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D1 - 19BCE245
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Practical 10

Video Processing

Develop a python program which takes the video as an argument and extract all the frames from a video. Select specific frames and recreate the video, which has selected frames only.

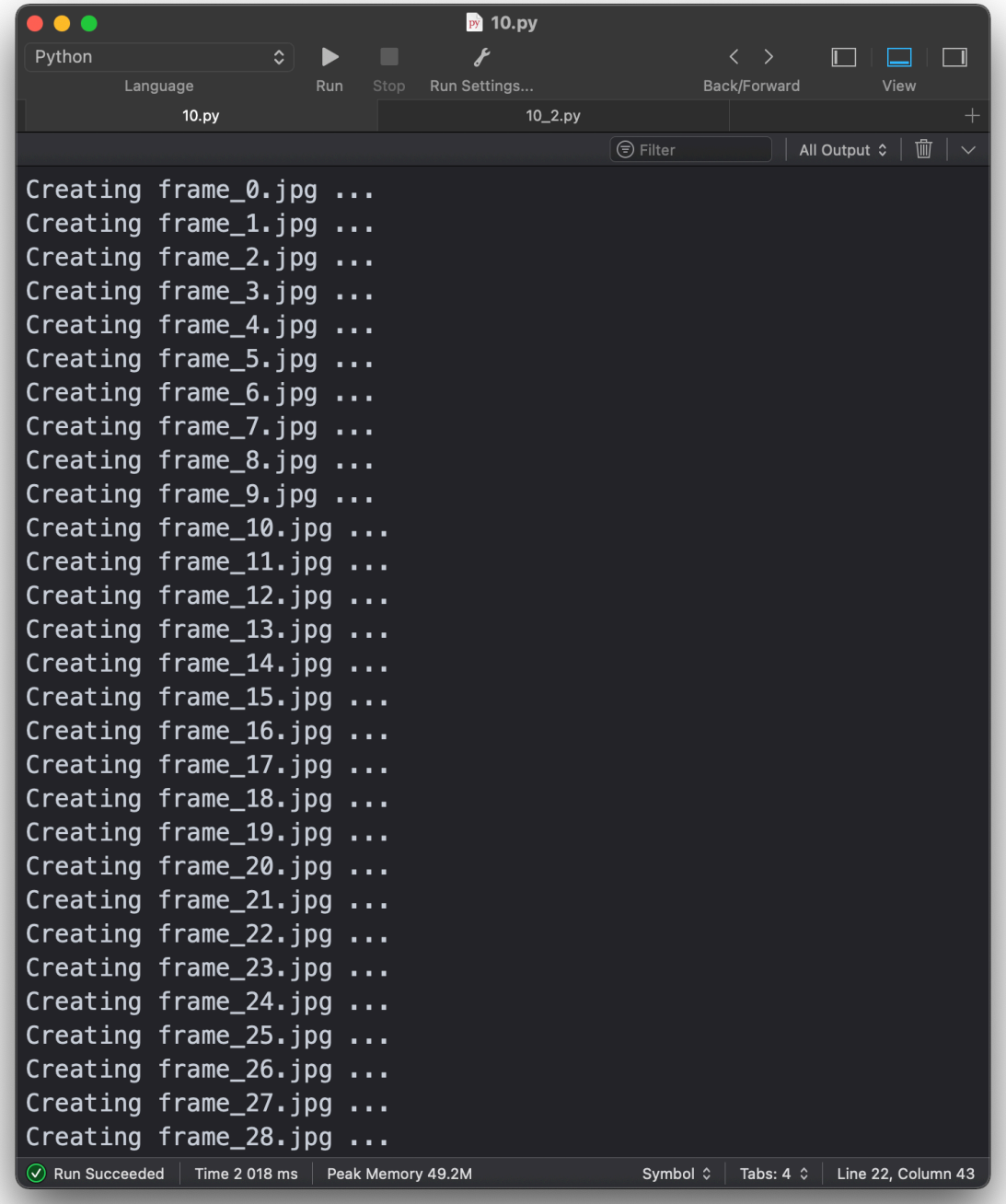
9b Code :

- ***Generating frames from video:***

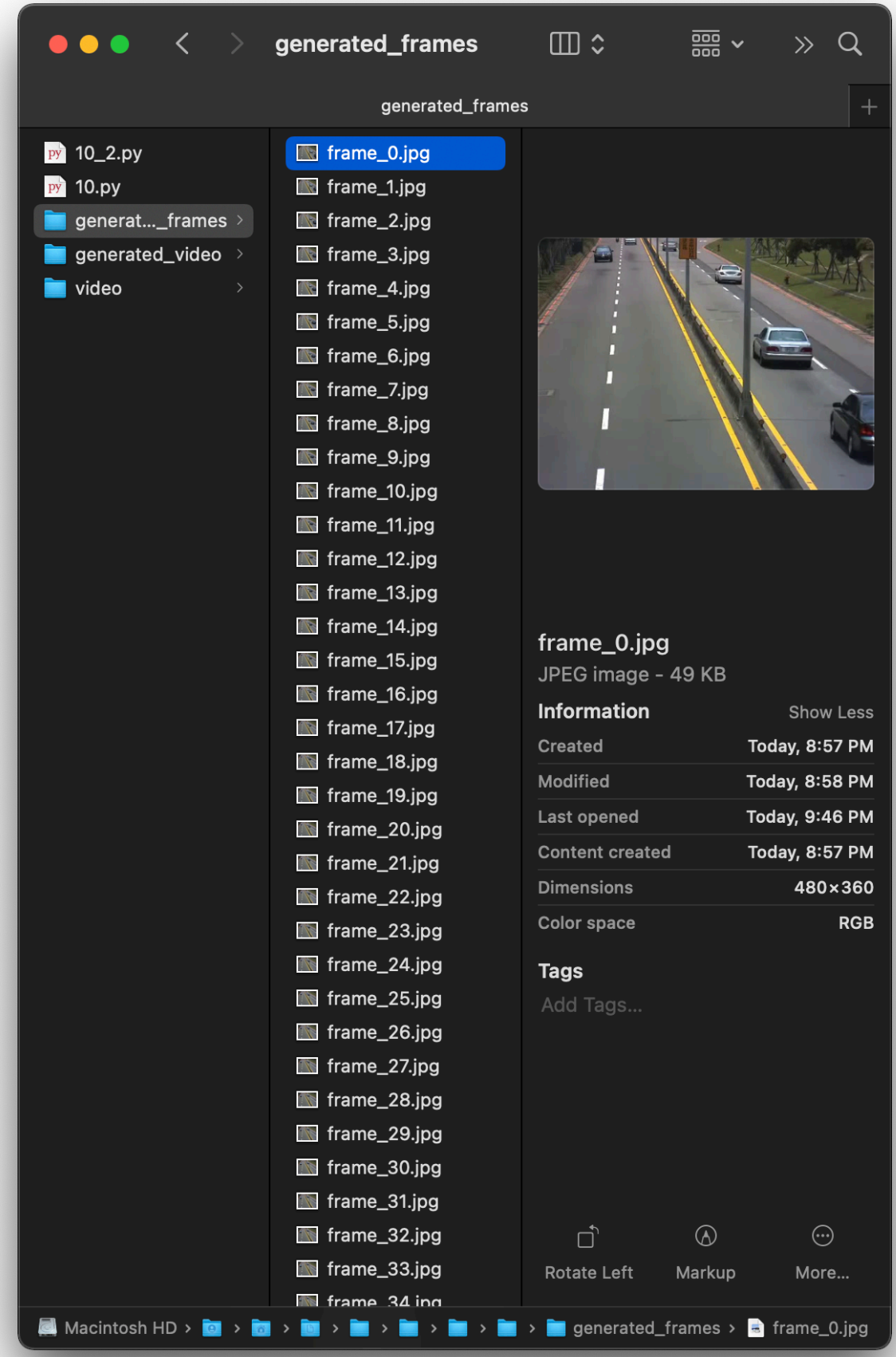
```
# Generating frames from video

# Importing all necessary libraries
import cv2
import os
import numpy as np
import glob

# Reading the video from specified path
traffic_video = cv2.VideoCapture("./video/traffic2.mp4")

# Setting current frame to zero
current_frame = 0

while (True):

  # Reading from frame
  ret, frame = traffic_video.read()

  if  ret:
       # If video is still left continue creating images
       name = 'frame_'+ str(current_frame) + '.jpg'
       print("Creating",name,"...")
```

```
24.
25.         # Writing the extracted images
26.         cv2.imwrite('./generated_frames/' + name, frame)
27.
28.         current_frame += 1
29.     else:
30.         break
31.
32.# Realeasing all  space and windows once done
33.traffic_video.release()
34.cv2.destroyAllWindows()
```

Output :



Generated frames images :



- *Generating video from frames:*

```
# Generating video from frames

import cv2
import numpy as np
import glob

img_array = []

# Reading all jpg files
for filename in glob.glob('./generated_frames/*.jpg'):
    img = cv2.imread(filename)
    height, width, layers = img.shape
    size = (width,height)
    img_array.append(img)

# Encoding Techniques, No ofFrames
out = cv2.VideoWriter('./generated_video/project.mp4v',
  cv2.VideoWriter_fourcc(*'mp4v'), 30, size)

for frame in range(len(img_array)):
    out.write(img_array[frame])

print("Generated video is saved in \'./generated_video/
  project.mp4\'.")
out.release()
```

Output :

```
Generated video is saved in './generated_video/project.mp4'.
```

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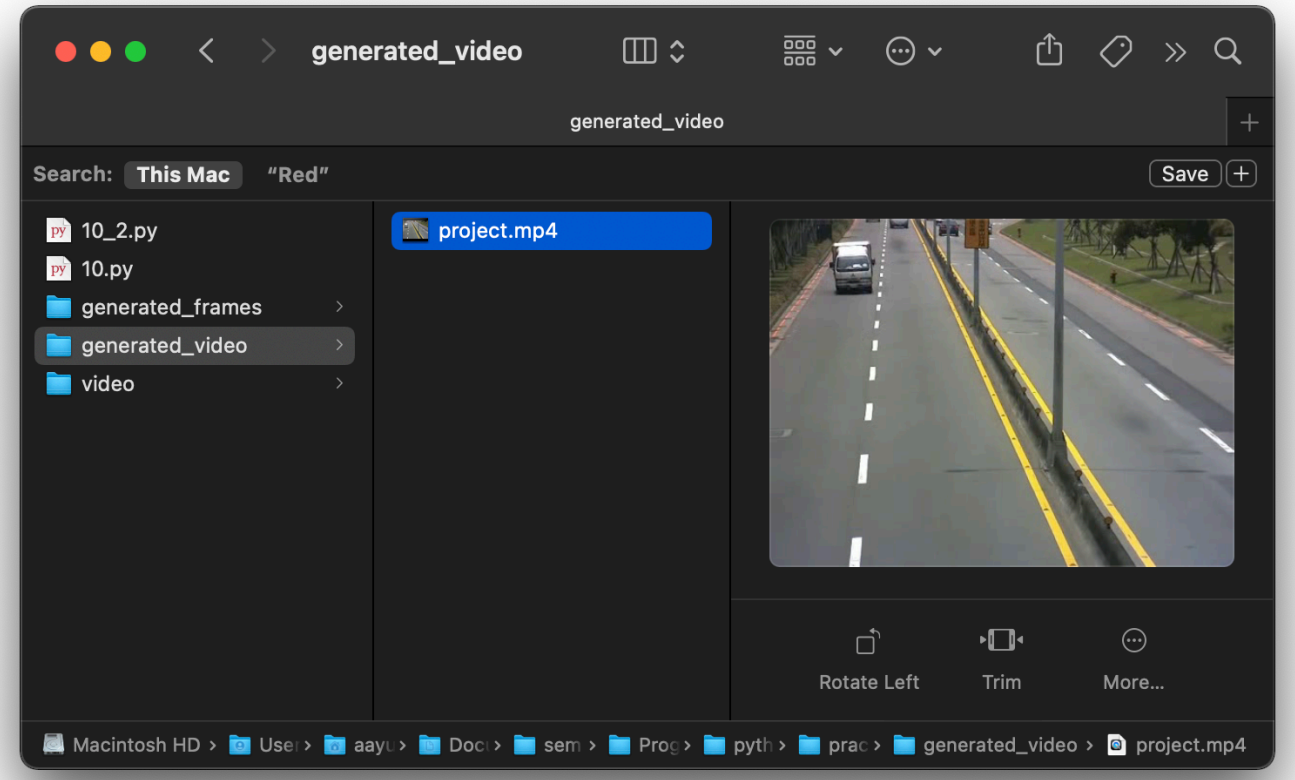
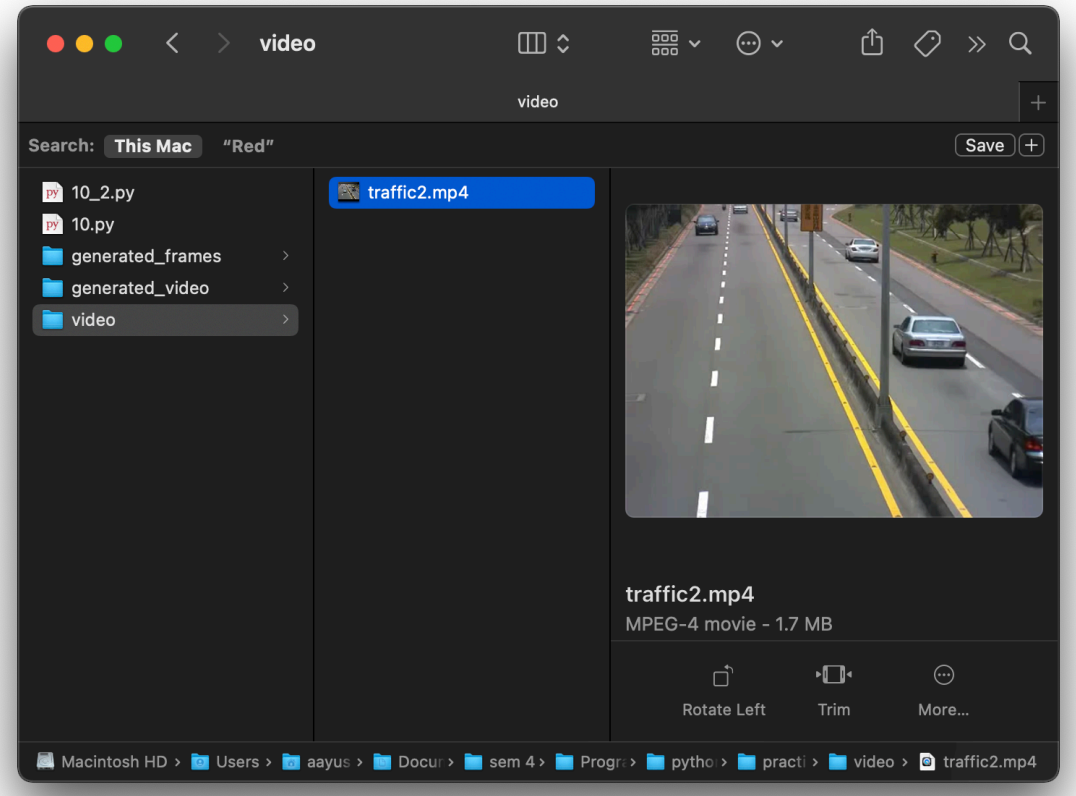
- *Generated video :*



- *Used traffic2.mp4 video :*



Conclusion :

Here we have learned about Video processing with libraries like cv2 and glob. We have divided whole video in each image frames with this concept and also made video from these image frames.

- **Video processing and openCV :** Processing a video means, performing operations on the video frame by frame. Frames are nothing but just the particular instance of the video in a single point of time. We may have multiple frames even in a single second. Frames can be treated as similar to an image. So, whatever operations we can perform on images can be performed on frames as well.
- Using PIL library we are opening images and resizing them to their mean_height and mean_width because the video which will be created using cv2 library required the input images of same height and width.
- Resized images are included in an array and frame of video is set with the mean_height and mean_width. Then by looping, we are appending each image to that frame.