Holden Herrell IST687 HW3

```
#Step 1
readStates <- function() {

  CensusURL<- "http://www2.census.gov/programs-surveys/popest/tables/2010-2011/state/totals/nst-est2011-01.csv"

  dfStates<- read.csv(url(CensusURL))

  return(dfStates)
}

dfStates<-readStates()
dfStates
```

```
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62 Note: The April 1, 2010 Population Estimates base reflects changes to the Census 2010 population from geograph
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	X	X.1	X.2
1			
2	April 1, 2010	Population Estimates (as of July 1)	
3	Census	Estimates Base	2010
4	308,745,538	308,745,538	309,330,219
5	55,317,240	55,317,244	55,366,108
6	66,927,001	66,926,987	66,976,458
7	114,555,744	114,555,757	114,857,529
8	71,945,553	71,945,550	72,130,124
9	4,779,736	4,779,735	4,785,401
10	710,231	710,231	714,146
11	6,392,017	6,392,013	6,413,158
12	2,915,918	2,915,921	2,921,588
13	37,253,956	37,253,956	37,338,198
14	5,029,196	5,029,196	5,047,692
15	3,574,097	3,574,097	3,575,498
16	897,934	897,934	899,792
17	601,723	601,723	604,912
18	18,801,310	18,801,311	18,838,613
19	9,687,653	9,687,660	9,712,157
20	1,360,301	1,360,301	1,363,359
21	1,567,582	1,567,582	1,571,102
22	12,830,632	12,830,632	12,841,980
23	6,483,802	6,483,800	6,490,622
24	3,046,355	3,046,350	3,050,202
25	2,853,118	2,853,118	2,859,143
26	4,339,367	4,339,362	4,347,223
27	4,533,372	4,533,372	4,545,343
28	1,328,361	1,328,361	1,327,379
29	5,773,552	5,773,552	5,785,681
30	6,547,629	6,547,629	6,555,466
31	9,883,640	9,883,635	9,877,143
32	5,303,925	5,303,925	5,310,658
33	2,967,297	2,967,297	2,970,072
34	5,988,927	5,988,927	5,995,715
35	989,415	989,415	990,958
36	1,826,341	1,826,341	1,830,141
37	2,700,551	2,700,551	2,704,283
38	1,316,470	1,316,472	1,316,807
39	8,791,894	8,791,894	8,799,593
40	2,059,179	2,059,180	2,065,913
41	19,378,102	19,378,104	19,395,206
42	9,535,483	9,535,475	9,560,234
43	672,591	672,591	674,629
44	11,536,504	11,536,502	11,537,968
45	3,751,351	3,751,354	3,760,184
46	3,831,074	3,831,074	3,838,332

47	12,702,379	12,702,379	12,717,722
48	1,052,567	1,052,567	1,052,528
49	4,625,364	4,625,364	4,637,106
50	814,180	814,180	816,598
51	6,346,105	6,346,110	6,357,436
52	25,145,561	25,145,561	25,253,466
53	2,763,885	2,763,885	2,775,479
54	625,741	625,741	625,909
55	8,001,024	8,001,030	8,023,953
56	6,724,540	6,724,540	6,742,950
57	1,852,994	1,852,996	1,854,368
58	5,686,986	5,686,986	5,691,659
59	563,626	563,626	564,554
60			
61	3,725,789	3,725,789	3,721,978
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	X.3	X.4	X.5	X.6	X.7	X.8
1		NA	NA	NA	NA	NA
2		NA	NA	NA	NA	NA
3	2011	NA	NA	NA	NA	NA
4	311,591,917	NA	NA	NA	NA	NA
5	55,521,598	NA	NA	NA	NA	NA
6	67,158,835	NA	NA	NA	NA	NA
7	116,046,736	NA	NA	NA	NA	NA
8	72,864,748	NA	NA	NA	NA	NA
9	4,802,740	NA	NA	NA	NA	NA
10	722,718	NA	NA	NA	NA	NA
11	6,482,505	NA	NA	NA	NA	NA
12	2,937,979	NA	NA	NA	NA	NA
13	37,691,912	NA	NA	NA	NA	NA
14	5,116,796	NA	NA	NA	NA	NA
15	3,580,709	NA	NA	NA	NA	NA
16	907,135	NA	NA	NA	NA	NA
17	617,996	NA	NA	NA	NA	NA
18	19,057,542	NA	NA	NA	NA	NA
19	9,815,210	NA	NA	NA	NA	NA
20	1,374,810	NA	NA	NA	NA	NA
21	1,584,985	NA	NA	NA	NA	NA
22	12,869,257	NA	NA	NA	NA	NA
23	6,516,922	NA	NA	NA	NA	NA
24	3,062,309	NA	NA	NA	NA	NA
25	2,871,238	NA	NA	NA	NA	NA
26	4,369,356	NA	NA	NA	NA	NA
27	4,574,836	NA	NA	NA	NA	NA
28	1,328,188	NA	NA	NA	NA	NA
29	5,828,289	NA	NA	NA	NA	NA
30	6,587,536	NA	NA	NA	NA	NA
31	9,876,187	NA	NA	NA	NA	NA
32	5,344,861	NA	NA	NA	NA	NA
33	2,978,512	NA	NA	NA	NA	NA
34	6,010,688	NA	NA	NA	NA	NA
35	998,199	NA	NA	NA	NA	NA
36	1,842,641	NA	NA	NA	NA	NA
37	2,723,322	NA	NA	NA	NA	NA
38	1,318,194	NA	NA	NA	NA	NA
39	8,821,155	NA	NA	NA	NA	NA
40	2,082,224	NA	NA	NA	NA	NA
41	19,465,197	NA	NA	NA	NA	NA
42	9,656,401	NA	NA	NA	NA	NA
43	683,932	NA	NA	NA	NA	NA
44	11,544,951	NA	NA	NA	NA	NA

```
## 45   3,791,508  NA  NA  NA  NA  NA
## 46   3,871,859  NA  NA  NA  NA  NA
## 47  12,742,886  NA  NA  NA  NA  NA
## 48   1,051,302  NA  NA  NA  NA  NA
## 49   4,679,230  NA  NA  NA  NA  NA
## 50     824,082  NA  NA  NA  NA  NA
## 51   6,403,353  NA  NA  NA  NA  NA
## 52  25,674,681  NA  NA  NA  NA  NA
## 53   2,817,222  NA  NA  NA  NA  NA
## 54     626,431  NA  NA  NA  NA  NA
## 55   8,096,604  NA  NA  NA  NA  NA
## 56   6,830,038  NA  NA  NA  NA  NA
## 57   1,855,364  NA  NA  NA  NA  NA
## 58   5,711,767  NA  NA  NA  NA  NA
## 59     568,158  NA  NA  NA  NA  NA
## 60              NA  NA  NA  NA  NA
## 61   3,706,690  NA  NA  NA  NA  NA
## 62              NA  NA  NA  NA  NA
## 63              NA  NA  NA  NA  NA
## 64              NA  NA  NA  NA  NA
## 65              NA  NA  NA  NA  NA
## 66              NA  NA  NA  NA  NA
```

```
#Step 2
readStates <- function() {

  CensusURL<- "http://www2.census.gov/programs-surveys/popest/tables/2010-2011/state/totals/nst-est2011-01.csv"

  dfStates<- read.csv(url(CensusURL))

  #take out extra columns
  dfStates<-dfStates[,1:5]

  #take out extra rows at top
  dfStates<- dfStates[-1:-8,]

  #give column names
  colnames(dfStates) <- c("stateName", "base2010", "base2011", "Jul2010", "Jul2011")

  #take out extra rows at bottom
  dfStates<- dfStates[1:51,]

  #make numbers numbers
  dfStates$base2010<- as.numeric(gsub(",","", dfStates$base2010))
  dfStates$base2011<- as.numeric(gsub(",","",dfStates$base2011))
  dfStates$Jul2010<- as.numeric(gsub(",","",dfStates$Jul2010))
  dfStates$Jul2011<- as.numeric(gsub(",","",dfStates$Jul2011))

  return(dfStates)
}

dfStates<-readStates()
dfStates
```

```
##                stateName base2010 base2011  Jul2010  Jul2011
## 9               .Alabama  4779736  4779735  4785401  4802740
## 10               .Alaska   710231   710231   714146   722718
## 11              .Arizona  6392017  6392013  6413158  6482505
## 12             .Arkansas  2915918  2915921  2921588  2937979
## 13           .California 37253956 37253956 37338198 37691912
## 14             .Colorado  5029196  5029196  5047692  5116796
## 15          .Connecticut  3574097  3574097  3575498  3580709
## 16             .Delaware   897934   897934   899792   907135
## 17 .District of Columbia   601723   601723   604912   617996
## 18              .Florida 18801310 18801311 18838613 19057542
## 19              .Georgia  9687653  9687660  9712157  9815210
```

```
## 20               .Hawaii  1360301  1360301  1363359  1374810
## 21                .Idaho  1567582  1567582  1571102  1584985
## 22             .Illinois 12830632 12830632 12841980 12869257
## 23              .Indiana  6483802  6483800  6490622  6516922
## 24                 .Iowa  3046355  3046350  3050202  3062309
## 25               .Kansas  2853118  2853118  2859143  2871238
## 26             .Kentucky  4339367  4339362  4347223  4369356
## 27            .Louisiana  4533372  4533372  4545343  4574836
## 28                .Maine  1328361  1328361  1327379  1328188
## 29             .Maryland  5773552  5773552  5785681  5828289
## 30        .Massachusetts  6547629  6547629  6555466  6587536
## 31             .Michigan  9883640  9883635  9877143  9876187
## 32            .Minnesota  5303925  5303925  5310658  5344861
## 33          .Mississippi  2967297  2967297  2970072  2978512
## 34             .Missouri  5988927  5988927  5995715  6010688
## 35              .Montana   989415   989415   990958   998199
## 36             .Nebraska  1826341  1826341  1830141  1842641
## 37               .Nevada  2700551  2700551  2704283  2723322
## 38        .New Hampshire  1316470  1316472  1316807  1318194
## 39           .New Jersey  8791894  8791894  8799593  8821155
## 40           .New Mexico  2059179  2059180  2065913  2082224
## 41             .New York 19378102 19378104 19395206 19465197
## 42       .North Carolina  9535483  9535475  9560234  9656401
## 43         .North Dakota   672591   672591   674629   683932
## 44                 .Ohio 11536504 11536502 11537968 11544951
## 45             .Oklahoma  3751351  3751354  3760184  3791508
## 46               .Oregon  3831074  3831074  3838332  3871859
## 47         .Pennsylvania 12702379 12702379 12717722 12742886
## 48         .Rhode Island  1052567  1052567  1052528  1051302
## 49       .South Carolina  4625364  4625364  4637106  4679230
## 50         .South Dakota   814180   814180   816598   824082
## 51            .Tennessee  6346105  6346110  6357436  6403353
## 52                .Texas 25145561 25145561 25253466 25674681
## 53                 .Utah  2763885  2763885  2775479  2817222
## 54              .Vermont   625741   625741   625909   626431
## 55             .Virginia  8001024  8001030  8023953  8096604
## 56           .Washington  6724540  6724540  6742950  6830038
## 57        .West Virginia  1852994  1852996  1854368  1855364
## 58            .Wisconsin  5686986  5686986  5691659  5711767
## 59              .Wyoming   563626   563626   564554   568158
```

```
#Step 3
mean(dfStates$Jul2011)
```

```
## [1] 6109645
```

```
#Step 4
highestPopState<-dfStates[which(dfStates$Jul2011 == (max(dfStates$Jul2011))),names(dfStates) %in% c("stateName")]
highestPopState
```

```
## [1] .California
## 65 Levels:  .Alabama .Alaska .Arizona .Arkansas .California ... West
```

```
#Answer is California

dfStatesSorted<- dfStates[order(dfStates$Jul2011),]
dfStatesSorted
```

```
##                stateName base2010 base2011  Jul2010  Jul2011
## 59               .Wyoming   563626   563626   564554   568158
## 17 .District of Columbia   601723   601723   604912   617996
## 54               .Vermont   625741   625741   625909   626431
## 43         .North Dakota   672591   672591   674629   683932
## 10                .Alaska   710231   710231   714146   722718
## 50         .South Dakota   814180   814180   816598   824082
## 16             .Delaware   897934   897934   899792   907135
## 35               .Montana   989415   989415   990958   998199
```

```
## 48         .Rhode Island  1052567  1052567  1052528  1051302
## 38        .New Hampshire  1316470  1316472  1316807  1318194
## 28                .Maine  1328361  1328361  1327379  1328188
## 20               .Hawaii  1360301  1360301  1363359  1374810
## 21                .Idaho  1567582  1567582  1571102  1584985
## 36             .Nebraska  1826341  1826341  1830141  1842641
## 57        .West Virginia  1852994  1852996  1854368  1855364
## 40           .New Mexico  2059179  2059180  2065913  2082224
## 37               .Nevada  2700551  2700551  2704283  2723322
## 53                 .Utah  2763885  2763885  2775479  2817222
## 25               .Kansas  2853118  2853118  2859143  2871238
## 12             .Arkansas  2915918  2915921  2921588  2937979
## 33          .Mississippi  2967297  2967297  2970072  2978512
## 24                 .Iowa  3046355  3046350  3050202  3062309
## 15          .Connecticut  3574097  3574097  3575498  3580709
## 45             .Oklahoma  3751351  3751354  3760184  3791508
## 46               .Oregon  3831074  3831074  3838332  3871859
## 26             .Kentucky  4339367  4339362  4347223  4369356
## 27            .Louisiana  4533372  4533372  4545343  4574836
## 49       .South Carolina  4625364  4625364  4637106  4679230
## 9                .Alabama  4779736  4779735  4785401  4802740
## 14             .Colorado  5029196  5029196  5047692  5116796
## 32            .Minnesota  5303925  5303925  5310658  5344861
## 58            .Wisconsin  5686986  5686986  5691659  5711767
## 29             .Maryland  5773552  5773552  5785681  5828289
## 34             .Missouri  5988927  5988927  5995715  6010688
## 51            .Tennessee  6346105  6346110  6357436  6403353
## 11              .Arizona  6392017  6392013  6413158  6482505
## 23              .Indiana  6483802  6483800  6490622  6516922
## 30        .Massachusetts  6547629  6547629  6555466  6587536
## 56           .Washington  6724540  6724540  6742950  6830038
## 55             .Virginia  8001024  8001030  8023953  8096604
## 39           .New Jersey  8791894  8791894  8799593  8821155
## 42       .North Carolina  9535483  9535475  9560234  9656401
## 19               .Georgia  9687653  9687660  9712157  9815210
## 31              .Michigan  9883640  9883635  9877143  9876187
## 44                  .Ohio 11536504 11536502 11537968 11544951
## 47          .Pennsylvania 12702379 12702379 12717722 12742886
## 22              .Illinois 12830632 12830632 12841980 12869257
## 18               .Florida 18801310 18801311 18838613 19057542
## 41              .New York 19378102 19378104 19395206 19465197
## 52                 .Texas 25145561 25145561 25253466 25674681
## 13            .California 37253956 37253956 37338198 37691912
```

```
#Step 5
MyFunction<- function() {
  MyVector<- c(1,2,3,4,5)

  MyNumber<- c(1)

  CumulativeDistMyVector<- ecdf(MyVector)
  MyValue <- CumulativeDistMyVector(MyNumber)
  return(MyValue)
}

MyValue<-MyFunction()
MyValue
```

```
## [1] 0.2
```

```
MyFunction<- function() {
  MyVector<- c(dfStates$Jul2011)

  MyNumber<- c(mean(dfStates$Jul2011))

  CumulativeDistMyVector<- ecdf(MyVector)
```

```
  MyValue <- CumulativeDistMyVector(MyNumber)
  return(MyValue)
}

MyValue<-MyFunction()
MyValue
```

```
## [1] 0.6666667
```

```
My2ndFunction<- function() {
  My2ndVector<- c(dfStates$Jul2011)

  My2ndNumber<- c(mean(dfStates$Jul2011))

  My2ndValue<- count(My2ndVector< My2ndNumber)/count(My2ndVector)

  return(My2ndValue)
}

My2ndValue<-MyFunction()
My2ndValue
```

```
## [1] 0.6666667
```

```
#I think either of my two functions work just as well as the other, but the second one may be better
#because the logic is easier to explain to someone not as familiar with R.
```