

Apply-Prep

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Introduction to Repeating things in R

```
estmass <- function(volume) {  
  mass <- 2.65 * volume ^0.9  
  return(mass)  
}
```

- Make a vector and apply or map functions
- combine functions using dplyr

Using Vectorized functions

```
c(1,2,3) * 2
```

```
## [1] 2 4 6
```

```
volume = c(1.6, 5.6, 3.1)  
estmass(volume) #already vectorized
```

```
## [1] 4.045329 12.491515 7.336204
```

```
str_to_sentence(c("dipodomys", "chartodipus")) #capitalized
```

```
## [1] "Dipodomys" "Chartodipus"
```

```
genus <- c("dipodomys", "chaetodipus", "dipodomys")  
species <- c("ordil", "baileyi", "spectabilis")  
combine_genus_species <- function(genus, species) {  
  genus_cap <- str_to_sentence(genus)  
  genus_species <- paste(genus_cap, species)  
  return(genus_species)  
}  
combine_genus_species(genus, species)
```

```
## [1] "Dipodomys ordil" "Chaetodipus baileyi" "Dipodomys spectabilis"
```

```
data <- data.frame(genus, species)
combine_genus_species(data$genus, data$species)
```

```
## [1] "Dipodomys ordii"      "Chaetodipus baileyi"  "Dipodomys spectabilis"
```

Mapply Function

```
estmass <- function(volume, veg_type){
  if (veg_type == "tree"){
    mass <- 2.65 * volume^0.9
  } else {
    mass <- NA
  }
  return(mass)
}
volumes <- c(1.6, 5.6, 3.1)
veg_type <- c("shrub", "tree", "tree")
mapply(FUN = estmass, volume = volumes, veg_type = veg_type)
```

```
## [1]      NA 12.491515  7.336204
```

Combining functions with DPLYR

```
estmass <- function(volume, veg_type){
  if (veg_type == "tree"){
    mass <- 2.65 * volume^0.9
  } else {
    mass <- NA
  }
  return(mass)
}
estmassvectorized <- function(volume){
  mass <- 2.65 * volume^0.9
  return(mass)
}
volumes <- c(1.6, 5.6, 3.1)
veg_type <- c("shrub", "tree", "tree")
plant_data <- data.frame(volumes, veg_type)
plant_data %>% #need to use vectorized data line 82
  mutate(masses = estmassvectorized(volumes))
```

```
##   volumes veg_type  masses
## 1     1.6   shrub  4.045329
## 2     5.6    tree 12.491515
## 3     3.1    tree  7.336204
```

```
plant_data %>%
  rowwise() %>%
  mutate(masses = estmass(volumes, veg_type))
```

```
## # A tibble: 3 x 3
## # Rowwise:
##   volumes veg_type masses
##   <dbl> <chr>    <dbl>
## 1     1.6 shrub     NA
## 2     5.6 tree     12.5
## 3     3.1 tree      7.34
```

```
getbiomass <- function(volumes){
  masses <- estmassvectorized(volumes)
  biomass <- sum(masses)
  return(biomass)
}
getbiomass(volumes)
```

```
## [1] 23.87305
```

```
#with dplyr
plant_data %>%
  group_by(veg_type) %>%
  summarize(biomass = getbiomass(volumes))
```

```
## # A tibble: 2 x 2
##   veg_type biomass
##   <chr>    <dbl>
## 1 shrub      4.05
## 2 tree     19.8
```