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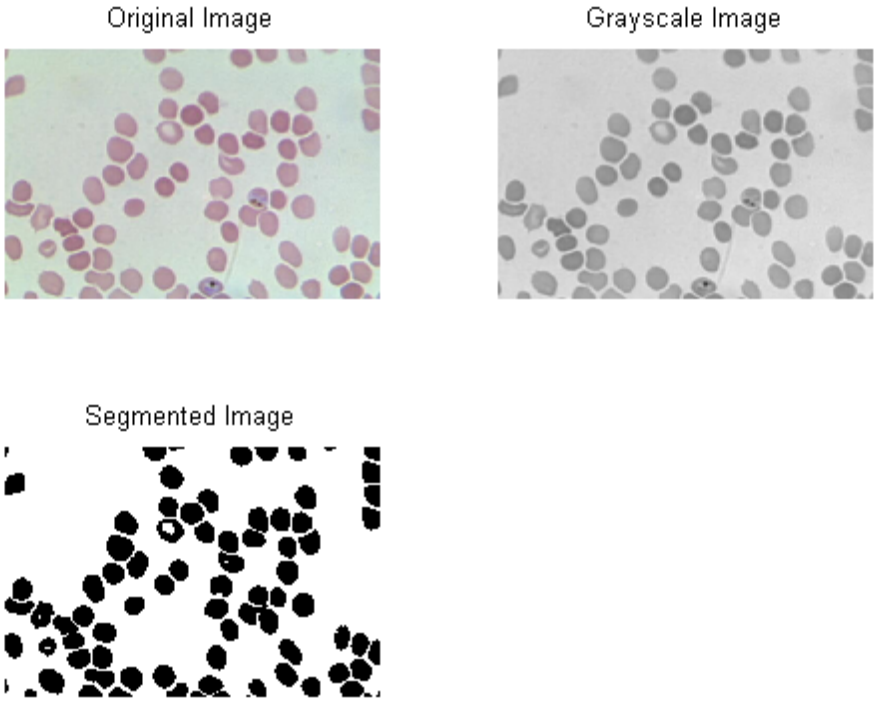
Begin

```
close all;
clear all;
clc;
```

Segmenting first rbc image

Since the images looks simple and does not have much rbc overlap we an go by simple otsu's thresholding method.

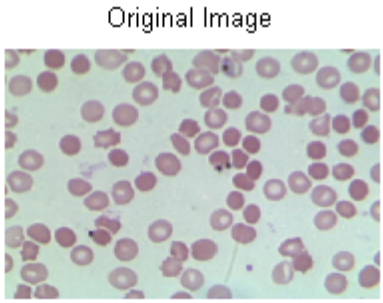
```
I = imread('rbcgpk1.jpg');
figure(1)
subplot(2,2,1);
imshow(I);
title('Original Image');
I = rgb2gray(I);
subplot(2,2,2);
imshow(I);
title('Grayscale Image');
level = graythresh(I);      %function graythresh calculates the otsu's threshold
segim = im2bw(I,level);
subplot(2,2,3);
imshow(segim);
title('Segmented Image');
```

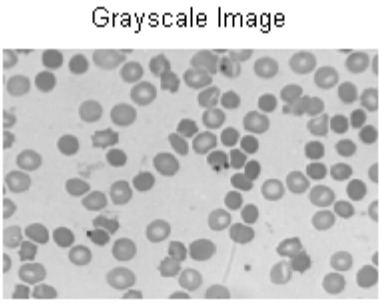


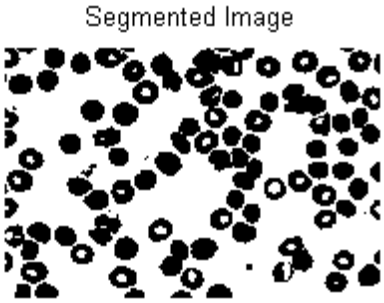
Segmenting second rbc image

The second image also looks simple and does not have much overlap of the rbc, hence we can again go for simple otsu's thresholding method.

```
I = imread('rbcgpk2.jpg');
figure(2)
subplot(2,2,1);
imshow(I);
title('Original Image');
I = rgb2gray(I);
subplot(2,2,2);
imshow(I);
title('Grayscale Image');
level = graythresh(I);      %function graythresh calculates the otsu's threshold
segim = im2bw(I,level);
subplot(2,2,3);
imshow(segim);
title('Segmented Image');
```



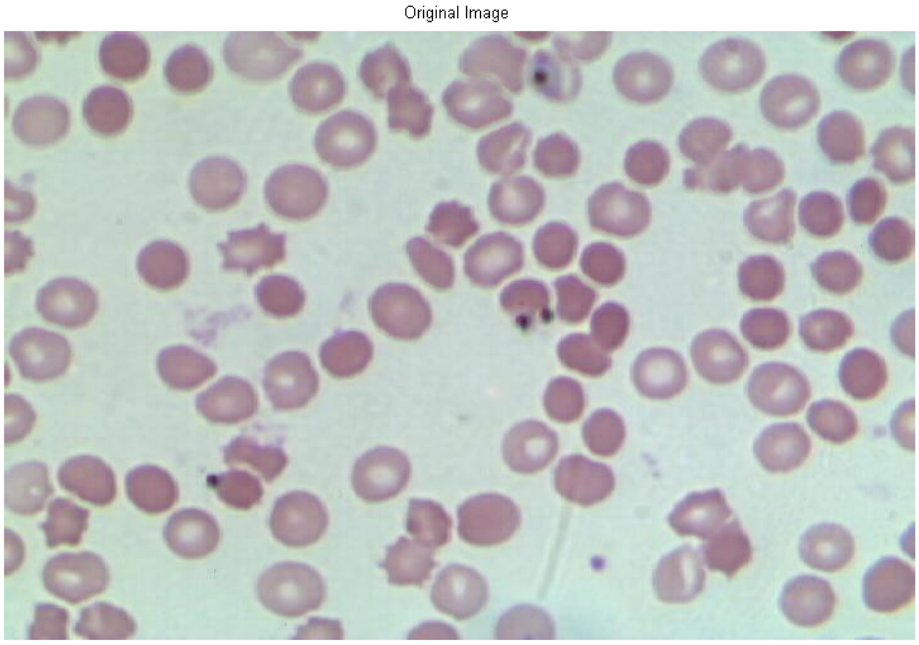


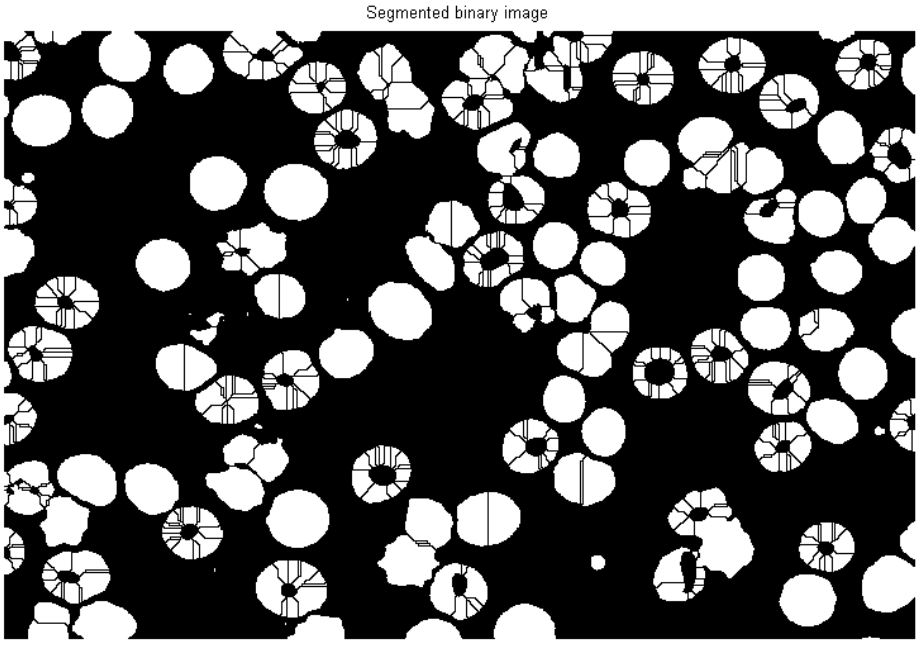


Segmenting the second rbc image again

This time using the watershed method to segment the image. We go for this method only to correct few errors here and there occured in the previous method.

```
I = imread('rbcgpk2.jpg');
figure(3)
imshow(I);
title('Original Image');
I = rgb2gray(I);
se = strel('disk',100);
I = imtophat(I,se);
I = imadjust(I);
level = graythresh(I);
bw = im2bw(I,level);
bw2 = 1 - bw;
D = bwdist(~bw2);
D = 1 -  bwdist(~bw2);
L = watershed(D);
bw2(L == 0) = 0;        %for L=0,means it belongs to no watershed and hence it mus
figure(4)
imshow(bw2);
title('Segmented binary image');
```



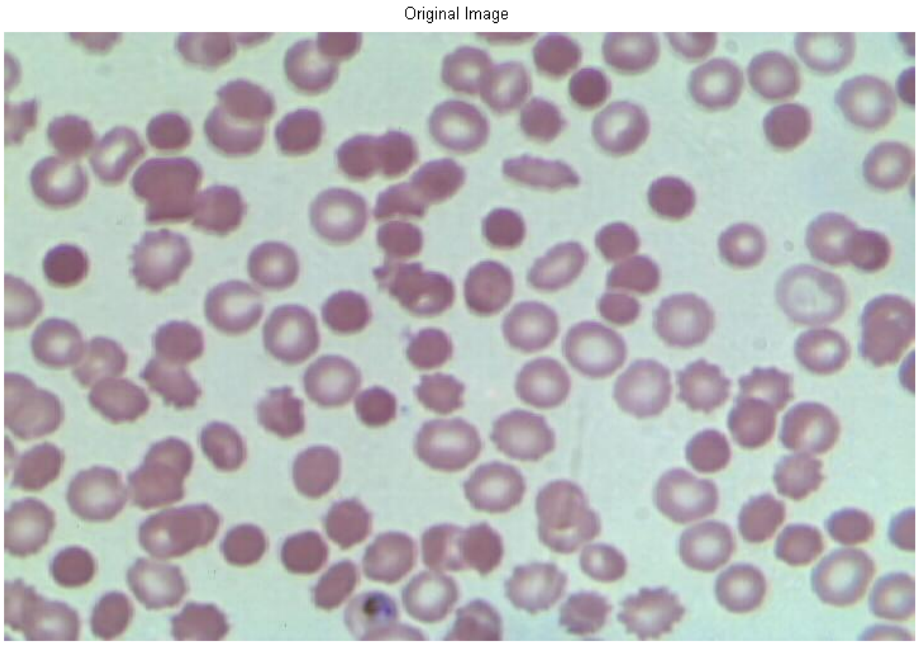


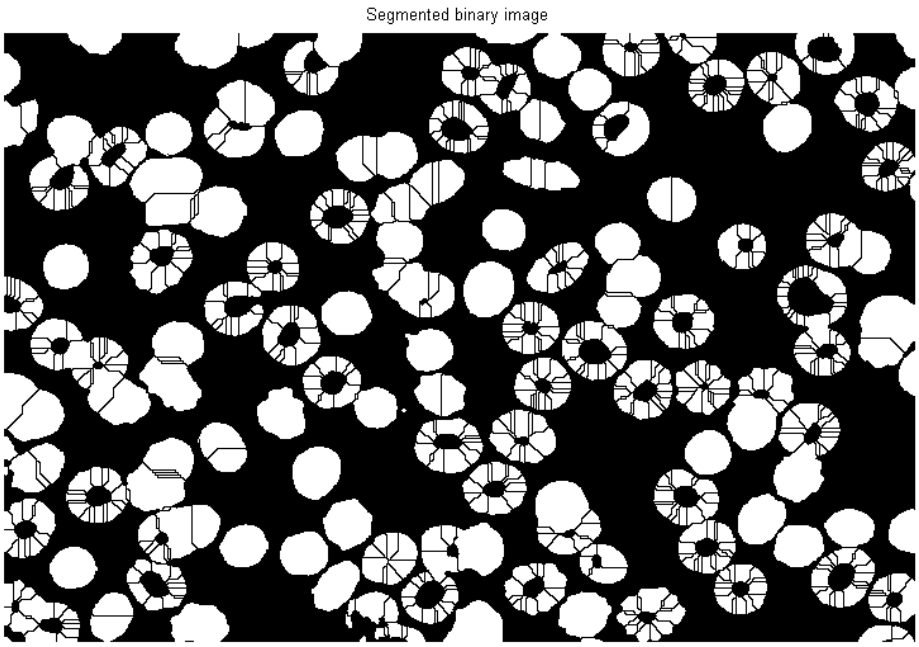
Segmenting the third rbc image

The third given rbc image has a bit of overlapping of rbcs and hence we go for the watershed method. However, this method results in over segmentation as you can see below.

```
I = imread('rbcgpk3.jpg');
figure(5)
```

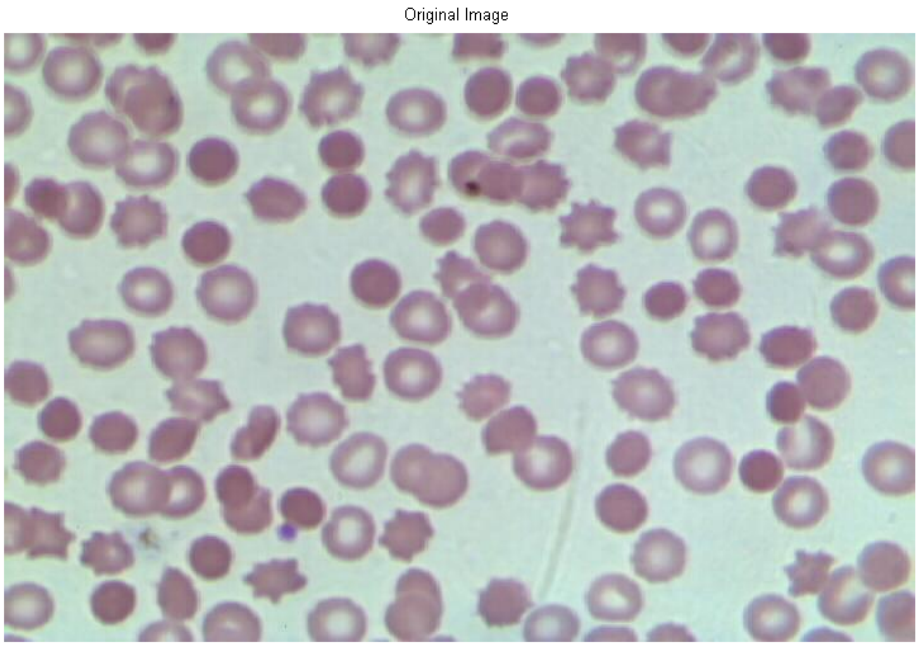
```
imshow(I);
title('Original Image');
I = rgb2gray(I);
se = strel('disk',100);
I = imtophat(I,se);
I = imadjust(I);
level = graythresh(I);
bw = im2bw(I,level);
bw2 = 1 - bw;
D = bwdist(~bw2);
D = 1 -  bwdist(~bw2);
L = watershed(D);
bw2(L == 0) = 0;        %for L=0,means it belongs to no watershed and hence it mus
figure(6)
imshow(bw2);
title('Segmented binary image');
```

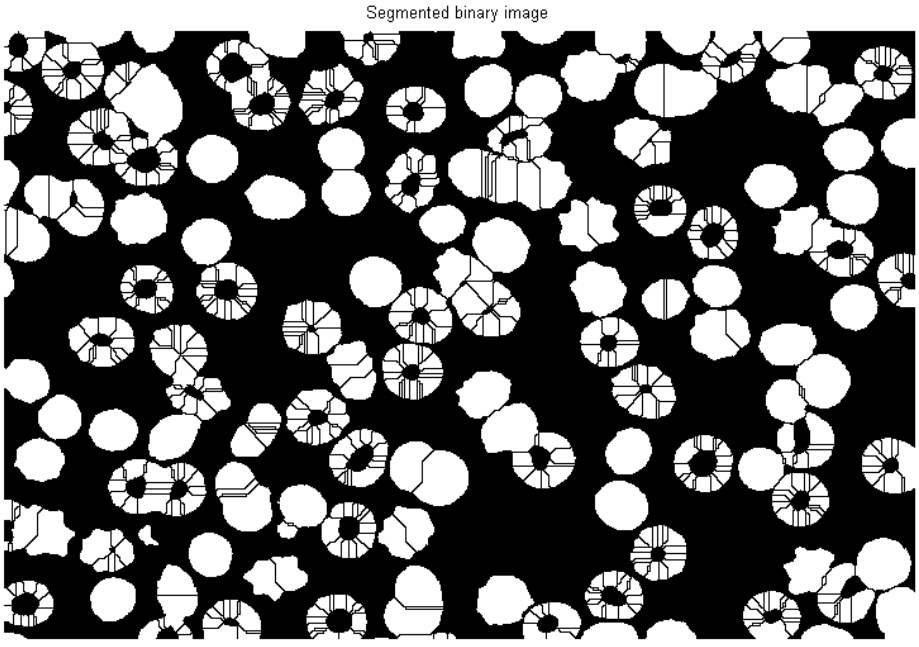




Segmenting the fourth rbc image

```
I = imread('rbcgpk4.jpg');
figure(7)
imshow(I);
title('Original Image');
I = rgb2gray(I);
se = strel('disk',100);
I = imtophat(I,se);
I = imadjust(I);
level = graythresh(I);
bw = im2bw(I,level);
bw2 = 1 - bw;
D = bwdist(~bw2);
D = 1 -  bwdist(~bw2);
L = watershed(D);
bw2(L == 0) = 0;        %for L=0,means it belongs to no watershed and hence it mus
figure(8)
imshow(bw2);
title('Segmented binary image');
```

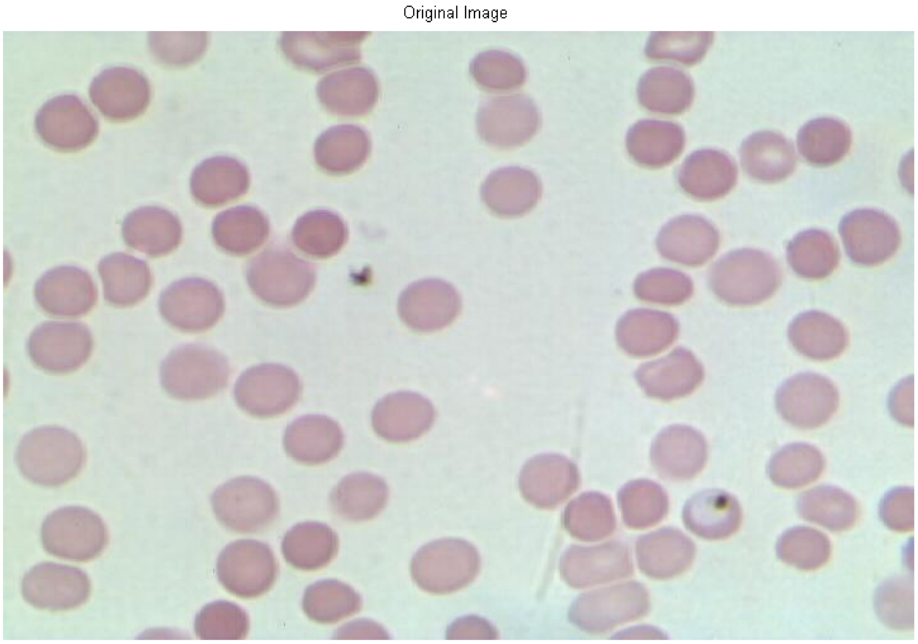


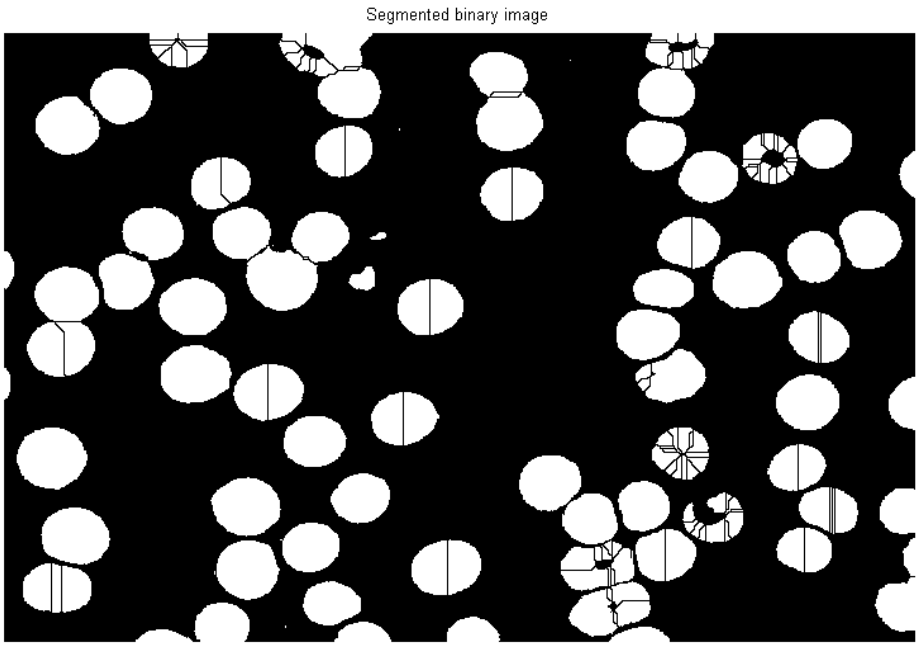


Segmenting the fifth rbc image

```
I = imread('rbcgpk5.jpg');
figure(9)
imshow(I);
title('Original Image');
```

```
I = rgb2gray(I);
se = strel('disk',100);
I = imtophat(I,se);
I = imadjust(I);
level = graythresh(I);
bw = im2bw(I,level);
bw2 = 1 - bw;
D = bwdist(~bw2);
D = 1 -  bwdist(~bw2);
L = watershed(D);
bw2(L == 0) = 0;        %for L=0,means it belongs to no watershed and hence it mus
figure(10)
imshow(bw2);
title('Segmented binary image');
```





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