Eye Monitering Model

Algorithm:-

1. **Import Required Libraries**:
   - `cv2` for image processing and capturing video.
   - `time` for managing eye closure duration.
   - `winsound` for playing alert sounds.
2. **Load Haar Cascade for Eye Detection**:
   - Use `cv2.CascadeClassifier` to load the pre-trained eye detection model.
3. **Initialize Webcam Video Capture**:
   - Use `cv2.VideoCapture(0)` to start capturing video from the webcam.
4. **Initialize Variables**:
   - `eye_closed_start_time` to keep track of the start time when eyes are closed.
   - `eye_closed_duration_threshold` to set the duration (in seconds) after which an alert sound is played if eyes remain closed.
5. **Define Function to Play Sound**:
   - `play_sound()` function uses `winsound.Beep` to play a beep sound with specific frequency and duration.
6. **Main Loop**:
   - Continuously capture frames from the webcam.
7. **Convert Frame to Grayscale**:
   - Use `cv2.cvtColor` to convert the captured frame to a grayscale image for eye detection.
8. **Detect Eyes**:
   - Use the Haar Cascade to detect eyes in the grayscale image.
   - `eye_cascade.detectMultiScale` returns a list of detected eyes.
9. **Check for Eye Detection**:
   - **If no eyes are detected**:
     - If `eye_closed_start_time` is `None`, set it to the current time.
     - If `eye_closed_start_time` is not `None`, calculate the duration for which the eyes have been closed.
     - If the closed duration exceeds `eye_closed_duration_threshold`, call `play_sound()` to play the alert sound and reset `eye_closed_start_time` to avoid continuous beeping.
   - **If eyes are detected**, reset `eye_closed_start_time` to `None`.
10. **Draw Rectangles Around Detected Eyes**:
    - For each detected eye, use `cv2.rectangle` to draw a rectangle on the frame.
11. **Display the Resulting Frame**:
    - Use `cv2.imshow` to display the frame with rectangles around detected eyes.
12. **Break the Loop on 'q' Key Press**:
    - Check if the 'q' key is pressed to exit the loop.
13. **Release Resources**:
    - Release the video capture object.
    - Close all OpenCV windows using `cv2.destroyAllWindows`.