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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.

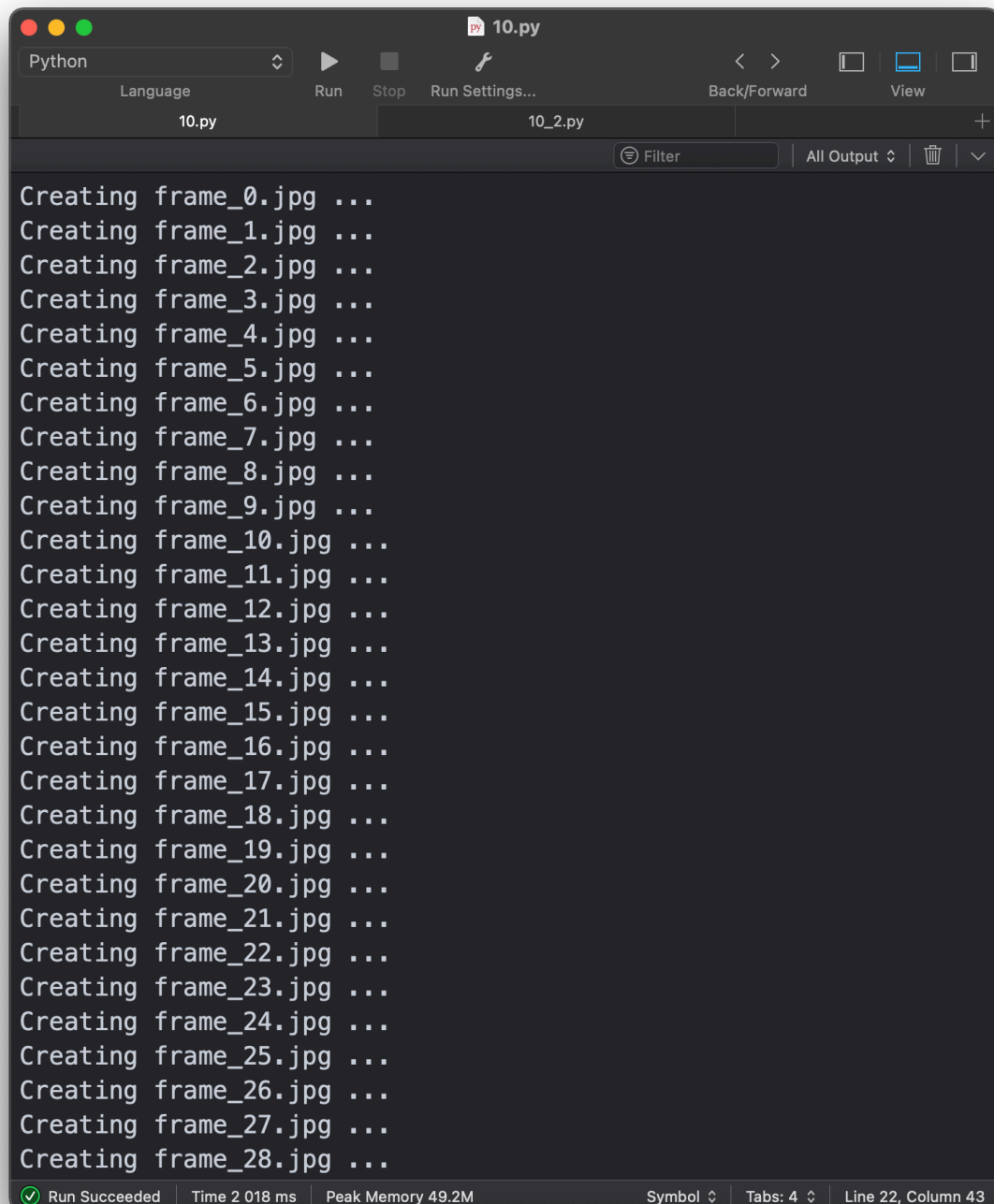
9b Code :

•*Generating frames from video:*

```
1. # Generating frames from video
2.
3. # Importing all necessary libraries
4. import cv2
5. import os
6. import numpy as np
7. import glob
8.
9. # Reading the video from specified path
10. traffic_video = cv2.VideoCapture("./video/traffic2.mp4")
11.
12. # Setting current frame to zero
13. current_frame = 0
14.
15. while (True):
16.
17.     # Reading from frame
18.     ret, frame = traffic_video.read()
19.
20.     if ret:
21.         # If video is still left continue creating images
22.         name = 'frame_' + str(current_frame) + '.jpg'
23.         print("Creating", name, "...")
```

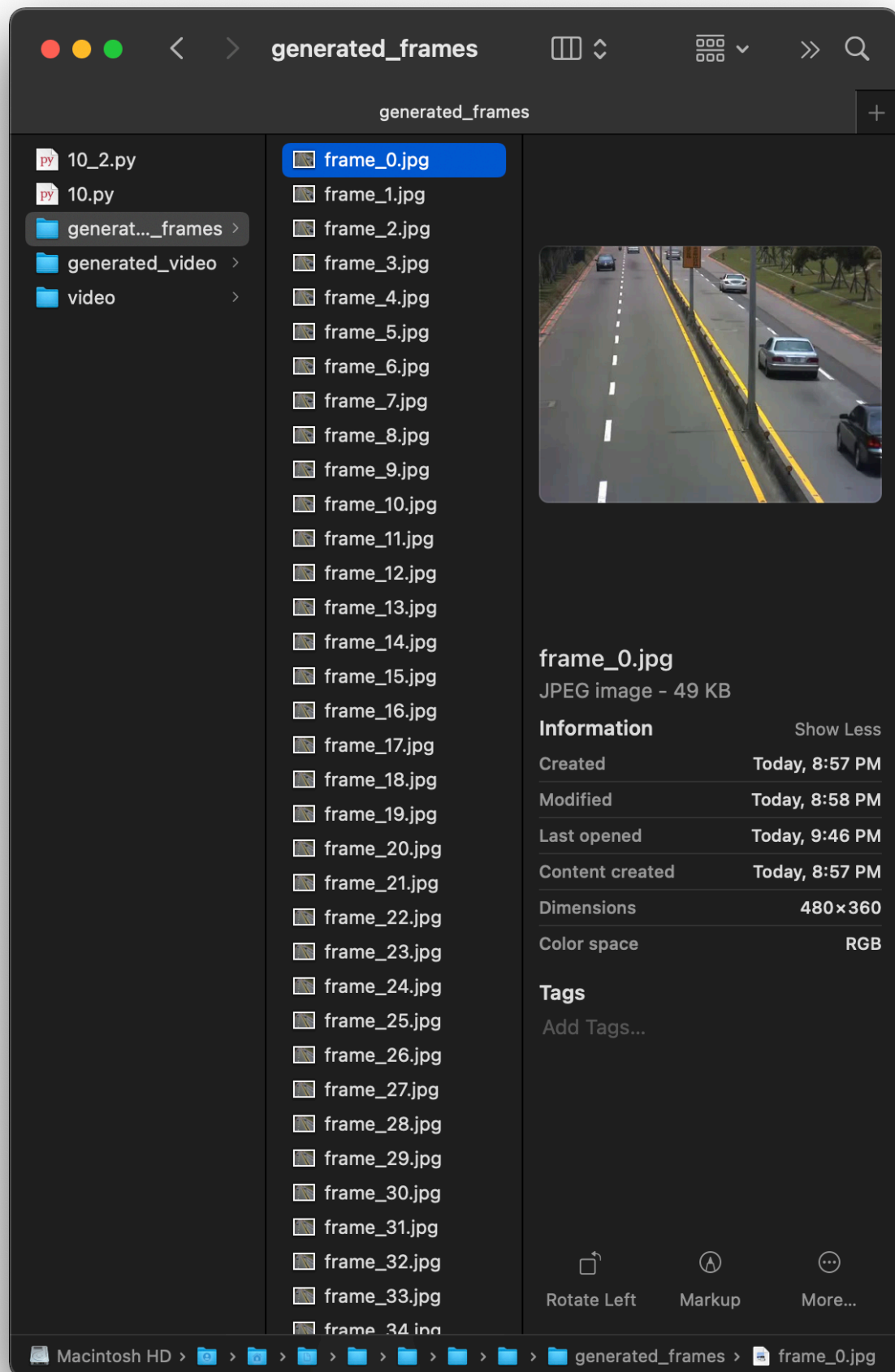
```
24.  
25.     # Writing the extracted images  
26.     cv2.imwrite('./generated_frames/' + name, frame)  
27.  
28.     current_frame += 1  
29. else:  
30.     break  
31.  
32. # Releasing all space and windows once done  
33. traffic_video.release()  
34. cv2.destroyAllWindows()
```

Output :



```
Python  
Language  
Run Stop Run Settings... Back/Forward View  
10.py 10_2.py  
Filter All Output  
Creating frame_0.jpg ...  
Creating frame_1.jpg ...  
Creating frame_2.jpg ...  
Creating frame_3.jpg ...  
Creating frame_4.jpg ...  
Creating frame_5.jpg ...  
Creating frame_6.jpg ...  
Creating frame_7.jpg ...  
Creating frame_8.jpg ...  
Creating frame_9.jpg ...  
Creating frame_10.jpg ...  
Creating frame_11.jpg ...  
Creating frame_12.jpg ...  
Creating frame_13.jpg ...  
Creating frame_14.jpg ...  
Creating frame_15.jpg ...  
Creating frame_16.jpg ...  
Creating frame_17.jpg ...  
Creating frame_18.jpg ...  
Creating frame_19.jpg ...  
Creating frame_20.jpg ...  
Creating frame_21.jpg ...  
Creating frame_22.jpg ...  
Creating frame_23.jpg ...  
Creating frame_24.jpg ...  
Creating frame_25.jpg ...  
Creating frame_26.jpg ...  
Creating frame_27.jpg ...  
Creating frame_28.jpg ...  
Run Succeeded Time 2 018 ms Peak Memory 49.2M Symbol Tabs: 4 Line 22, Column 43
```

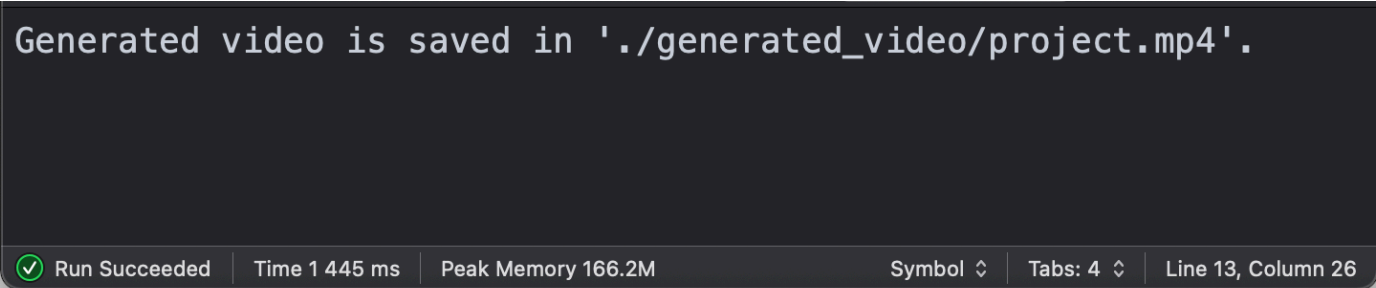
Generated frames images :



•*Generating video from frames:*

```
1. # Generating video from frames
2.
3. import cv2
4. import numpy as np
5. import glob
6.
7. img_array = []
8.
9. # Reading all jpg files
10. for filename in glob.glob('./generated_frames/*.jpg'):
11.     img = cv2.imread(filename)
12.     height, width, layers = img.shape
13.     size = (width,height)
14.     img_array.append(img)
15.
16. # Encoding Techniques, No ofFrames
17. out = cv2.VideoWriter('./generated_video/project.mp4v',
    cv2.VideoWriter_fourcc(*'mp4v'), 30, size)
18.
19. for frame in range(len(img_array)):
20.     out.write(img_array[frame])
21.
22. print("Generated video is saved in \'./generated_video/
    project.mp4\'")
23. out.release()
```

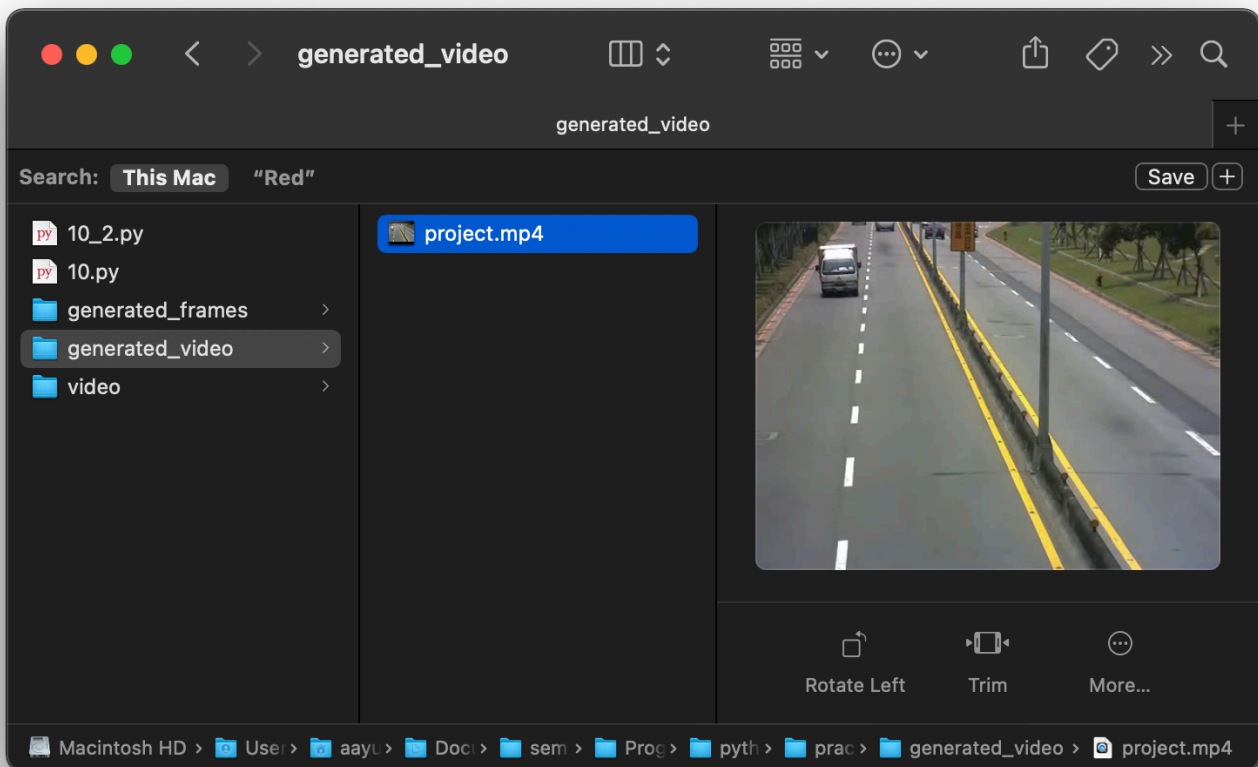
Output :



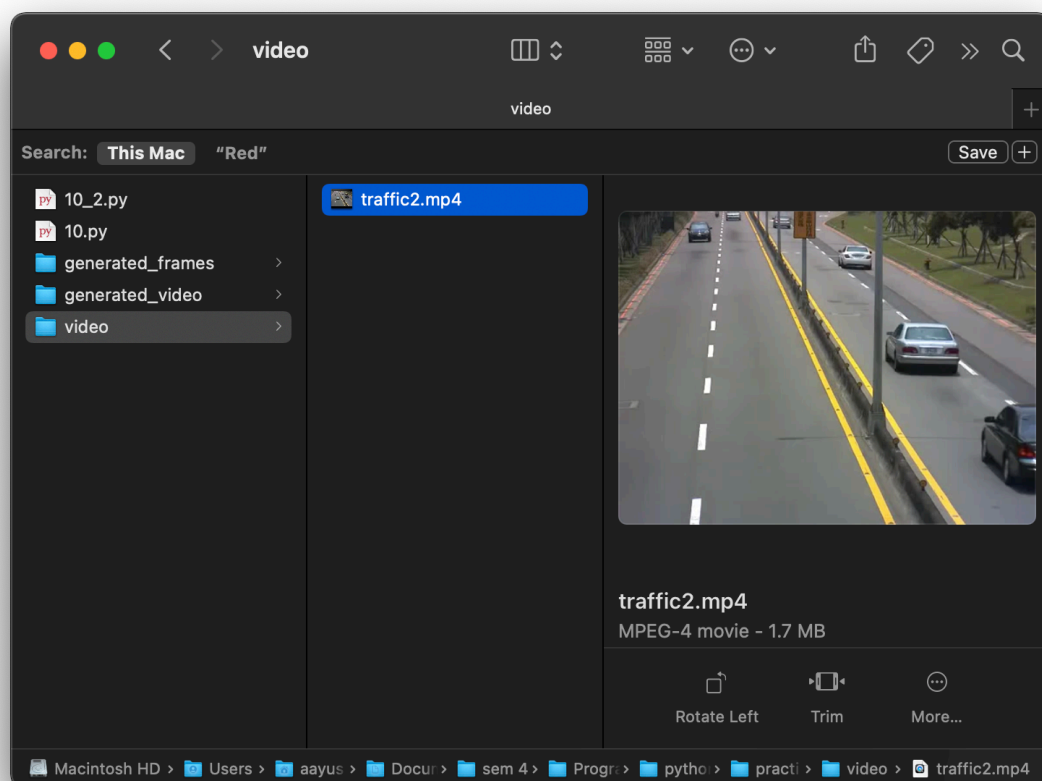
```
Generated video is saved in './generated_video/project.mp4'.
```

✓ Run Succeeded | Time 1 445 ms | Peak Memory 166.2M | Symbol ↕ | Tabs: 4 ↕ | Line 13, Column 26

- *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.