Video Read and Write in Open CV

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To Capture a Video:

To capture a video by a filename:
>>> cv2.VideoCapture('inputfilename.mp4')

To capture a video from the front camera:

>>> cv2.VideoCapture(0)	// Zero(0) is the default device index of the camera one wants to read.

#We can capture videos using Webcam and then and then one may perform desired operations on it
#However, to capture the frame indefinitely we need to use a while loop.

```
>>> while(True):
        ret, frame = cap.read()
        cv2.imshow('Video Screen', frame)
```

//It will take the capture of the camera at that point of time, If it is available then it will return **True** in variable **Ret** and the **desired value** in variable **frame**

Thus, the overall code becomes:

```
>>> import cv2
>>> first_cap = cv2.VideoCapture(0)
>>> while(1):
>>>     ret, frame = first_cap.read()
>>>    cv2.imshow('Video Screen', frame)
>>>     if cv2.waitKey(1) == ord('q'):
>>>         break
>>>
>>> first_cap.release()
>>> cv2.destroyAllWindows()
```

To Convert from RGB to Greyscale:

Take any image(be it a videocapture read or an proper image read),

>>> img = cv2.imread('Me.jpg',1)
>>> gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
>>> cv2.imshow('Video Screen', gray)

#Default coloring of an image that gets loaded is COLOR_BGR

More properties:

>>> first_cap.get(cv2.CAP_PROP_FRAME_WIDTH)	Gets the Width of the frame
>>> first_cap.get(cv2.CAP_PROP_FRAME_HEIGHT)	Gets the Height of the frame

The other properties can be found by clicking the link below:
https://docs.opencv.org/4.0.0/d4/d15/group__videoio__flags__base.html#gaeb8dd9c89c10a5c63c139bf7c4f5704d

To save a video:

#To save the video, we will use the VideoWriter class.

>>> fourcc = cv2.VideoWriter_fourcc('A', 'B', 'C', 'D')
>>> out = cv2.VideoWriter('name_of_output_file.mp3', fourcc, 20.0, (640,480))

2nd Argument: FourCC Code // Read More at http://www.fourcc.org/codecs.php
3rd Argument: Number of frames per second
4th Argument: Size of Video(Width X Height)

Final Code:

```
>>> import cv2
>>> first_cap = cv2.VideoCapture(0)
>>>
>>> four_cc = cv2.VideoWriter_fourcc('X','V','I','D')
>>> first_write = cv2.VideoWriter('firstwrite.mp4', four_cc,20,(640,480))
>>>
>>> while(1):
>>>    ret, frame = first_cap.read()
>>>    grayvideo = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
>>>    first_write.write(grayvideo)
>>>    cv2.imshow('Video Screen', grayvideo)
>>>    if cv2.waitKey(1) == ord('q'):
>>>        break
>>>
>>> first_cap.release()
>>> first_write.release()
>>> cv2.destroyAllWindows()
```

To Set Properties:

>>> first_cap = cv2.VideoCapture(0)
>>> first_cap.set(property name, property value)

Eg: **>>>** first_cap.set(cv2.CAP_PROP_FRAME_HEIGHT, 720)
However, we can use an integer given in:
https://docs.opencv.org/4.0.0/d4/d15/group__videoio__flags__base.html#gaeb8dd9c89c10a5c63c139bf7c4f5704d

Eg: **>>>** first_cap.set(3,720)

#The default camera sets its values of WIDTH and HEIGHT according to its resolution
#Even though you give any value, camera will set the resolutions only which are available for it