glass <- read\_csv("G:/data science/Assignment/KNN/ass1/glass.csv")

Parsed with column specification:

cols(

RI = col\_double(),

Na = col\_double(),

Mg = col\_double(),

Al = col\_double(),

Si = col\_double(),

K = col\_double(),

Ca = col\_double(),

Ba = col\_double(),

Fe = col\_double(),

Type = col\_integer()

)

> View(glass)

> attach(glass)

> str(glass)

Classes ‘tbl\_df’, ‘tbl’ and 'data.frame': 214 obs. of 10 variables:

$ RI : num 1.52 1.52 1.52 1.52 1.52 ...

$ Na : num 13.6 13.9 13.5 13.2 13.3 ...

$ Mg : num 4.49 3.6 3.55 3.69 3.62 3.61 3.6 3.61 3.58 3.6 ...

$ Al : num 1.1 1.36 1.54 1.29 1.24 1.62 1.14 1.05 1.37 1.36 ...

$ Si : num 71.8 72.7 73 72.6 73.1 ...

$ K : num 0.06 0.48 0.39 0.57 0.55 0.64 0.58 0.57 0.56 0.57 ...

$ Ca : num 8.75 7.83 7.78 8.22 8.07 8.07 8.17 8.24 8.3 8.4 ...

$ Ba : num 0 0 0 0 0 0 0 0 0 0 ...

$ Fe : num 0 0 0 0 0 0.26 0 0 0 0.11 ...

$ Type: int 1 1 1 1 1 1 1 1 1 1 ...

- attr(\*, "spec")=List of 2

..$ cols :List of 10

.. ..$ RI : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Na : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Mg : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Al : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Si : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ K : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Ca : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Ba : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Fe : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Type: list()

.. .. ..- attr(\*, "class")= chr "collector\_integer" "collector"

..$ default: list()

.. ..- attr(\*, "class")= chr "collector\_guess" "collector"

..- attr(\*, "class")= chr "col\_spec"

> summary(glass)

RI Na Mg Al Si

Min. :1.511 Min. :10.73 Min. :0.000 Min. :0.290 Min. :69.81

1st Qu.:1.517 1st Qu.:12.91 1st Qu.:2.115 1st Qu.:1.190 1st Qu.:72.28

Median :1.518 Median :13.30 Median :3.480 Median :1.360 Median :72.79

Mean :1.518 Mean :13.41 Mean :2.685 Mean :1.445 Mean :72.65

3rd Qu.:1.519 3rd Qu.:13.82 3rd Qu.:3.600 3rd Qu.:1.630 3rd Qu.:73.09

Max. :1.534 Max. :17.38 Max. :4.490 Max. :3.500 Max. :75.41

K Ca Ba Fe Type

Min. :0.0000 Min. : 5.430 Min. :0.000 Min. :0.00000 Min. :1.00

1st Qu.:0.1225 1st Qu.: 8.240 1st Qu.:0.000 1st Qu.:0.00000 1st Qu.:1.00

Median :0.5550 Median : 8.600 Median :0.000 Median :0.00000 Median :2.00

Mean :0.4971 Mean : 8.957 Mean :0.175 Mean :0.05701 Mean :2.78

3rd Qu.:0.6100 3rd Qu.: 9.172 3rd Qu.:0.000 3rd Qu.:0.10000 3rd Qu.:3.00

Max. :6.2100 Max. :16.190 Max. :3.150 Max. :0.51000 Max. :7.00

> boxplot(glass)

> pairs(glass)

> table(glass$Type)

1 2 3 5 6 7

70 76 17 13 9 29

> glass$Type <- factor(glass$Type , levels = c("1","2" ,"3" ,"5" ,"6" , "7"))

> str(glass)

Classes ‘tbl\_df’, ‘tbl’ and 'data.frame': 214 obs. of 10 variables:

$ RI : num 1.52 1.52 1.52 1.52 1.52 ...

$ Na : num 13.6 13.9 13.5 13.2 13.3 ...

$ Mg : num 4.49 3.6 3.55 3.69 3.62 3.61 3.6 3.61 3.58 3.6 ...

$ Al : num 1.1 1.36 1.54 1.29 1.24 1.62 1.14 1.05 1.37 1.36 ...

$ Si : num 71.8 72.7 73 72.6 73.1 ...

$ K : num 0.06 0.48 0.39 0.57 0.55 0.64 0.58 0.57 0.56 0.57 ...

$ Ca : num 8.75 7.83 7.78 8.22 8.07 8.07 8.17 8.24 8.3 8.4 ...

$ Ba : num 0 0 0 0 0 0 0 0 0 0 ...

$ Fe : num 0 0 0 0 0 0.26 0 0 0 0.11 ...

$ Type: Factor w/ 6 levels "1","2","3","5",..: 1 1 1 1 1 1 1 1 1 1 ...

- attr(\*, "spec")=List of 2

..$ cols :List of 10

.. ..$ RI : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Na : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Mg : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Al : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Si : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ K : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Ca : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Ba : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Fe : list()

.. .. ..- attr(\*, "class")= chr "collector\_double" "collector"

.. ..$ Type: list()

.. .. ..- attr(\*, "class")= chr "collector\_integer" "collector"

..$ default: list()

.. ..- attr(\*, "class")= chr "collector\_guess" "collector"

..- attr(\*, "class")= chr "col\_spec"

> glass\_train <- glass[1:200,]

> glass\_test <- glass[201:214,]

> glass\_train\_labels <- glass[1:114,10]

> glass\_train\_labels <- glass\_train\_labels[["Type"]]

> glass\_test\_labels <- glass[115:214,10]

> glass\_test\_labels <- glass\_test\_labels[["Type"]]

> glass\_test\_pred <- knn(train = glass\_train , test = glass\_test , cl=glass\_train\_labels , k= 21)

Error in knn(train = glass\_train, test = glass\_test, cl = glass\_train\_labels, :

'train' and 'class' have different lengths

> normlize <- function(x){}

> normlize <- function(x){}

> normlize <- function(x){

+ return((x -min(x))/ (max(x)-min(x)))}

> normlize(c(0.01,0.02,0.03,0.04,0.05))

[1] 0.00 0.25 0.50 0.75 1.00

> normlize(c(10 , 20 , 30 ,40 , 50))

[1] 0.00 0.25 0.50 0.75 1.00

> glass\_n <- as.data.frame(lapply(glass[2:9], normalize))

Error in match.fun(FUN) : object 'normalize' not found

> glass\_n <- as.data.frame(lapply(glass[2:9], normlize))

> glass\_train <- glass[1:200,]

> glass\_test <- glass[201:214,]

> glass\_train\_labels <- glass[1:114,10]

> glass\_train\_labels <- glass\_train\_labels[["Type"]]

> glass\_test\_labels <- glass[115:214,10]

> glass\_test\_labels <- glass\_test\_labels[["Type"]]

> glass\_test\_pred <- knn(train = glass\_train , test = glass\_test , cl=glass\_train\_labels , k= 21)

Error in knn(train = glass\_train, test = glass\_test, cl = glass\_train\_labels, :

'train' and 'class' have different lengths