Problem 2
Building an AI model to detect Anomaly

Anomaly detection from CCTV footage works much like object detection. Here are the steps I took to identify the anomaly in creating an AI model-

- ➔ I have selected a video of the "Fire house" for anomaly detection from the video.
- ➔ I have chosen the YOLOv4 model from the video as suitable for anomaly detection.
- ➔ I collected a total of 150 images from Google and annotated them with the labelimg.
- ➔ For the labeling, Fire is selected as "Anomaly" and the other one is "House".
- ➔ I created a yolov4 folder to store all important files for custom training.
- ➔ copy over both datasets (object.zip and test.zip) into the root directory of the Colab VM.
- ➔ Unzip the datasets and the contents so that the files are in / darknet / data / folder.
- ➔ **Configured files for training:** This step involves properly configuring the custom .cfg, obj.data, obj.names, train.txt and test.txt files. It is important to configure all these files with extreme caution as typos or small errors can cause major problems with the custom training.
    - ☐ Upload the custom .cfg back to the cloud VM from Google Drive.
    - ☐ Upload the obj.names and obj.data files to cloud VM from Google Drive.
- ➔ Generating train.txt and test.txt file.
- ➔ **Download pre-trained weights for the convolutional layers:** This step downloads the weights for the convolutional layers of the YOLOv4 network. By using these weights it helps the custom object detector to be way more accurate and not have to train as long.
- ➔ Train the custom object detector.
- ➔ Checking the Mean Average Precision (mAP) of The Model.
- ➔ Run the custom object detector.
- ➔ For detecting the Anomaly from a fire house, darknet converts into the TensorFlow model.
- ➔ Find the weighted file after training the model
- ➔ Analysis the video for detecting the Anomaly.