**Lab Tasks**

**Lab Manual Work:**

**Q1:** Dry run code of Uniform cost search.

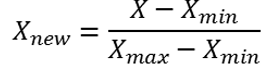
1. Input different graphs with different values.
2. What you will observe if goal node is set to 3 instead of 4.
3. Modify code of UCS and display graph and highlight shortest path.

**Project Work:**

**Q2:** Change code of KNN written with Sklearn to scratch code.

1. Perform split of train and test sets without “train\_test\_split” function.
2. Perform scaling of features without built in MinMax Scaler () func.

Formula of MinMax Scaling is given below:



Apply this formula feature wise.(Each feature)

1. Write code of KNN without Sklearn.
2. Perform K-fold cross validation (make it user defined e.g. user entered, k=5)
3. Use Manhattan distance instead of Euclidian distance. Formula is given below. Analyze your performance.



**Q3:** Write a code which takes images from your folder and augment each image 2 times and store in another folder with different names. The two augmentation types are given below:

1. Invert Image

By subtracting pixel values from 255, this augmenter inverts the input image.

**(b)** Image Solarize

This augmenter inverts all pixel values greater than a certain threshold in the input image.