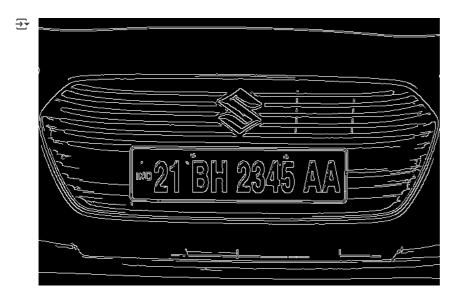
```
# Install required packages
!apt install tesseract-ocr
!pip install pytesseract opencv-python-headless matplotlib
Reading package lists... Done
     Building dependency tree... Done
     Reading state information... Done
     tesseract-ocr is already the newest version (4.1.1-2.1build1).
     0 upgraded, 0 newly installed, 0 to remove and 34 not upgraded.
     Requirement already satisfied: pytesseract in /usr/local/lib/python3.11/dist-packages (0.3.13)
     Requirement already satisfied: opencv-python-headless in /usr/local/lib/python3.11/dist-packages (4.11.0.86)
     Requirement already satisfied: matplotlib in /usr/local/lib/python3.11/dist-packages (3.10.0)
     Requirement already satisfied: packaging>=21.3 in /usr/local/lib/python3.11/dist-packages (from pytesseract) (24.2)
     Requirement already satisfied: Pillow>=8.0.0 in /usr/local/lib/python3.11/dist-packages (from pytesseract) (11.2.1)
     Requirement already satisfied: numpy>=1.21.2 in /usr/local/lib/python3.11/dist-packages (from opencv-python-headless) (2.0.2)
     Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (1.3.2)
     Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (0.12.1)
     Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (4.58.0)
     Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (1.4.8)
     Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (3.2.3)
     Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.11/dist-packages (from matplotlib) (2.9.0.post0)
     Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-packages (from python-dateutil>=2.7->matplotlib) (1.17.0)
import cv2
import pytesseract
import matplotlib.pyplot as plt
```

```
import cv2
import pytesseract
import matplotlib.pyplot as plt
from google.colab.patches import cv2_imshow

# Configure pytesseract path (Colab already has it after install)
pytesseract.pytesseract.tesseract_cmd = r'/usr/bin/tesseract'
```

## Double-click (or enter) to edit

```
import cv2
import pytesseract
import matplotlib.pyplot as plt
from google.colab.patches import cv2_imshow
import numpy as np
# Load the image
img = cv2.imread('/content/bh-plate-2 (1).webp')
img = cv2.resize(img, (600, 400)) # Resize for better visibility
# Convert to grayscale
gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
# Noise removal
blur = cv2.bilateralFilter(gray, 11, 17, 17)
# Edge detection
edged = cv2.Canny(blur, 30, 200)
cv2 imshow(edged)
```



```
cnts, _ = cv2.findContours(edged.copy(), cv2.RETR_TREE, cv2.CHAIN_APPROX_SIMPLE)
# Sort and look for rectangular contour
cnts = sorted(cnts, key=cv2.contourArea, reverse=True)[:10]
screenCnt = None
for c in cnts:
    peri = cv2.arcLength(c, True)
    approx = cv2.approxPolyDP(c, 0.018 * peri, True)
    if len(approx) == 4:
        screenCnt = approx
       break
if screenCnt is None:
   print("No contour detected.")
    # Mask everything except plate
    mask = cv2.drawContours(np.zeros(gray.shape, dtype=np.uint8), [screenCnt], 0, 255, -1)
   out = cv2.bitwise_and(img, img, mask=mask)
    # Crop the plate
    (x, y) = np.where(mask == 255)
    (topx, topy) = (np.min(x), np.min(y))
    (bottomx, bottomy) = (np.max(x), np.max(y))
    cropped = gray[topx:bottomx+1, topy:bottomy+1]
    cv2_imshow(cropped)
```



```
# Enhance cropped image
cropped = cv2.resize(cropped, None, fx=2, fy=2, interpolation=cv2.INTER_CUBIC)
_, thresh = cv2.threshold(cropped, 0, 255, cv2.THRESH_BINARY + cv2.THRESH_OTSU)
# OCR
text = pytesseract.image_to_string(thresh, config='--psm 7 -1 eng')
print("Detected Number Plate:", text.strip())
```

Start coding or generate with AI.

Detected Number Plate: ~21 BH 2345 AA