Why BLB is fast

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```
n <- 100000
b <- 100
N <- rnorm(n)
B <- sample(N,b)

mean1 <- function(B,n){
X <- sample(B, n, replace = TRUE)
return(mean(X))
}

mean2 <- function(B,n,b){
  X <- as.numeric( rmultinom(1,n,rep(1/b,b)) )
  return(sum(X*B)/n)
}

mean1(B,n)
```

```
## [1] 0.1475424
```

```
mean2(B,n,b)
```

```
## [1] 0.1453736
```

```
microbenchmark::microbenchmark(mean1(B,n), mean2(B,n,b))
```

```
## Unit: microseconds
##            expr      min        lq       mean   median        uq      max
##     mean1(B, n) 1848.499 1991.7710 2929.21315 2255.875 2686.1705 32239.42
##  mean2(B, n, b)   16.336   19.0155   30.05457   31.213   37.0225    57.29
##  neval
##    100
##    100
```