

# loops-prep

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#Basic For Loops in R

```
for (item in list_of_items){  
  do_something(item)  
}  
volumes <- c(1.6,3,8)  
for (volume in volumes){  
  mass <- 2.65 * volume^0.9  
  print(mass)  
}
```

```
volume <- volumes[1]  
mass <- 2.65 * volume^0.9  
print(mass)  
volume <- volumes[2]  
mass <- 2.65 * volume^0.9  
print(mass)  
volume <- volumes[3]  
mass <- 2.65 * volume^0.9  
print(mass)
```

#Looping By Index

```
volumes <- c(1.6,3,8) # i is short for index  
masses <- vector(length = length(volumes), mode = "numeric")  
for (i in 1:length(volumes)){  
  mass <- 2.65 * volumes[i]^0.9  
  masses[i] <- mass  
}
```

#Looping Over Multiple Objects

```
volumes <- c(1.6,3,8)  
b0 <- c(2.65, 1.28, 3.29)  
b1 <- c(0.9, 1.1, 1.2)  
masses <- vector(length = length(volumes), mode = "numeric")  
for (i in 1:length(volumes)){  
  mass <- 2.65 * volumes[i]^b1[i]  
  masses[i] <- mass  
}
```

### #Looping Using Functions

```
est_mass <- function (volume){  
  if (volume > 5) {  
    mass <- 2.65 * volume ^ 0.9  
  }else {  
    mass <- NA  
  }  
  return(mass)  
}  
  
volumes = c(1.6, 3, 8)  
masses <- vector(mode = "numeric", length = length(volumes))  
for (i in 1:length(volumes)) {  
  mass <- est_mass(volumes[i])  
  masses[i] <- mass  
}  
  
masses_apply <- sapply(volumes, est_mass)
```

### #Looping Over Files

```
download.file("https://www.datacarpentry.org/semester-biology/data/locations.zip", "locations.zip")  
unzip("locations.zip")  
  
data_files<- list.files(pattern = "locations-")  
results<- vector(mode = "integer", length(data_files))  
for(i in 1:length(data_files)){  
  data <- read.csv(data_files[i])  
  count <- nrow(data)  
  results[i] <- count  
}
```