Day1_Notes

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Notes during Lecture

https://docs.google.com/document/d/1XMRyRu4VAb1kXgstZc61qrt0gKggWX5A5OYXpGZI2P8/edit

Document to ask questions

brakets around x<-4 will automatically print it

```
(x<-4)
```

```
## [1] 4
```

round brakets only for functions

which(age>=18) gives us vector of indices, but if age[which(age>=18)] or age[age>=18] we get values that are >=18.

Factor sets the levels to distinct values/characters/possibilities. NEVER convert factor directly into a numeric –> have to do 2 steps! 1st transform into character, then to numeric. R saves factors under diffferent class called "factor".

Exercises

1.1

```
sqrt(144)
```

```
## [1] 12
```

```
log2(24)
```

```
## [1] 4.584963
```

```
2/3*(sqrt(9)-log10(1000))^2+5/6
```

```
## [1] 0.8333333
```

##1.2

```
x <- 2
y <- 10
y!=x
```

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

```
y==x
```

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

```
y>=x
```

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

```
(z <- y/x)
```

```
## [1] 5
```

```
y/2
```

```
## [1] 5
```

Environment shows variables defined by me.

1.3

not possible due to number at the beginning of the variable. Change number.

1.4

```
Name <- "Maria"
Age <- 30
PhD <- TRUE
class(Name)
```

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

```
class(Age)
```

```
## [1] "numeric"
```

```
class(PhD)
```

```
## [1] "logical"
```

```
is.na((PhD))
```

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

1.5

```
x <- -5
y <- 0
z <- x / y
z
```

```
## [1] -Inf
```

1.6

```
b <- 16
h <- 9
(A <- b*h)
```

```
## [1] 144
```

```
A > 100
```

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

1.7

```
num <- c(seq(1,10,1))
alpha <- letters[1:5]
mix <- c(num, alpha)
class(mix)
```

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

1.8

```
expDesign <- factor(c(rep("Wildtype", 3), rep("Mutant", 4)))
class(expDesign)
```

```
## [1] "factor"
```

```
length(expDesign)
```

```
## [1] 7
```

```
levels(expDesign)
```

```
## [1] "Mutant"   "Wildtype"
```

```
names(expDesign) <- c( paste0("M", seq(1, 7, 1)))
expDesign
```

```
##       M1       M2       M3       M4       M5       M6       M7
## Wildtype Wildtype Wildtype   Mutant   Mutant   Mutant   Mutant
## Levels: Mutant Wildtype
```

1.9

no differences in Value, class or length.

1.10

```
x <- c(0, -1, 3, 10, -14, 7.5, 9)
y <- x[c(1,3,4,6,7)]

y1 <- x[c(-2, -5)]
y2 <- x[c(T, F, T, T, F, T, T)]
y3 <- x[x >0]
```

1.11

```
normExpr <- c(10.2, 11.4, 4.0)
names(normExpr) <- c("CD8A", "CD8B", "PDCD1")

normExpr[1:2]
```

```
## CD8A CD8B
## 10.2 11.4
```

```
normExpr[c(1,2)]
```

```
## CD8A CD8B
## 10.2 11.4
```

```
normExpr[c("CD8A", "CD8B")]
```

```
## CD8A CD8B
## 10.2 11.4
```

1.12

```
cellFractions <- c(-0.1, 0.4, -0.4, 0.5, 0.2)
cellFractions[cellFractions<=0] <- 0
```