In [1]:

```
import numpy as np
import cv2
import matplotlib.pyplot as plt
```

In [2]:

```
original_image = cv2.imread("C:/Users/ahmet/Downloads/beach.jpg")
```

In [3]:

```
img=cv2.cvtColor(original_image,cv2.COLOR_BGR2RGB)
```

In [4]:

```
vectorized = img.reshape((-1,3))
vectorized = np.float32(vectorized)
criteria = (cv2.TERM_CRITERIA_EPS + cv2.TERM_CRITERIA_MAX_ITER, 10, 1.0)
```

In [5]:

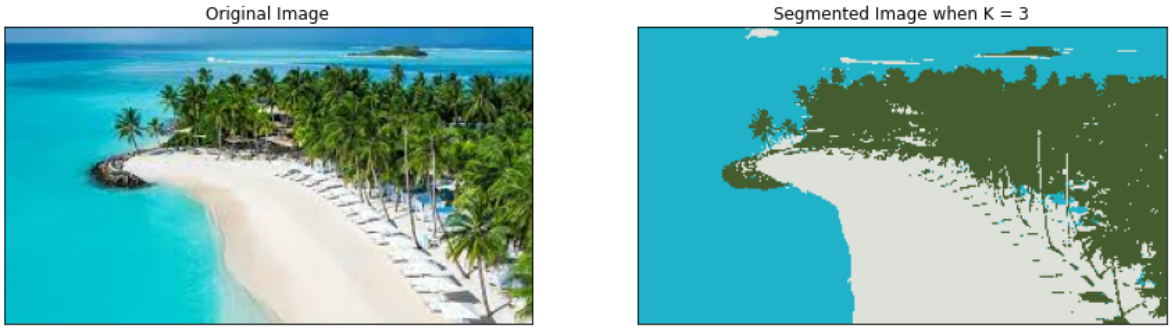
```
K = 3
attempts=10
ret,label,center=cv2.kmeans(vectorized,K,None,criteria,attempts,cv2.KMEANS_PP_CENTERS)
```

In [6]:

```
center = np.uint8(center)
res = center[label.flatten()]
result_image = res.reshape((img.shape))
```

In [7]:

```
figure_size = 15
plt.figure(figsize=(figure_size,figure_size))
plt.subplot(1,2,1),plt.imshow(img)
plt.title('Original Image'), plt.xticks([]), plt.yticks([])
plt.subplot(1,2,2),plt.imshow(result_image)
plt.title('Segmented Image when K = %i' % K), plt.xticks([]), plt.yticks([])
plt.show()
```



In [8]:

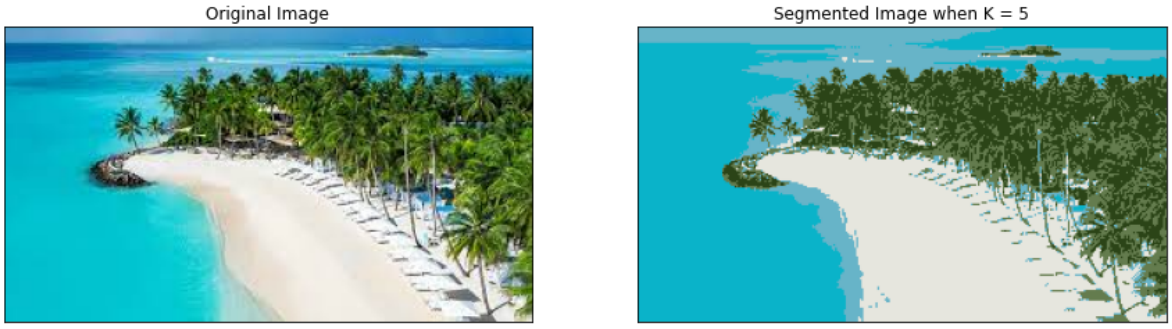
```
K = 5
attempts=10
ret,label,center=cv2.kmeans(vectorized,K,None,criteria,attempts,cv2.KMEANS_PP_CENTERS)
```

In [9]:

```
center = np.uint8(center)
res = center[label.flatten()]
result_image = res.reshape((img.shape))
```

In [10]:

```
figure_size = 15
plt.figure(figsize=(figure_size,figure_size))
plt.subplot(1,2,1),plt.imshow(img)
plt.title('Original Image'), plt.xticks([]), plt.yticks([])
plt.subplot(1,2,2),plt.imshow(result_image)
plt.title('Segmented Image when K = %i' % K), plt.xticks([]), plt.yticks([])
plt.show()
```



In [11]:

```
K = 7
attempts=10
ret,label,center=cv2.kmeans(vectorized,K,None,criteria,attempts,cv2.KMEANS_PP_CENTERS)
```

In [12]:

```
center = np.uint8(center)
res = center[label.flatten()]
result_image = res.reshape((img.shape))
```

In [13]:

```
figure_size = 15
plt.figure(figsize=(figure_size,figure_size))
plt.subplot(1,2,1),plt.imshow(img)
plt.title('Original Image'), plt.xticks([]), plt.yticks([])
plt.subplot(1,2,2),plt.imshow(result_image)
plt.title('Segmented Image when K = %i' % K), plt.xticks([]), plt.yticks([])
plt.show()
```