The aim of this problem is to track basketball players in a given video. Video is basically a recording of moving visual images. In order to detect objects that are moving in a video, we can compute the difference between two consecutive frames, for all frames. The objects that haven’t moved at all will result into zero difference whereas the objects that have undergone some amount of displacement will produce a non-zero difference. This idea can be used to track players in the video at hand. The assumption being made for this idea to work is that the camera location must be constant throughout the recording and this is true in case of the given video. Using this idea, I have implemented the following algorithm with the help of OpenCV in C++.

1. Play the video
2. Capture 2 current consecutive frames at a time (i.e. frame\_1 and frame\_2)
3. Convert them into gray scale images
4. Compute the absolute value of the difference between these 2 grayscale images
5. Convert this difference image into a binary image by thresholding it at a specific level
6. Remove noise by applying smoothing operation i.e. by blurring the thresholded binary image
7. This binary image contains information about the objects that have moved and the basketball is one of these objects
8. To retain only the players, perform morphological operations of opening and closing to get the final thresholded binary image
9. Obtain contours of the objects in this binary image and determine the objects having the largest and the second largest contour size
10. Draw a bounding rectangular box around these objects at the same corresponding locations in current frame\_1
11. Display this same frame\_1 containing bounding rectangles around objects that have moved along with their locations
12. Move to the next two frames of the video and assign those frames to frame\_1 and frame\_2
13. Go to step 2 and carry the same process until the last frame of the video has been reached
14. By successively displaying the images assigned to frame\_1 with their corresponding bounding boxes, a video gets created which basically shows how the player’s movements are being tracked