

## A3Q4

### Sw:

Software used: Adobe Photoshop

URL: <https://www.adobe.com/in/products/photoshop/free-trial-download.html>

Edge Detection and Image Masking into the new background image using Edge detection brush.

Input images:



Image in which edge detection brush will be  
Used to make a mask.

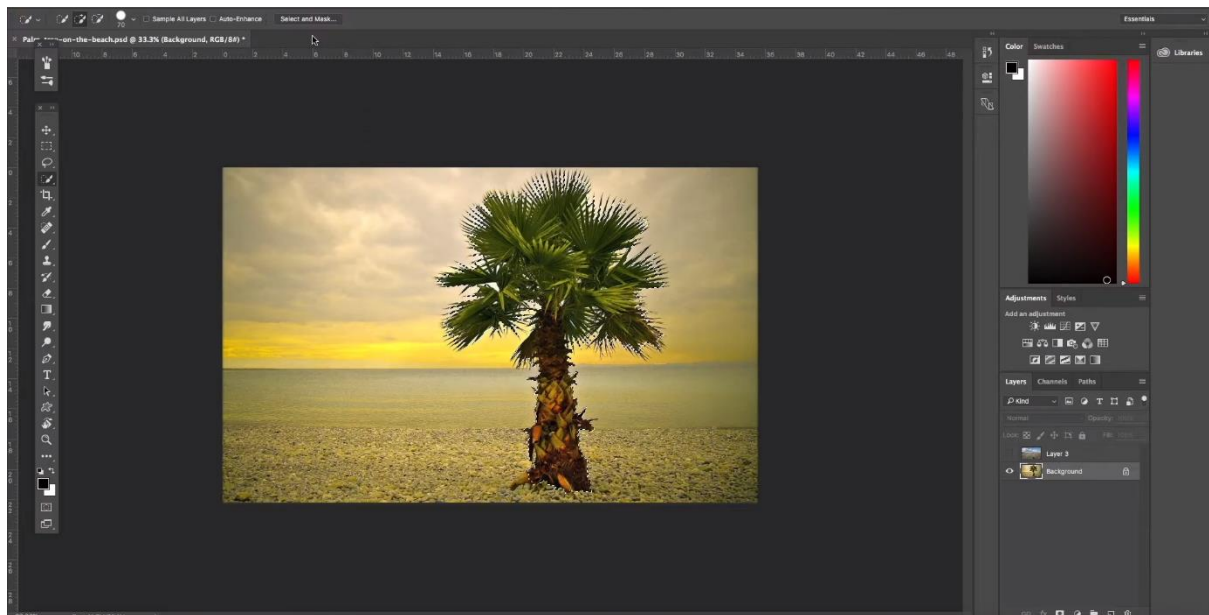
(Background layer)

Background image of which masking will be  
Done.

Step-1:

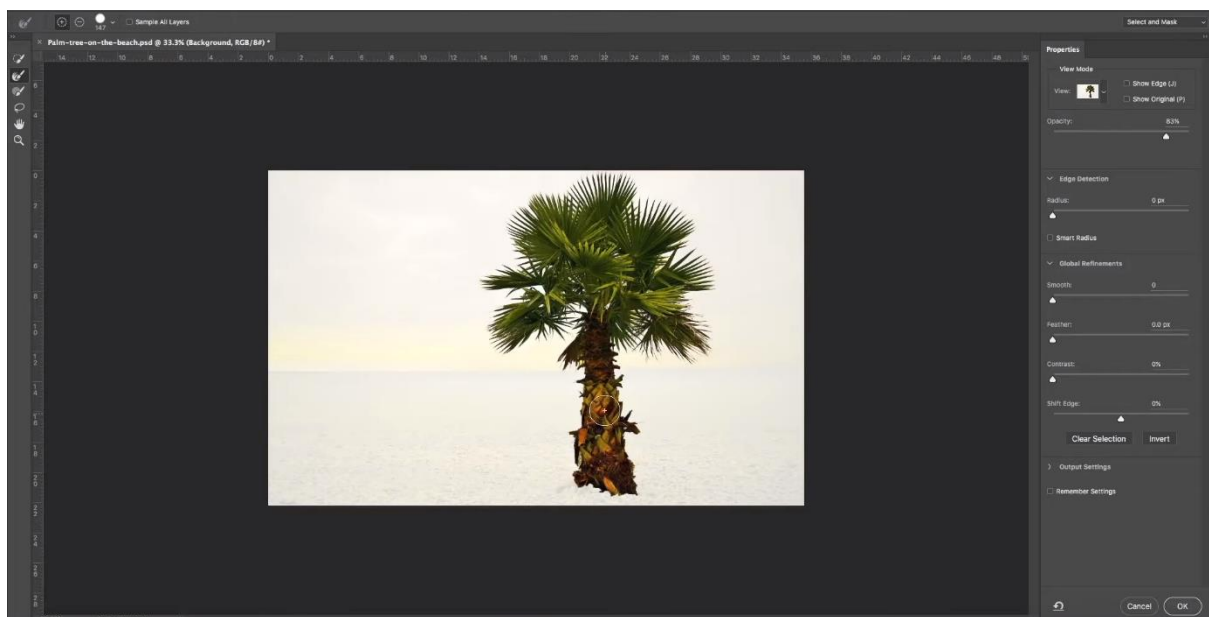
Select the **Refine Edge Brush Tool** on the left side, or press “R” on the keyboard.  
**Brush over the areas** you want Photoshop to refine. Feel free to adjust the size and type of the brush in the brush drop-down menu to be as accurate as you need.

This is same as an edge detection algorithm by using this we will create the mask of the tree by detecting the outer edges of the palm tree present in the background layer.



Outer edges selected using the edge detection tool of edge brush.

Step-2:

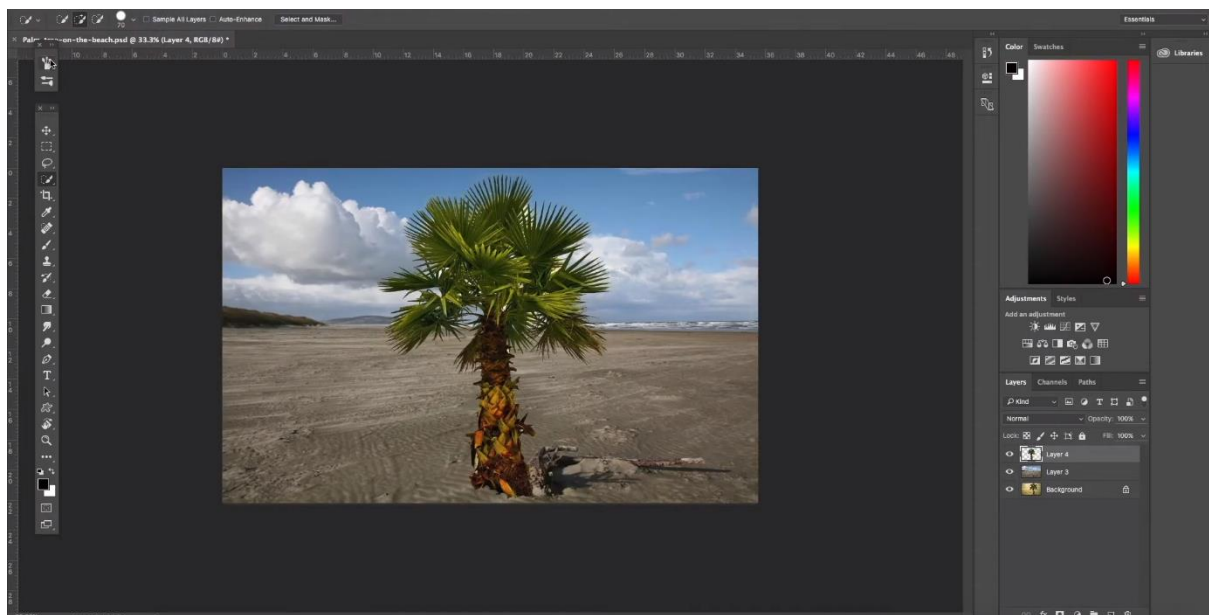


After using select and make mask our mask is ready to make of composite image.

Now, we must copy and paste the mask in the new background image to finally make a composite image.

This can be thought as bitwise masking of the mask with adaptive threshold and pixel values.

Step-3:



Masking is now done to make a composite image.

Final Output image:

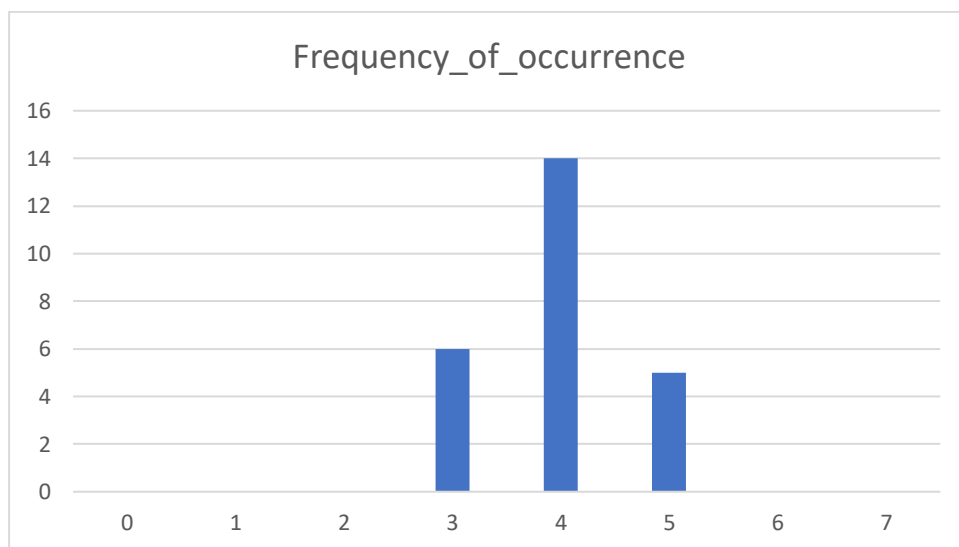


q4q:

- q4q-analytical: Histogram equalization of various grey-scale level of given image.

*Image:*

4	4	4	4	4
3	4	5	4	3
3	5	5	5	3
3	4	5	4	3
4	4	4	4	4



X-axis: Gray-scale values

Y-axis: Frequency

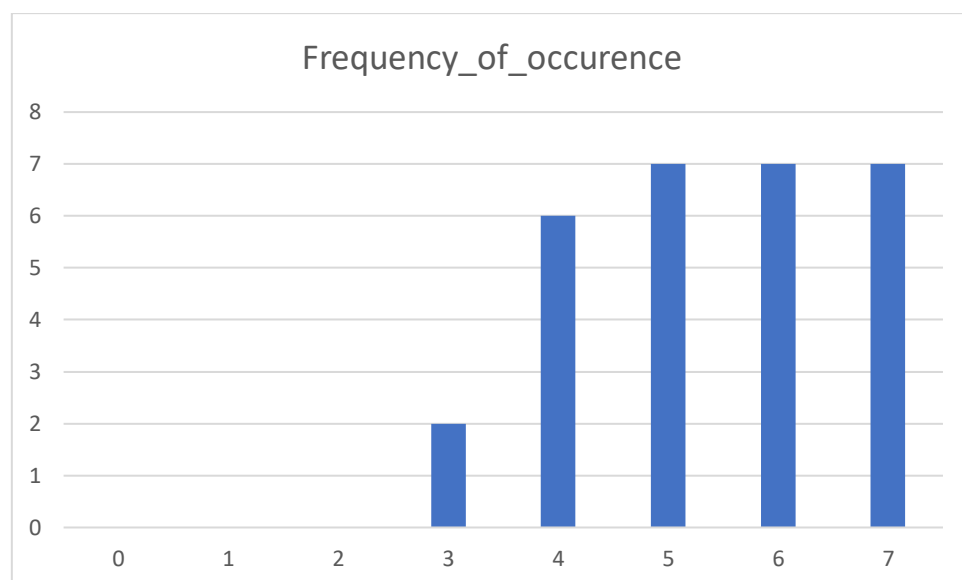
Highest occurrence Gray scale value = 5

$2^8 = 3\text{bits}$

[0, 7]

Gray Level	No. of Pixel (nk)	PDF = nk/sum	CDF = sk	sk*7	Histogram equalized level
0	0	0	0	0	0
1	0	0	0	0	0
2	0	0	0	0	0
3	6	$6/25 = 0.24$	0.24	1.68	2
4	14	0.56	0.8	5.6	6
5	5	0.2	1.0	7	7
6	0	0	1.0	7	7
7	0	0	1.0	7	7

Equalized Histogram:



Output Image:

6	6	6	6	6
2	6	7	6	2
2	7	7	7	2
2	6	7	6	2
6	6	6	6	6

- q4q-mcq:
  1. For mean shift algorithm which of the following options are correct:
    - a) Complexity is  $O(n^2T)$

- b) Number of initial clusters needed*
- c) Assume rectangular cluster*
- d) Automatically finds various number of nodes.*
- e) No need for guessing centre of cluster*
- f) It is not robust to outliers*

*Ans: a, d, e*

*2. Which of the following option is correct for a fly's vision:*

- a) 1 ommatidium = 16 photoreceptor*
- b) Hexagonal lens*
- c) Compound eyes*
- d) 3 spectral filters*
- e) Wide gap between lens and retina*

*Ans: b, c*