In this project, you will be required to write Python code to implement one of these three applications.

Option 1: Blurring a segment in a video

For this option, your code/function should accept the following parameters:

1. A path to a video that lives on your local machine
2. The dimension of the segment that needs to be blurred. Tuple/List of four elements (topLeftX, topLeftY, widthOut, heightOut)
3. Start time of the blur (hh:mm:ss)
4. End time of the blur (hh:mm:ss)

More notes:

1. The blurring should be animated. You can hard-code the duration of the animation, .5 to 2 seconds seems reasonable
2. The blurring should be gradual, which means that the strength/intensity of the blur should be more in the inner part of the segment, and less around the edges

Option 2: Zooming in a segment in a video

For this option, your code/function should accept the following parameters:

1. A path to a video that lives on your local machine
2. The dimension of the segment that needs to be zoomed in. Tuple/List of four elements (topLeftX, topLeftY, widthOut, heightOut)
3. Scale factor (e.g. 2 means 2x)
4. Start time of the blur (hh:mm:ss)
5. End time of the blur (hh:mm:ss)

More notes:

1. The zooming should be animated. You can hard-code the duration of the animation, 2 to 4 seconds seems reasonable
2. You can use a built-in function to scale the segment of the video
3. Of course, the zoomed in segment needs to be in the frame all the time
4. The size of the scaled segment needs to be less than the size of the original image
    - For example, if the segment size is 200x400, and you specify the scale factor to be 2, then the resulting (scaled) segment would be 400x800, which needs to be smaller than the size of the original image/frame in your video
5. You don't need to be do a zoom out animation at the end

Option 3: Adding a caption to a video

For this option, your code/function should accept the following parameters:

1. A path to a video that lives on your local machine
2. Location where the caption needs to be inserted (x, y)
3. Caption font size
4. PauseOrNot (a boolean value that will specify whether the video should be paused or not)
5. Start time of the caption (hh:mm:ss)
6. End time of the caption (hh:mm:ss)

More notes:

1. You can use MoviePy (or any other library of your choice) to create an image with a caption
2. You will also need to provide a color to each pixel (in the caption/text) that contrasts with the background color. For example, assuming that the caption/text is displayed on a background that contains both light and dark intensities, the pixels (in the caption/text) that are on top of the light portion should be dark, and the pixels (in the caption/text) that are on top of the dark portion should be light.

Other notes:

You have the option of working in groups or individually; however, if you work in a group (of 3 students at most), you will be required to:

1. Utilize AWS Lambdas
2. Provide a short virtual/Zoom presentation demoing and presenting your project (you should plan for a 10-minute long presentation)