R Notebook

Code

DATA SCIENCE PROGRAMMING II (BSD2223)

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QUESTIONS 1

Hide

```
s1 <- 1.9
s2 <- 2.7
n1 <- 25
n2 <- 18

degreesoffreedom <- (((s1^2/n1)+(s2^2/n2))^2)/((((s1^2/n1)^2)/(n1-1))+(((s2^2/n2)^2)/(n2-1)))
degreesoffreedom
```

```
[1] 28.69932
```

QUESTIONS 2

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```
#A
fruits <- c("apple","banana","strawberry","durian","mango")
fruits
```

```
[1] "apple"      "banana"     "strawberry" "durian"     "mango"
```

Hide

```
#B
oddnum <- seq(11,20,by=2)
oddnum
```

```
[1] 11 13 15 17 19
```

Hide

```
#C
fruitsandoddcom <- c(fruits,oddnum)
fruitsandoddcom
```

```
 [1] "apple"      "banana"     "strawberry" "durian"     "mango"      "11"
 [7] "13"         "15"         "17"         "19"
```

Hide

```
#D
class(fruitsandoddcom)
```

```
[1] "character"
```

Hide

```
#E
fruitsandoddcom[c(3,7)]
```

```
[1] "strawberry" "13"
```

Hide

```
#F
head(fruitsandoddcom,-1)
```

```
[1] "apple"      "banana"     "strawberry" "durian"     "mango"      "11"
[7] "13"         "15"         "17"
```

QUESTIONS 3

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```
##Relation operators are used to compare between values, terms or expressions. Returns a Boolean TRUE value if the first ope
rand satisfies the relation compared to the second. A TRUE value is always considered to be greater than the FALSE. For exam
ple:

## The result of different words is shown 'FALSE'
"LinDan" == "LeeChongWei"
```

```
[1] FALSE
```

Hide

```
## The result of same words is shown 'TRUE'
"LeeChongWei" == "LeeChongWei"
```

```
[1] TRUE
```

Hide

```
## 4 > 2 is shown 'TRUE'
4 > 2
```

```
[1] TRUE
```

Hide

```
## 4 < 2 is shown 'FALSE'
4 < 2
```

```
[1] FALSE
```

Hide

```
## Since the last number of alphabet is z which is the largest number for all alphabets and 9 also is the largest number for all singular numbers. For Example:

#A < B < C < D < E < F < G < H < I < J < K < L < M
#  < N < O < P < Q < R < S < T < U < V < W < X < Y < Z

#a < b < c < d < e < f < g < h < i < j < k < l < m
#  < n < o < p < q < r < s < t < u < v < w < x < y < z

#0 < 1 < 2 < 3 < 4 < 5 < 6 < 7 < 8 < 9

##Doing for compare "abcdef" and "abcefg"

##Since the first three characters of both strings are equal but 'd' of the first string is smaller than 'e' of the second, then "abcdef" < "abcefg" is TRUE.

c("abcdef") < c("abcefg")
```

```
[1] TRUE
```

Hide

```
## logical operators are used to carry out Boolean operations which are ‘AND’, ‘OR’ and ‘NOT’. For example:

a <- c(TRUE, TRUE, FALSE, FALSE)
b <- c(TRUE, FALSE, TRUE, FALSE)

## The result of NOT 'a' is shown opposite of the elements of 'a'
!a
```

```
[1] FALSE FALSE  TRUE  TRUE
```

Hide

```
## Operators & and | perform element-wise operation producing result with the length of the longer operand.
a & b
```

```
[1]  TRUE FALSE FALSE FALSE
```

Hide

```
a | b
```

```
[1]  TRUE  TRUE  TRUE FALSE
```

Hide

```
## Operators && and || evaluates only the first element of the operands resulting into a single length logical vector.
a && b
```

```
Warning: 'length(x) = 4 > 1' in coercion to 'logical(1)'Warning: 'length(x) = 4 > 1' in coercion to 'logical(1)'
```

```
[1] TRUE
```

Hide

```
a || b
```

```
Warning: 'length(x) = 4 > 1' in coercion to 'logical(1)'
```

```
[1] TRUE
```

QUESTIONS 4

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```
#A
v1 <- c(TRUE,TRUE,-0.001,0,FALSE)
V2 <- c(FALSE,TRUE,0,TRUE,55)
v1 || v2
```

```
Warning: 'length(x) = 5 > 1' in coercion to 'logical(1)'
```

```
[1] TRUE
```

Hide

```
#B
v3 <- c(TRUE,FALSE,0,27,-0.001)
v4 <- c(TRUE,-0.5,0,TRUE,0)
v3 & v4
```

```
[1]  TRUE FALSE FALSE  TRUE FALSE
```