2_logicalOperators

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how to use logical operators & and , | or , == not

& and ——————————————-

```r
a <- 10>20 & 10<20

print(a)
```

```
## [1] FALSE
```

```r
b <- 10<20 & 10<30

print(b)
```

```
## [1] TRUE
```

or | —————————————————-

```r
c <- 10>20 | 10<20

print(c)
```

```
## [1] TRUE
```

```r
d <- 10>20 | 10>30

print(d)
```

```
## [1] FALSE
```

equal == ————————————————————

```r
e <- 10 == 20

print(e)
```

```
## [1] FALSE
```

```r
f <- 10 == 10
print(f)
```

```
## [1] TRUE
```

no equal != ————————————————-

```r
g <- 10 != 20

print(g)
```

```
## [1] TRUE
```

```r
h <- 10 != 10

print (h)
```

```
## [1] FALSE
```

using logical operation on datset

##h how to read csv file

```r
auction <- read.csv("C:\\Users\\Administrator\\Desktop\\Data_Science\\Project_1_Rstudio\\Data\\auction.
```

how to project data top 5

```r
head(auction)
```

```
##     auctionid   bid  bidtime                  bidder bidderrate openbid price
## 1 1638893549 175.0 2.230949            schadenfreud          0      99 177.5
## 2 1638893549 100.0 2.600116                   chuik          0      99 177.5
## 3 1638893549 120.0 2.600810              kiwisstuff          2      99 177.5
## 4 1638893549 150.0 2.601076              kiwisstuff          2      99 177.5
## 5 1638893549 177.5 2.909826 eli.flint@flightsafety.co          4      99 177.5
## 6 1639453840   1.0 0.355856                bfalconb          2       1 355.0
##                item  auction_type
## 1 Cartier wristwatch 3 day auction
## 2 Cartier wristwatch 3 day auction
## 3 Cartier wristwatch 3 day auction
## 4 Cartier wristwatch 3 day auction
## 5 Cartier wristwatch 3 day auction
## 6 Cartier wristwatch 3 day auction
```

```
### how to view in tabular format

View(auction)

### getting perticular data

a <- auction[auction$bidder == "chuik" & auction$bid == 100,]

a
```

```
##      auctionid bid  bidtime bidder bidderrate openbid price            item
## 2   1638893549 100 2.600116  chuik          0      99 177.5 Cartier wristwatch
## NA          NA  NA       NA   <NA>         NA      NA    NA             <NA>
##      auction_type
## 2   3 day auction
## NA           <NA>
```

```
b <- auction[auction$auctionid >= 150 & auction$openbid >= 50,]

head(b)
```

```
##      auctionid    bid  bidtime                   bidder bidderrate openbid
## 1   1638893549 175.0 2.230949            schadenfreud          0      99
## 2   1638893549 100.0 2.600116                   chuik          0      99
## 3   1638893549 120.0 2.600810              kiwisstuff          2      99
## 4   1638893549 150.0 2.601076              kiwisstuff          2      99
## 5   1638893549 177.5 2.909826 eli.flint@flightsafety.co          4      99
## 39  1641142160  99.0 0.715428          princess-ginger         18      99
##       price               item  auction_type
## 1    177.50 Cartier wristwatch 3 day auction
## 2    177.50 Cartier wristwatch 3 day auction
## 3    177.50 Cartier wristwatch 3 day auction
## 4    177.50 Cartier wristwatch 3 day auction
## 5    177.50 Cartier wristwatch 3 day auction
## 39   200.01 Cartier wristwatch 3 day auction
```

```
c <- auction[auction$bidder == "kiwisstuff" & auction$bid != 150,]

c
```

```
##         auctionid bid bidtime     bidder bidderrate openbid price
## 3      1638893549 120 2.60081 kiwisstuff          2      99 177.5
## NA             NA  NA      NA       <NA>         NA      NA    NA
## NA.1           NA  NA      NA       <NA>         NA      NA    NA
## NA.2           NA  NA      NA       <NA>         NA      NA    NA
## NA.3           NA  NA      NA       <NA>         NA      NA    NA
## NA.4           NA  NA      NA       <NA>         NA      NA    NA
## NA.5           NA  NA      NA       <NA>         NA      NA    NA
## NA.6           NA  NA      NA       <NA>         NA      NA    NA
## NA.7           NA  NA      NA       <NA>         NA      NA    NA
## NA.8           NA  NA      NA       <NA>         NA      NA    NA
## NA.9           NA  NA      NA       <NA>         NA      NA    NA
```

```
## NA.10          NA  NA    NA      <NA>        NA    NA    NA
## NA.11          NA  NA    NA      <NA>        NA    NA    NA
## NA.12          NA  NA    NA      <NA>        NA    NA    NA
## NA.13          NA  NA    NA      <NA>        NA    NA    NA
## NA.14          NA  NA    NA      <NA>        NA    NA    NA
## NA.15          NA  NA    NA      <NA>        NA    NA    NA
##                      item   auction_type
## 3     Cartier wristwatch 3 day auction
## NA                   <NA>           <NA>
## NA.1                 <NA>           <NA>
## NA.2                 <NA>           <NA>
## NA.3                 <NA>           <NA>
## NA.4                 <NA>           <NA>
## NA.5                 <NA>           <NA>
## NA.6                 <NA>           <NA>
## NA.7                 <NA>           <NA>
## NA.8                 <NA>           <NA>
## NA.9                 <NA>           <NA>
## NA.10                <NA>           <NA>
## NA.11                <NA>           <NA>
## NA.12                <NA>           <NA>
## NA.13                <NA>           <NA>
## NA.14                <NA>           <NA>
## NA.15                <NA>           <NA>
```