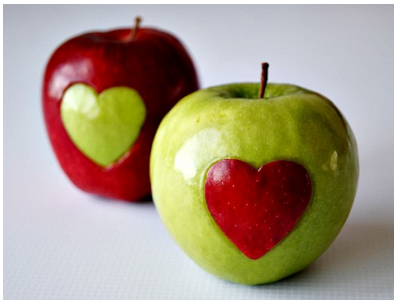
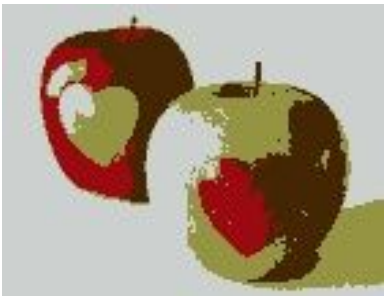
Assignment - 3 Report

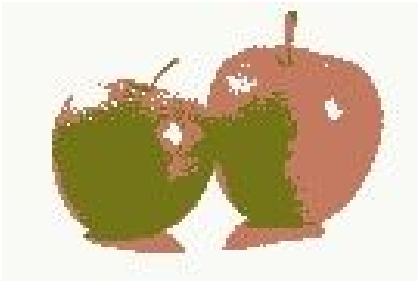
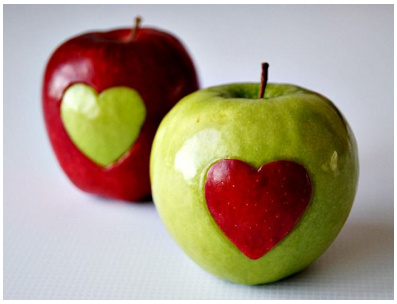
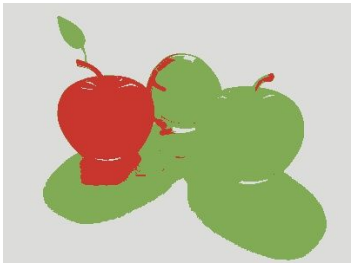
Submitted By: Kshitij Srivastava (MT18099)

Question 1: Segmentation using K-means clustering

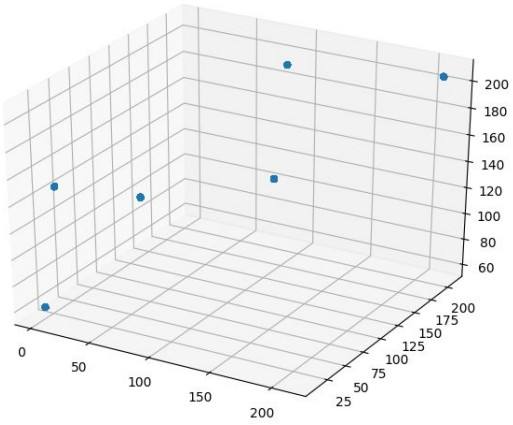
Part A: Using 3-dimensional color space

Original	K = 2
 Original	 K = 4
Original	K = 7
Original	K = 6

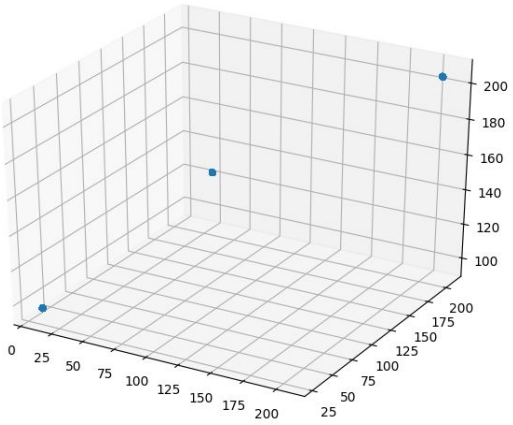
Part B: Using 5-dimensional space

Original	 K = 4
 Original	K = 10
Original	K = 10
Original	 K = 6

Scatter Plots:



3-dimensional (k = 10)



5-dimensional (k = 10)

Observations:

- From the cluster plots, we can see that using 3-dimensional color space gives better results than using 5-dimensional space.
- This is probably because of the fact that in 5-dimensional space, the spatial property of a pixel also plays a major role in deciding the centroid of the cluster and hence, pixels of different colors are also clustered together.
- The scatter plot provides more evidence to the above statement, we can see that there are clearly more cluster points in the 3-dimensional color space in comparison to the 5-dimensional color space.

Question 2: Mean-shift clustering

 Original	 quantile=.04, n_samples=1000
 Original	 quantile=.04, n_samples=1000
 Original	 quantile=.04, n_samples=1000

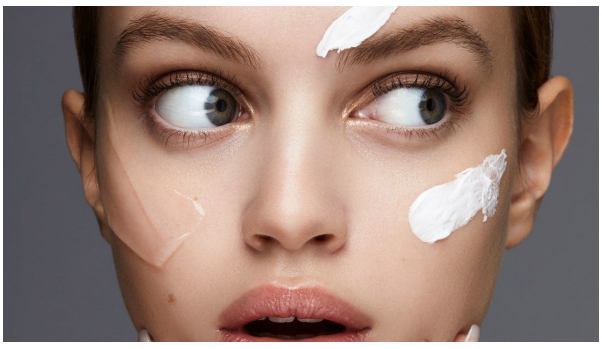
Choice of parameters:

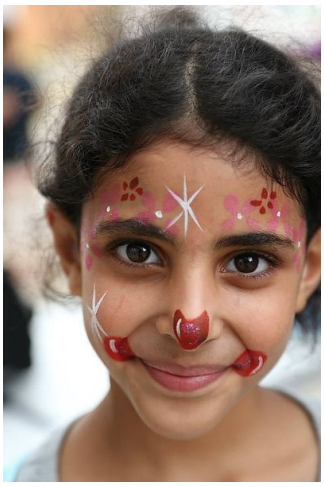
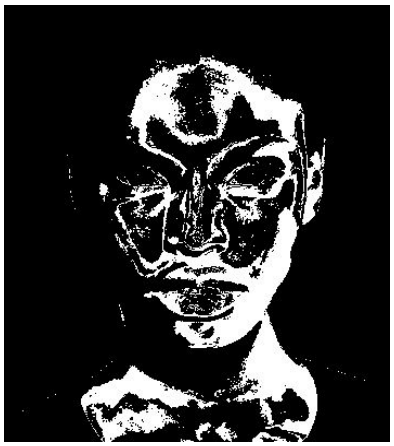
- I chose the above parameters based on trial and error.
- However, I did observe that the small the value of quantile was, the greater was the number of clusters formed.
- And the lower the value of n_samples, the lower the number of clusters formed.

Question 3:

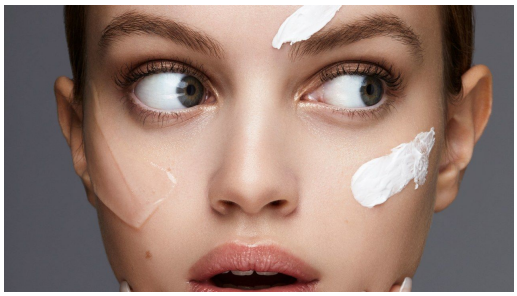
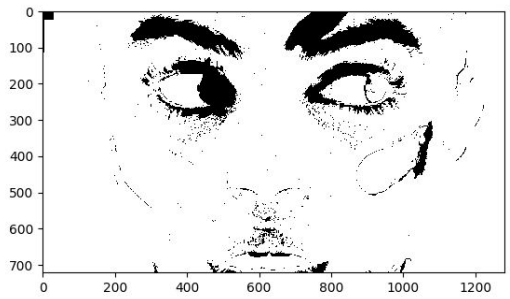
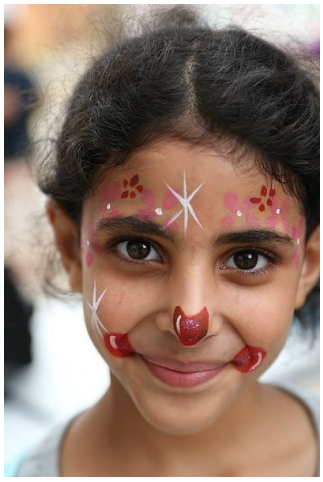
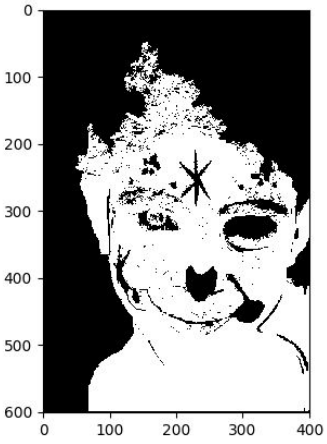
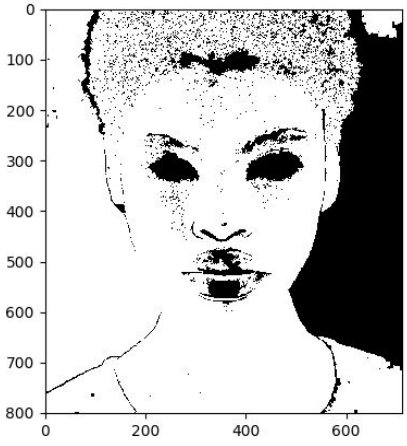
Part A: Skin Color Thresholding

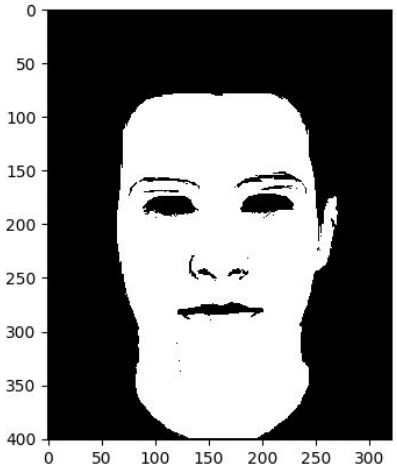
- I have used a mixture of RGB, YCbCr and HSV color space thresholds for this.
- Images have been binarized.
- Ref:https://github.com/WillBrennan/SkinDetector/tree/master/skin_detector



Part C: Seeded Segmentation


0
50
100
150
200
250
300
350
400
0
50
100
150
200
250
300