

## 11. Perform transformation using Direct Linear Transformation.

### PROGRAM:

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*EXP-11.py - C:\Users\reddy\OneDrive\Desktop\COMPUTER VISION\EXP-11.py (3.11.9)*
File Edit Format Run Options Window Help
import cv2
import numpy as np
# Read image
img = cv2.imread("C:\Users\reddy\OneDrive\Desktop\COMPUTER VISION\iii.jpg")
h, w, _ = img.shape[1:2]
# Source points
src = np.array([
    [150, 50],
    [250, 50],
    [150, 300],
    [250, 300]
], dtype=float)
# Destination points
dst = np.array([
    [10, 0],
    [w, 0],
    [10, h],
    [w, h]
], dtype=float)
# Construct matrix A for DLT
A = []
for i in range(4):
    x, y = src[i][0], src[i][1]
    u, v = dst[i][0], dst[i][1]
    A.append([x, y, -1, 0, 0, 0, x*u, y*u, u])
    A.append([0, 0, -x, -y, -1, 0, x*v, y*v, v])
A = np.array(A)
# Solve using SVD
U, S, Vt = np.linalg.svd(A)
# Last row of V (transpose) gives solution
H = Vt[-1].reshape(3, 3)
# Apply transformation
dlt_img = cv2.warpPerspective(img, H, (w, h))
# Display images
cv2.imshow("Original Image", img)
cv2.imshow("DLT Transformed Image", dlt_img)
cv2.waitKey(0)
cv2.destroyAllWindows()

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### OUTPUT:

