**Part 2**

**Chart 1: Different Types of Attacks**

xyplot(Attack.category ~ Number.of.events, data =ev, ylab = "Types of Attacks", xlab = "Number of events", geom = "boxplot", xlim=range(0:5000))

**Chart 2: Different types of attacks**

qplot(Attack.category,data = ip, main = "Different types of Attacks")

**Chart 3: Different types of attacks and Source IPs**

qplot(Attack.category,data = ip, fill = Source.IP, main = "Different types of Attacks w sIP")

**Chart 4: Different types of attacks and Destination IP’s**

qplot(Attack.category, data = ip, fill = Destination.IP, main = "Different types Attacks w dIP")

**Chart 5: Source IP Counts**

qplot(Source.IP,data = ip, main = "Different types of Attacks")

**Chart 6: Focus on single IP address 175.45.176.1**

**SingleSipFilt** = filter(ip, Source.IP == '175.45.176.1') # focus on a single IP

SingleSipGbyAttck = groupby(SingleSipFilt, Attack.category) # set it up for summarize

SingleSipSum = summarize(SingleSipGbyAttck, cont=n()) # Attcks and Counts

SingleSipArr = arrange(SingleSipSum, desc(cont), Attack.category) #high to low

barchart(cont~Attack.category, data=SingleSipArr) #attack occurrences for single IP

or

SingleSipFilt = filter(ip, Source.IP == '175.45.176.1')

qplot(Attack.category,data = SingleSipFilt, main = "Attacks from SIP 175.45.176.1")

**Chart 7: Table with 3 columns of counts of sIP, Attacks, Freq, in 13 attack boxes**

1. tbip=table(ip$Source.IP, ip$Attack.category)

2. tbip=as.data.frame(table(ip$Source.IP, ip$Attack.category))

3. xyplot(Freq ~ sIP | Attcks, data = tbip, main = "Number of attack from Source IP", xlab="Source IP", ylab="Occurances", pch=19 )

or

4. levelplot(Freq ~ Var1\*Var2, data = tbip, shrink = c(0.5, 1), main = "Number of attack from Source IP", xlab="Source IP", ylab="Occurances",col.regions = colorRampPalette(c("#F5F5F5", "#01665E"))(20))

**Chart 8: Destination Port Numbers being used by Attacks**

dstip = as.data.frame(table(ip$Destination.IP, ip$Destination.Port)

topPor2 = dstip[dstip$Freq > 5,]

xyplot(ports ~ dIP , data = topPor2, main = "Destination Port Numbers being used by Attacks", xlab="Destination IP", ylab="Destination Port", grid=TRUE )

**Chart 9: Top 25 Attacked Destination Ports**

1. port = as.data.frame(table(ip$Destination.Port) #count all different ports

2. top = port[port$Freq > 100,] #only counts of ports above 100

3**. xyplot(Port.Num ~ Freq, data = top, ylab = "Destination Port Number", xlab = "Number of attacks",main = "Top 25 Attacked Destination Ports" , geom = "boxplot", xlim=range(100:20000))**

**Chart 10: Destination port 80 attacks (subset)**

1. http = subset(ip, Destination.Port == "80")

2. qplot(Attack.category,data = http, fill = Source.IP, main = "Different types of HTTP Attacks")

**Chart 11: Top Protocols used in Attacks**

smpr=as.data.frame(table(ip$Protocol))

topprot = smpr[smpr$Freq >390]

barchart(Var1 ~ Freq , data = topprot, main = "Top 11 Protocols used in attacks", xlab="Number of Times used", ylab="Protocol", grid=TRUE )

barchart(Var1 ~ Freq , data = topprot, main = "Top 11 Protocols used in attacks", sub="(Displaying Detail of Smaller Value Range)", xlab="Number of Times used", ylab="Protocol", grid=TRUE, xlim=range(0:10000)