

Homework 1 Solutions

Question 1

```
load("fertilizer_2000.RData")
```

```
# part (a)  
nrow(fertilizer_2000)
```

```
## [1] 68
```

```
# part (b)  
fertilizer_2000[21,]$country
```

```
## [1] "Gambia, The"
```

```
# part (c)  
mean_gdp <- mean(fertilizer_2000$avgdppc)  
mean_gdp
```

```
## [1] 4291.377
```

```
# part (d)  
above_avg_gdp <- subset(fertilizer_2000, avgdppc > mean_gdp)  
mean(above_avg_gdp$prec)
```

```
## [1] 1391.391
```

Question 2

```
# part (a)  
fibonacci <- function(n) {  
  # handle n=1 or 2  
  if (n==1) return(0)  
  if (n==2) return(1)  
  
  fib <- c(0,1) # set first two values  
  for (i in 3:n) {  
    fib[i] <- fib[i-1] + fib[i-2]  
  }  
  fib[n]  
}
```

```
# check that it works  
fibonacci(5)
```

```
## [1] 3
```

```
fibonacci(8)
```

```
## [1] 13
```

```
fibonacci(16)
```

```
## [1] 610
```

```
# part (b)
```

```
alt_seq <- function(a,b,n) {
```

```
  if (n==1) return(a)
```

```
  if (n==2) return(b)
```

```
  alt_fib <- c(a,b)
```

```
  for (i in 3:n) {
```

```
    alt_fib[i] <- alt_fib[i-1] + alt_fib[i-2]
```

```
  }
```

```
  alt_fib[n]
```

```
}
```

```
# check that it works
```

```
alt_seq(a=3,b=7,n=4)
```

```
## [1] 17
```

```
alt_seq(a=5,b=9,n=16)
```

```
## [1] 7375
```