BGGN213_Lopez_Lab6

Steven Lopez

Intro to functions lecture activities

```
add <- function(x,y) {
  x+y
}
```

Can I execute this chunk?

```
add (1,1)
```

```
[1] 2
```

```
add (c(100,1),1)
```

```
[1] 101   2
```

```
add<-function(x, y=1) {
  x+y
}
```

```
add(5)
```

```
[1] 6
```

```
add (1,3)
```

```
[1] 4
```

```
add (c(100,1),2)
```

```
[1] 102   3
```

```
add <- function(x, y, z) {
  x+y+z
}
add(10, 1, 1)
```

```
[1] 12
```

Make a function “generate_DNA()” that makes a random nucleotide sequence of any length.

```
#generate_DNA <- function() {
bases <- c("A", "C", "G", "T")
sample(bases, size = 5, replace = TRUE)
```

```
[1] "G" "T" "C" "C" "G"
```

Make function

```
generate_DNA <- function(length) {
  bases <- c("A", "C", "G", "T")
  sequence <- sample(bases, size = length, replace = TRUE)
  return(sequence)
}
generate_DNA(10)
```

```
 [1] "A" "G" "A" "T" "A" "G" "A" "C" "A" "A"
```

```
#install.packages("bio3d")
library(bio3d)
unique(bio3d::aa.table$aa1)[1:20]
```

```
 [1] "A" "R" "N" "D" "C" "Q" "E" "G" "H" "I" "L" "K" "M" "F" "P" "S" "T" "W" "Y"
[20] "V"
```

Generate random protein sequences of length 6 to 12.

```
generate_protein <- function(length){
  amino_acids <- unique(bio3d::aa.table$aa1)
  sequence <- sample(amino_acids, size=length, replace = TRUE)
  sequence <- paste(sequence, collapse = "")
  return(sequence)
}
```

Sequences from length 6 to 12.

```
answer <- sapply(6:12, generate_protein)
answer
```

```
[1] "QDRREY"       "ENIEIRK"      "EHTXVFGQ"     "WQSMLGATC"    "HYEAXYWDKV"
[6] "NTFIRQAYIFM"  "MCHTXLNIVVSH"
```

Run function

```
generate_protein(6)
```

```
[1] "ICIDMT"
```

```
paste(c("barry", "alice", "amy", "chandra"),
      "loves R")
```

```
[1] "barry loves R"   "alice loves R"   "amy loves R"     "chandra loves R"
```

```
paste(">id.", 6:12, "\n", answer, "\n", sep ="")
```

```
[1] ">id.6\nQDRREY\n"        ">id.7\nENIEIRK\n"       ">id.8\nEHTXVFGQ\n"
[4] ">id.9\nWQSMLGATC\n"     ">id.10\nHYEAXYWDKV\n"   ">id.11\nNTFIRQAYIFM\n"
[7] ">id.12\nMCHTXLNIVVSH\n"
```

```
cat(paste(">id.", 6:12, "\n", answer, "\n", sep =""), sep = "")
```

```
>id.6
QDRREY
>id.7
ENIEIRK
```

```
>id.8
EHTXVFGQ
>id.9
WQSMLGATC
>id.10
HYEAXYWDKV
>id.11
NTFIRQAYIFM
>id.12
MCHTXLNIVVSH
```