R Code for Statistical analysis of dataset

```
install.packages(c("tidyverse","gt","janitor")) # Install required Packages for code executionlibrary(tidyverse) #Data Tools Required (Dplyr,ggplot)
library(gt) #Table Package create and format tables
library(janitor) # Data examining tool ## using the tabyl function to return frequency table
#############Functions ########################
Fun_con_Features = function(x)#Get Data Stats
{
   x %>%
     droplevels(.) %>% # Removes 0 Values
     tabyl(.) %>% # Returns Frequency Table of Values
     adorn_totals("col") %>% #Generate Percent Value Coloum
     adorn_pct_formatting()
}
#### Import Data ##############################
 IoFT_Dataset  <- read.csv("IoFT_Dataset.csv", #location of CSV
                                          na.strings="",
                                             stringsAsFactors=TRUE)
                                             ###########CLEAN DATA
                                             ####################
IoFT_Dataset$Type = factor(str_trim(IoFT_Dataset$Type))
IoFT_Dataset$Type.of.Attack = factor(str_trim(IoFT_Dataset$Type.of.Attack))##########Data Analysis#########################
df_CLASSIFICATION = Fun_con_Features( IoFT_Dataset$Type)
df_CLASSIFICATION$CAT.FEATURE = "CLASSIFICATION"
df_CLASSIFICATIONdf_senario = Fun_con_Features( IoFT_Dataset$Attack.Senario)
df_senario$CAT.FEATURE = "Attack.Senario"
df_senariodf_TYPE_ATTACK = Fun_con_Features(IoFT_Dataset$Type.of.Attack)
df_TYPE_ATTACK$CAT.FEATURE = "Type Of Attack"
df_TYPE_ATTACKdf_protocal = Fun_con_Features(IoFT_Dataset$Protocol)
df_protocal$CAT.FEATURE = "Protocals"
df_protocal#Combine all dataFrames into one "table (DF)"
df.cat.feature = dplyr::bind_rows(
   df_TYPE_ATTACK,
   df_protocal
)
#Build a table with GT
df.cat.feature %>%
   gt() %>%
   tab_header(
     title = "Dataset Features",
     #subtitle = "Part 1, Section i"
```

```
  )%>%
  cols_label( #provide Accurate Titles for Column
    . = "Feature Type",
    n = "N",
    percent = "%"
  ) %>%
  cols_align(
    align = "right"
  ) %>%
  cols_hide(
    #Remove Columns of data that do not need to be displayed within
       the table
    columns = c("CAT.FEATURE", "Total")
  ) %>%
  tab_row_group(
    group = "Type of Attack",
    rows = CAT.FEATURE == "Type Of Attack"
  ) %>%
  tab_row_group(
    group = "Protocal",
    rows = CAT.FEATURE == "Protocals"
  )
```

Code Snippet 2: R Code used to generate ECU-IoFT dataset statistics presented within the report.