lab6

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My first function :)

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

Can I just use it?

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

```
[1] 2
```

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

```
[1] 101
```

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

```
[1] 101   2 101
```

```
add(10, 10)
```

```
[1] 20
```

```
add(10)
```

```
[1] 11
```

Q: Make a function "Generate_DNA()" that makes a random nucleotide sequence of any length (user specifies the length)

```
  bases <- c("A", "C", "G", "T")
  sequence <- sample(bases, size=100, replace = TRUE)
```

Above is my working snippet, now I can make it into a function

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

Now I can run this function to get output

```
Generate_DNA(10)
```

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

the paste function is included here because collapse = " " changes the output from "A" "B" "C" etc. to ABC to put the output together so you can copy and paste it into BLAST to get the identities

```
Generate_protein <- function(length) {
  amino_acids <- unique(bio3d::aa.table$aa1)[1:20]
  sequence <- sample(amino_acids, size=length, replace = TRUE)
  sequence <- paste(sequence, collapse ="")
  return(sequence)
}
```

Run function

```
Generate_protein(10)
```

```
[1] "CSDINILIGT"
```

I want to generate sequences of length 6 to 12

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

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

```
>id.6
VHNWDI
>id.7
FCPGDWS
>id.8
HNPLIYWT
>id.9
WHREPDVVA
>id.10
VFAARNWLVI
>id.11
VNVSHPLNYFP
>id.12
FGYMRKTNQYKI
```