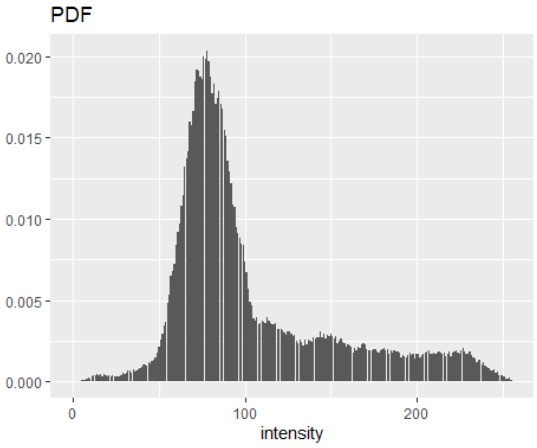
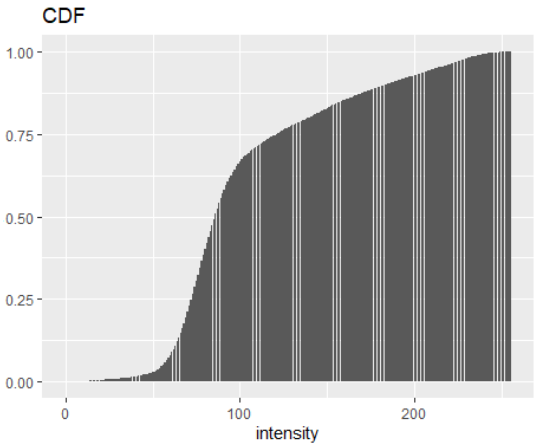
Ploting codes

```
library(tidyverse)
setwd("C:/Users/KimMinyoung/Desktop/2020-1 학기/오픈소프트웨어프로젝트/Lec03")
pdf <- read.table("PDF.txt")
cdf <- read.table("CDF.txt")
stretched_PDF <- read.table("stretched_PDF.txt")
equalized_PDF_gray <-read.table("equalized_PDF_gray.txt")
PDF_RGB<-read.table("PDF_RGB.txt")
equalized_PDF_RGB<-read.table("equalized_PDF_RGB.txt")
equalized_PDF_YUV<-read.table("equalized_PDF_YUV.txt")
matched_PDF_gray<-read.table("matched_PDF_gray.txt")
matched_PDF_YUV<-read.table("matched_PDF_YUV.txt")
trans_func_stretch <- read.table("trans_func_stretch.txt")
trans_func_eq <-read.table("trans_func_eq.txt")
trans_func_eq_RGB<-read.table("trans_func_eq_RGB.txt")
trans_func_eq_YUV <-read.table("trans_func_eq_YUV.txt")
trans_func_ma_gray<-read.table("trans_func_ma_gray.txt")
trans_func_ma_YUV<-read.table("trans_func_ma_YUV.txt")
matched_PDF_gray<-read.table("matched_PDF_gray.txt")
matched_PDF_YUV<-read.table("matched_PDF_YUV.txt")
names(pdf)<- c("x","y")
names(cdf)<- c("x","y")
names(stretched_PDF)<- c("x","y")
names(equalized_PDF_gray)<- c("x","y")
names(PDF_RGB)<-c("x","color1_R","color2_G","color3_B")
names(equalized_PDF_RGB)<-c("x","color1_R","color2_G","color3_B")
names(equalized_PDF_YUV)<-c("x","color1_R","color2_G","color3_B")
names(trans_func_stretch)<- c("x","y")
names(trans_func_eq)<- c("x","y")
names(trans_func_eq_RGB)<-c("x","color1_R","color2_G","color3_B")
names(trans_func_eq_YUV)<- c("x","y")
names(trans_func_ma_gray)<- c("x","y")
names(trans_func_ma_YUV)<- c("x","y")
names(matched_PDF_gray)<- c("x","y")
names(matched_PDF_YUV)<- c("x","color1_R","color2_G","color3_B")
```

Practice1 - PDF/CDF Generation

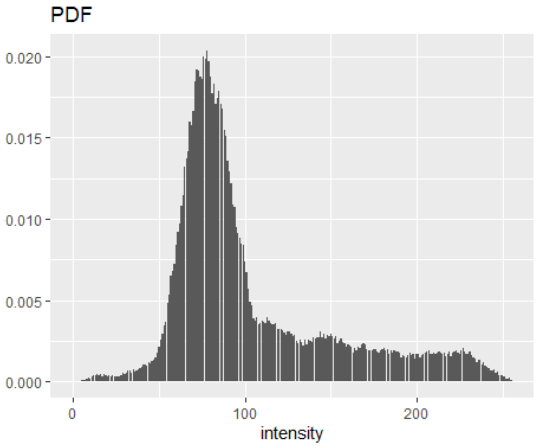
```
ggplot(pdf,aes(x,y))+geom_bar(stat="identity")+ggtitle("PDF")+xlab("intensity
")

ggplot(cdf,aes(x,y))+geom_bar(stat="identity")+ggtitle("CDF")+xlab("intensity
")
```

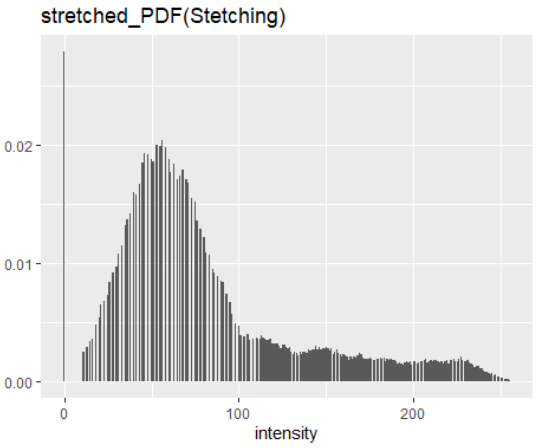


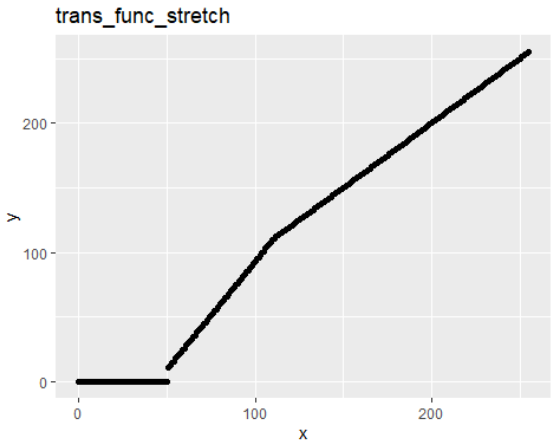


Pratice2 - Histogram Stretching

```
ggplot(pdf,aes(x,y))+geom_bar(stat="identity")+ggtitle("PDF")+xlab("intensity
")

ggplot(stretched_PDF,aes(x,y))+geom_bar(stat="identity")+ggtitle("stretched_P
DF(Stetching)")+xlab("intensity")

trans_func_eq_RGB<-trans_func_eq_RGB%>%
  gather(`color1_R`,`color2_G`,`color3_B`,key = "color", value="y")

ggplot(trans_func_stretch,aes(x,y))+geom_point()+ggtitle("trans_func_stretch")
```



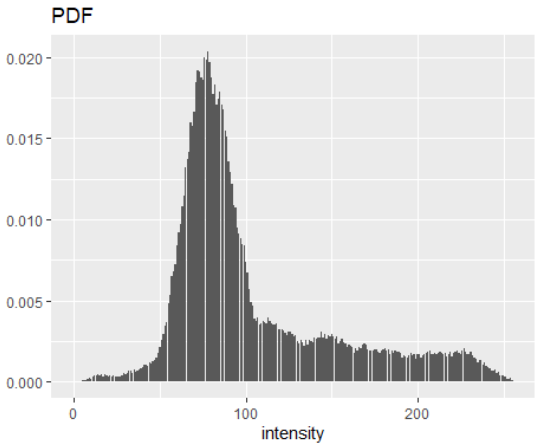


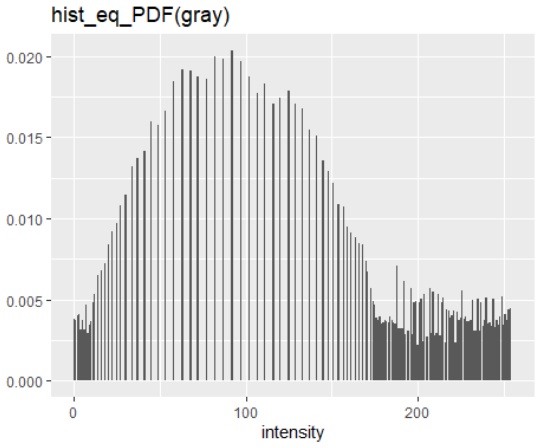


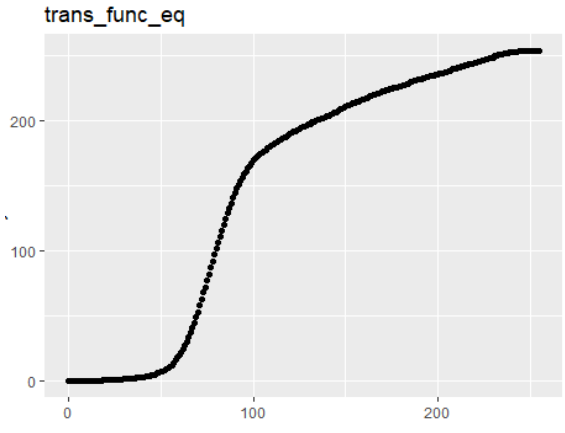
practice3 - histogram Equalization gray

```
ggplot(pdf,aes(x,y))+geom_bar(stat="identity")+ggtitle("PDF")+xlab("intensity
")

ggplot(equalized_PDF_gray,aes(x,y))+geom_bar(stat="identity")+ggtitle("hist_e
q_PDF(gray)")+xlab("intensity")
```

```
ggplot(trans_func_eq,aes(x,y))+geom_point()+ggtitle("trans_func_eq")
```

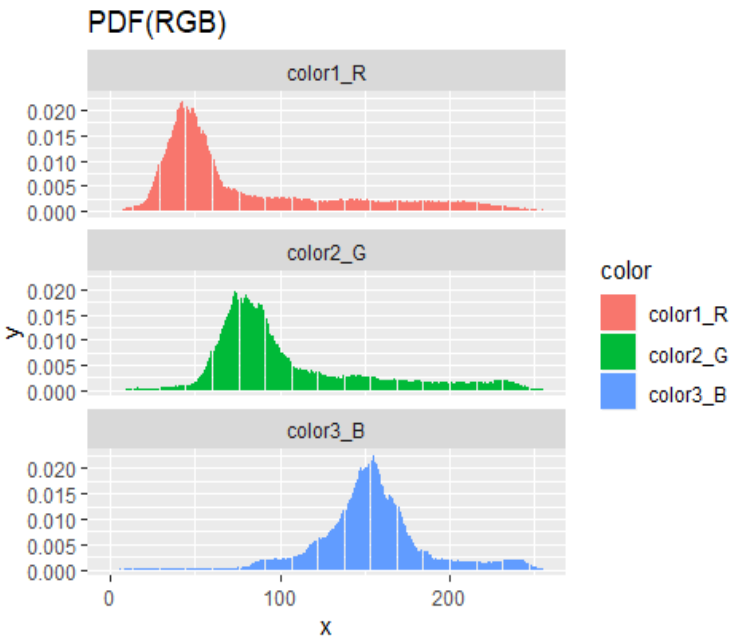


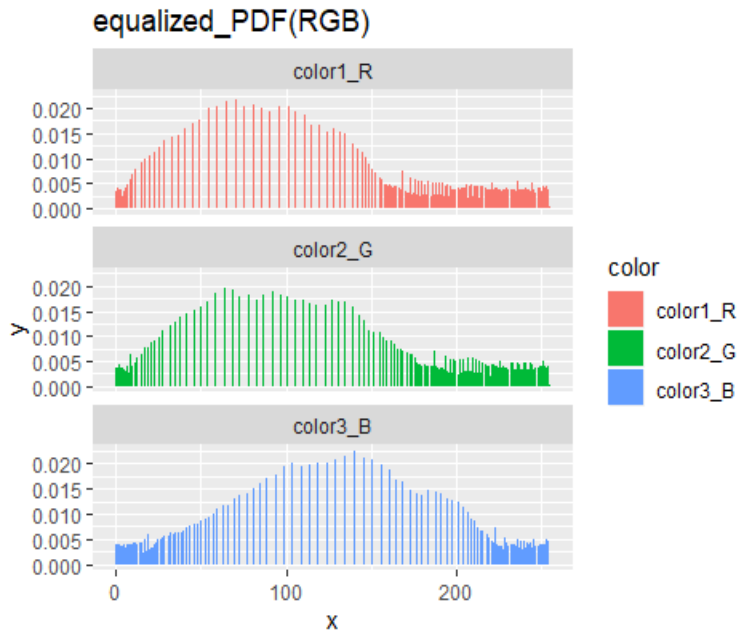


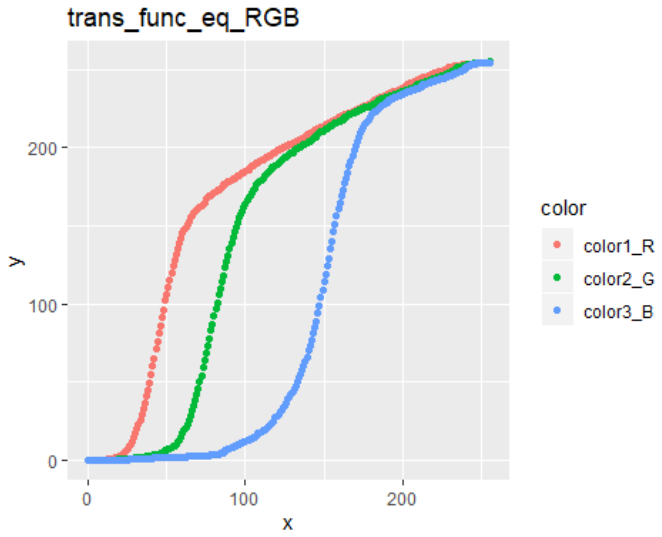


practice4 - histogram Equalization RGB

```
PDF_RGB<-PDF_RGB%>%
  gather(`color1_R`,`color2_G`,`color3_B`,key = "color", value="y")
equalized_PDF_RGB<-equalized_PDF_RGB%>%
  gather(`color1_R`,`color2_G`,`color3_B`,key = "color", value="y")
equalized_PDF_YUV<-equalized_PDF_YUV%>%
  gather(`color1_R`,`color2_G`,`color3_B`,key = "color", value="y")

ggplot(PDF_RGB,aes(x,y,fill=color))+geom_bar(stat="identity")+ggtitle("PDF(RGB)")+facet_wrap(~color,ncol=1)

ggplot(equalized_PDF_RGB,aes(x,y,fill=color))+geom_bar(stat="identity")+ggtitle("equalized_PDF(RGB)")+facet_wrap(~color,ncol=1)

ggplot(trans_func_eq_RGB,aes(x,y,color=color))+geom_point()+ggtitle("trans_func_eq_RGB")
```

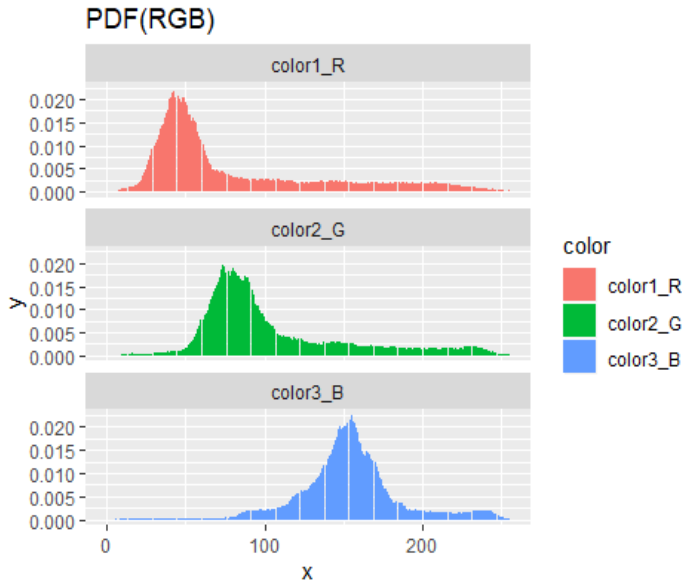


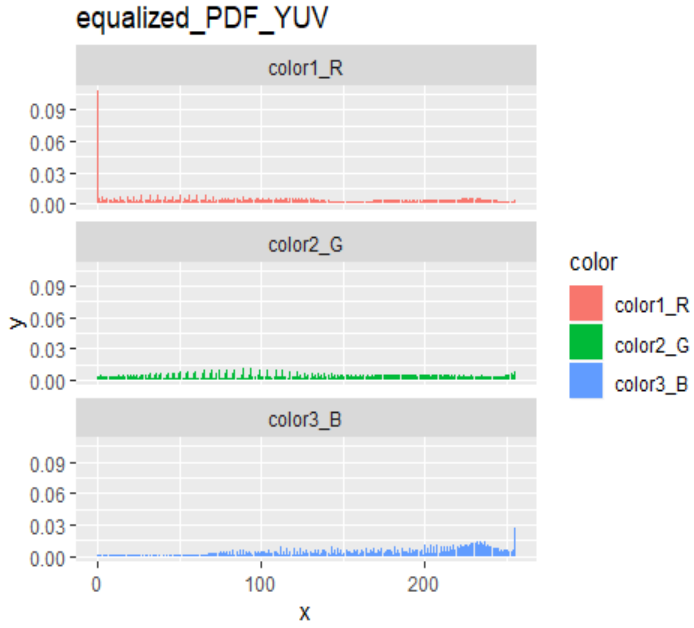




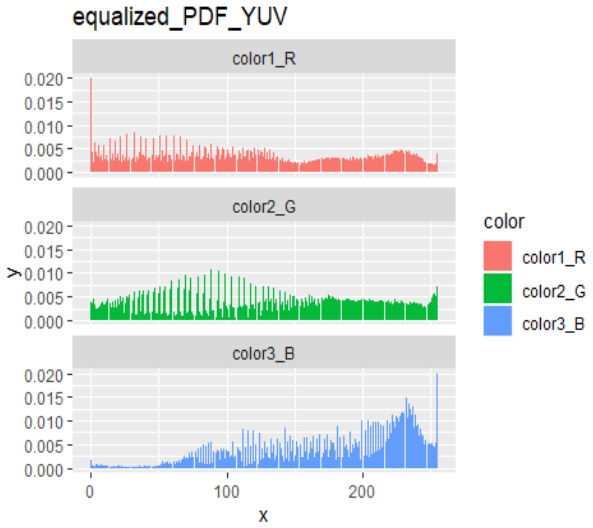
practice5 - histogram Equalization YUV

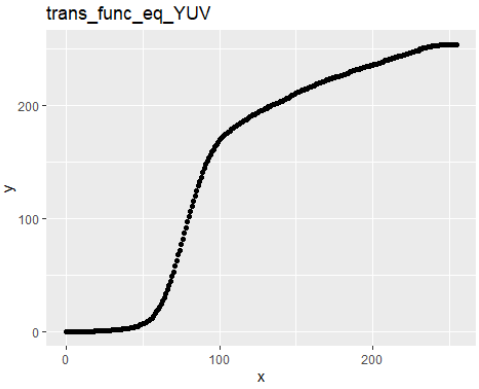
```
ggplot(PDF_RGB,aes(x,y,fill=color))+geom_bar(stat="identity")+ggtitle("PDF(RGB)")+facet_wrap(~color,ncol=1)

ggplot(equalized_PDF_YUV,aes(x,y,fill=color))+geom_bar(stat="identity")+ggtitle("equalized_PDF_YUV")+facet_wrap(~color,ncol=1)

ggplot(trans_func_eq_YUV,aes(x,y))+geom_point()+ggtitle("trans_func_eq_YUV")
```





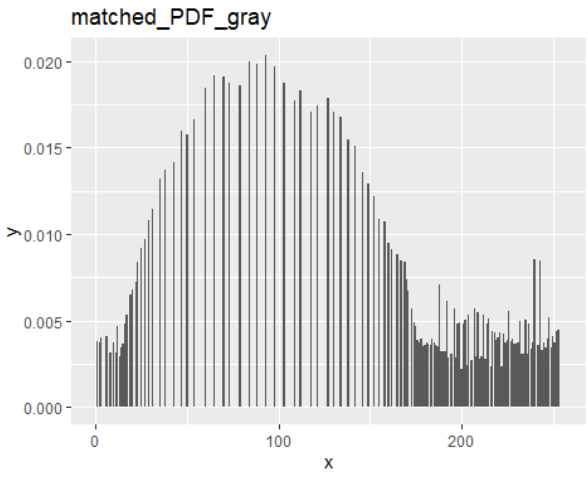
➔ `0.02` 가 넘는 `outlier` 때문에 분포가 잘 보이지 않기때문에 분포를 보기위해 큰 값을 `0.02` 로 바꿔넣어 그려보면 아래와 같다.

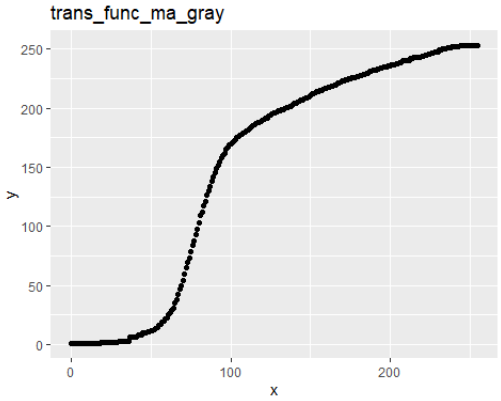




Homework1 - histogram matching gray

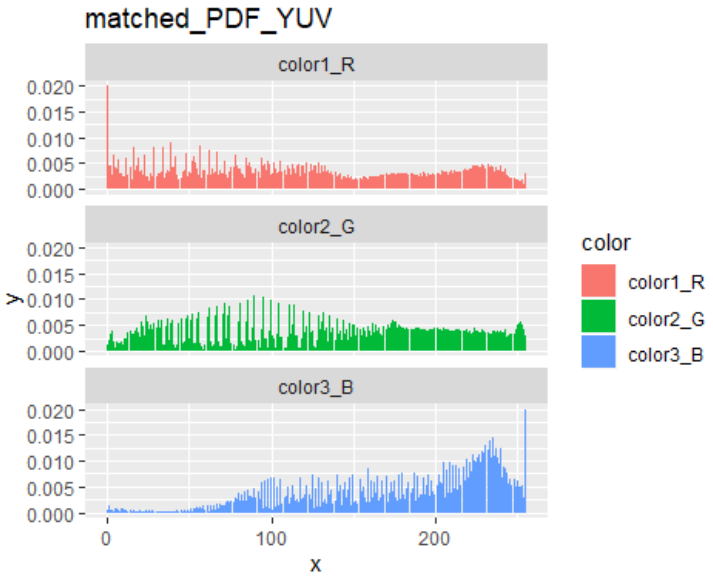
```
ggplot(matched_PDF_gray,aes(x,y))+geom_bar(stat="identity")+ggtitle("matched_
PDF_gray")

ggplot(trans_func_ma_gray,aes(x,y))+geom_point()+ggtitle("trans_func_ma_gray")
```

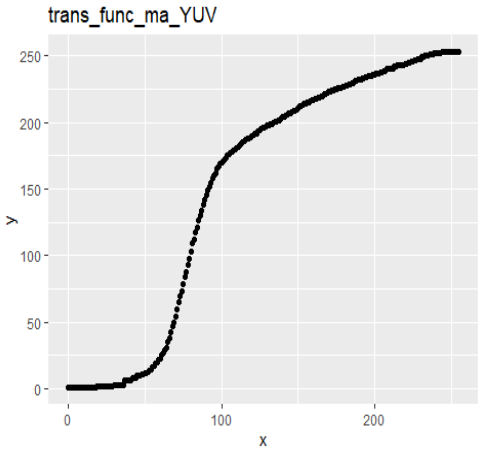




Homework2 - histogram matching YUV

```
matched_PDF_YUV$color1_R[1]<-0.02
matched_PDF_YUV$color3_B[256]<-0.02
matched_PDF_YUV<-matched_PDF_YUV%>%
  gather(`color1_R`,`color2_G`,`color3_B`,key = "color", value="y")

ggplot(matched_PDF_YUV,aes(x,y,fill=color))+geom_bar(stat="identity")+ggtitle
("matched_PDF_YUV")+facet_wrap(~color,ncol=1)

ggplot(trans_func_ma_YUV,aes(x,y))+geom_point()+ggtitle("trans_func_ma_YUV")
```




trans_func_ma_YUV
250
200
150
100
50
0
y
0
100
200
x