Caballero_Rworksheet#4a

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```
#1.
shoe_size <- c(6.5,9.0,8.5,8.5,10.5,7.0,9.5,9.0,13.0,7.5,10.5,8.5,12.0,10.5,13.0,11.5,8.5,5.0,10.0,6.5,
Height <- c(66.0,68.0,64.5,65.0,70.0,64.0,70.0,71.0,72.0,64.0,74.5,67.0,71.0,71.0,77.0,72.0,59.0,62.0,7
Household_data <- data.frame(shoe_size,Height)
Household_data
#A the data shows the data of shoe sizes and their corresponding height.



Gender <- c("F","F","F","F","M","F","F","F","M","F","M","F","M","M","M","M","F","F","M","F","F","M","M"
final_household <- cbind(Household_data,Gender)
final_household
#we are making a subset of Male and Female
male_subset <- subset(final_household, Gender == "M")
male_subset

female_subset <- subset(final_household,Gender == "F")
female_subset
#B the result is
#male_subset
#shoe_size Height Gender
#5       10.5   70.0      M
#9       13.0   72.0      M
#11      10.5   74.5      M
#13      12.0   71.0      M
#14      10.5   71.0      M
#15      13.0   77.0      M
#16      11.5   72.0      M
#19      10.0   72.0      M
#22       8.5   67.0      M
#23      10.5   73.0      M
#25      10.5   72.0      M
#26      11.0   70.0      M
#27       9.0   69.0      M
#28      13.0   70.0      M

#> female_subset
#shoe_size Height Gender
#1        6.5   66.0      F
#2        9.0   68.0      F
#3        8.5   64.5      F
#4        8.5   65.0      F
#6        7.0   64.0      F
```

```
#7          9.5   70.0      F
#8          9.0   71.0      F
#10         7.5   64.0      F
#12         8.5   67.0      F
#17         8.5   59.0      F
#18         5.0   62.0      F
#20         6.5   66.0      F
#21         7.5   64.0      F
#24         8.5   69.0      F


#C Means
mean_size <- mean(shoe_size)
mean_size
#the mean of all shoe size of the repondents(all) is 9.410714

mean_height <- mean(Height)
mean_height
#the mean of all height of the respondents(all) is  68.57143

mean_shoe_M <- mean(male_subset$shoe_size)
mean_shoe_M
#the mean of shoe sizes of male repondents is 10.96429

mean_height_M <- mean(male_subset$Height)
mean_height_M
#the mean of height of male respondents is 71.46429

mean_shoe_F <- mean(female_subset$shoe_size)
mean_shoe_F
#the mean of shoe sizes of female respondents is 7.857143

mean_height_F <- mean(female_subset$Height)
mean_height_F
#the mean of height of female respondents is 65.67857

#D
#Yes there is a relationship between shoe sizes and height, the taller the person is the bigger its sho


#2
months <- c("March","April","January","November","January",
            "September","October","September","November","August",
            "January","November","November","February","May","August",
            "July","December","August","August","September","November","February","April")
factor_months_vector <- factor(months)
factor_months_vector

#3
summary_month <- summary(months)
summary_month
#  Length    Class      Mode
#      24 character character
```

```
summary_factor <- summary(factor_months_vector)
summary_factor
#April     August   December  February    January       July      March
#2         4          1         2           3           1          1
#May   November    October September
#1         5          1         3
#both Vectors are useful but a factor can be more important when the order of levels matters, while a cl
#7.
#a.
calc_min_bills<-function(){
  price<-as.integer(readline(prompt="Price of snack(a random number divisible by 50):"))

  if (is.na(price)|| price %% 50 !=0){
    cat("Invalid.\n")
    return()
  }
  num_bills<-0
  bill_denominations<-c(1000,500,200,100,50)

  for(bill in bill_denominations){
    num_bills<-num_bills + (price %/% bill)
    price<-price %% bill
  }

  cat("Minimum number of bills needed:", num_bills,"\n")
}
calc_min_bills()

#8.
#a.
Name<-c("Annie","Thea","Steve","Hanna")
Grade1<-c(85,65,75,95)
Grade2<-c(65,75,55,75)
Grade3<-c(85,90,80,100)
Grade4<-c(100,90,85,90)
cardDf<-data.frame(Name, Grade1, Grade2, Grade3, Grade4)
cardDf

#b.
student_above_90<-FALSE
for(j in 1:length(Name)){
  average_score<-c((Grade1)[j]+(Grade2)[j]+(Grade3)[j]+(Grade4)[j])/4
  if (average_score>90){
    cat(paste(Name[j], "'s average grade this semester is", round(average_score,2),"\n"))
    student_above_90<-TRUE
  }
}
if(!student_above_90){
  print("No student have an average of over 90 in the math during the semester")
}

#c.
for (test_num in 1:4){
  total_score<-Grade1 + Grade2 + Grade3 + Grade4
```

```r
    average_score<-total_score/4
    if (average_score[test_num]<80){
      cat("The", test_num, "test was difficult.\n")
    }
}


#d.
for (j in 1:length(Name)){
  highest_grade<-Grade1[j]

  if (Grade2[j]>highest_grade){
    highest_grade<-Grade2[j]
  }
  if (Grade3[j]>highest_grade){
    highest_grade<-Grade3[j]
  }
  if (Grade4[j]>highest_grade){
    highest_grade<-Grade4[j]
  }

  if (highest_grade>90){
    cat(paste(Name[j], "'s highest grade this semester is", highest_grade, ".\n"))
  }
}
```