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Algorithm - K-Means segmentation of data

Algorithm kmeans
    input:    dat - the data that is to be segmented, must be in the
                form of a vector where each element contains the
                information for one discrete peice of data,
            k - the number of segments to separate the data into

    output:    segment_idx - a vector the same length as dat, used to
                store the segment each peice of data belongs to
            segment_means - an array of the mean values of the segments
                in the data.

    means - array of k values to act as mean segment values
    intitialize means with k different values from dat
    newmeans - symmetric array of means, used to store new means
        calculated from segments to compare against old means

    for val in dat
        set corresponding index of val in segment_idx to index of
        closest value from means array

    for mean in means
        recalculate mean value for each segment using values in dat whos
        coresponding index in segment_idx is equal to the index of mean
        in means, store new value innewmeans array

    **process data until values in means do not change after an
        iteration through the data**
    while newmeans not = means
        means = newmeans - set means to values in newmeans

        for val in dat
            recalculate segments as above

        for mean in means
            recalculate mean value for each segment as above

    return segment_idx, segment_means

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