Homework 5

Mark Tao

Ideology of US Supreme Court Justices

This week we explored an important programming method called the *loop*. In this exercise, we will practice using loops with data on the ideological positions of United States Supreme Court Justices. Just like legislators, justices make voting decisions that we can use to estimate their ideological positions. This exercise is based in part on Andrew Martin and Kevin Quinn. (2002). 'Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the U.S. Supreme Court, 1953-1999.' *Political Analysis*, 10:2, pp.134-154.

Loading the data

```
justices <- read.csv("/data/qss/PREDICTION/justices.csv", stringsAsFactors = FALSE)
```

Name	Description
term	Supreme Court term
justice	Justice's family name
idealpt	Justice's estimated ideal point
pparty	Political party of the nominating president
pres	President's name

The ideal points of the justices are negative to indicate liberal leanings and positive to indicate conservative leanings.

Questions

Question 1

1.1. We wish to know the median ideal point for the Court during each term included in the dataset. Use a loop to calculate the median ideal point of the justices during each term of the Court. Store the calculated medians in a single vector called `median.ideal.point`.

```
terms <- unique(justices$term)
n <- length(terms)

median.ideal.point <- rep(NA, len = n)
names(median.ideal.point) <- terms

for (i in 1:n) {

    median.ideal.point[i] <- median(justices$idealpt[justices$term ==
        terms[i]])

}
median.ideal.point
```

```
##    1945    1946    1947    1948    1949    1950    1951    1952    1953    1954
## -0.014   0.253   0.564   0.656   0.966   0.985   0.928   1.124   0.592   0.386
##    1955    1956    1957    1958    1959    1960    1961    1962    1963    1964
##  0.703   0.263   0.616   0.545   0.432   0.531  -0.042  -0.815  -0.879  -0.610
##    1965    1966    1967    1968    1969    1970    1971    1972    1973    1974
## -0.606  -0.320  -0.962  -0.974   0.083   0.591   0.772   1.054   0.612   0.623
##    1975    1976    1977    1978    1979    1980    1981    1982    1983    1984
##  0.544   0.496   0.276   0.110   0.139   0.070   0.019   0.469   0.750   0.676
##    1985    1986    1987    1988    1989    1990    1991    1992    1993    1994
##  0.792   0.756   0.963   1.033   0.799   0.968   0.576   0.705   0.741   0.661
##    1995    1996    1997    1998    1999    2000    2001    2002    2003    2004
##  0.568   0.689   0.633   0.740   0.729   0.484   0.307   0.228   0.179   0.084
##    2005    2006    2007    2008
##  0.441   0.435   0.342   0.588
```

1.2. Next, generate a plot with term on the horizontal axis and median ideal point on the vertical axis. Include a dashed horizontal line at zero to indicate a "neutral" ideal point. The points on the plot should be connected by a line, so as to display the trend over time (hint: use `type = "b"`). Be sure to include informative axis labels and a plot title.

```
plot(x = terms, y = median.ideal.point, xlab = "term", main = "How median ideal points have changed over
    ylab = "median ideal points", pch = 16, type = "n")
points(terms, median.ideal.point, pch = 15, col = "black", type = "b")
abline(h = 0, lty = "dashed")
```


How median ideal points have changed over terms
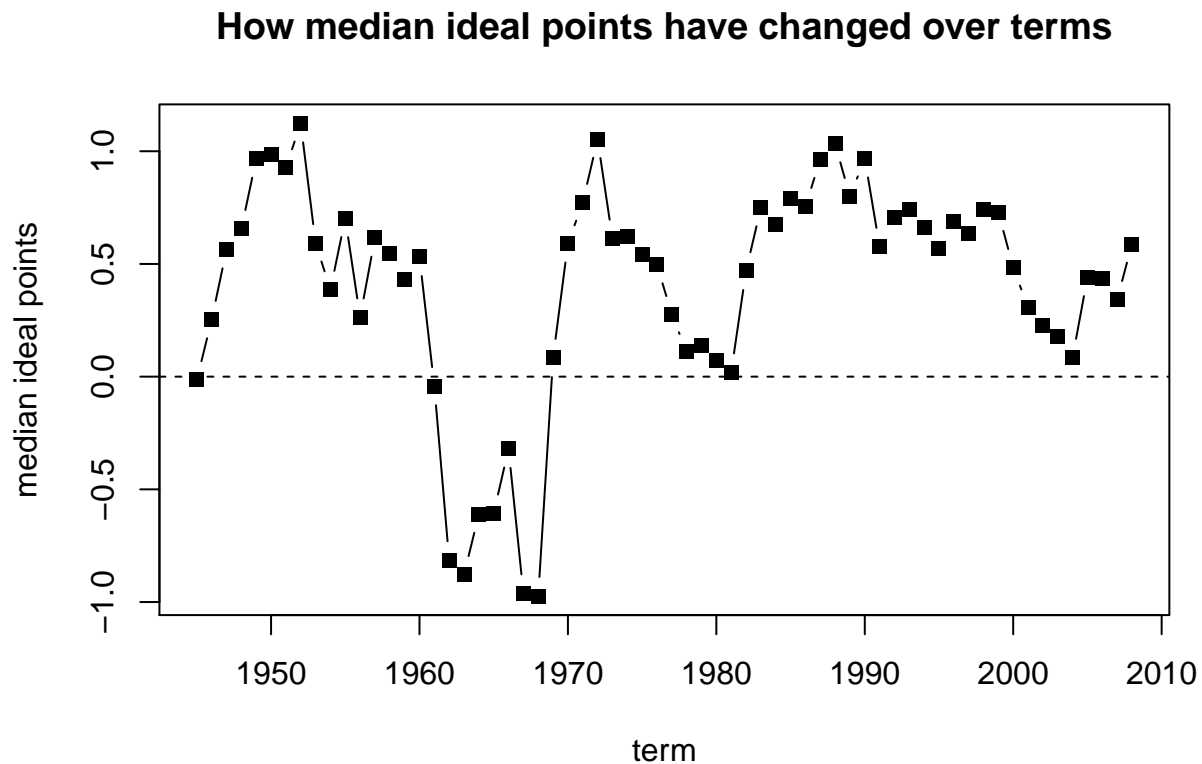
Question 2

2.1. Use a loop to identify the name of the justice with the median ideal point **for each term**. Store the names in a single vector called `median.name`.

```
justicenames <- unique(justices$justice)
num <- length(justicenames)
median.name <- rep(NA, len = n)
names(median.name) <- terms

for (i in 1:n) {

    median.name[i] <- justices$justice[justices$term == terms[i] &
        justices$idealpt == median.ideal.point[i]]

}
median.name
```

```
##           1945          1946          1947          1948          1949
##         "Reed"        "Reed"        "Reed" "Frankfurter"      "Burton"
##           1950          1951          1952          1953          1954
##       "Burton"      "Burton"       "Clark"       "Clark" "Frankfurter"
##           1955          1956          1957          1958          1959
## "Frankfurter"       "Clark"       "Clark"       "Clark"       "Clark"
##           1960          1961          1962          1963          1964
##      "Stewart"       "White"    "Goldberg"     "Brennan"    "Goldberg"
##           1965          1966          1967          1968          1969
##        "Black"       "Black"    "Marshall"    "Marshall"       "Black"
##           1970          1971          1972          1973          1974
##       "Harlan"       "White"       "White"       "White"       "White"
##           1975          1976          1977          1978          1979
##      "Stewart"     "Stewart"    "Blackmun"    "Blackmun"       "White"
##           1980          1981          1982          1983          1984
##        "White"       "White"       "White"       "White"      "Powell"
##           1985          1986          1987          1988          1989
##       "Powell"      "Powell"       "White"       "White"       "White"
##           1990          1991          1992          1993          1994
##       "Souter"      "Souter"    "O'Connor"     "Kennedy"    "O'Connor"
##           1995          1996          1997          1998          1999
##      "Kennedy"     "Kennedy"     "Kennedy"     "Kennedy"    "O'Connor"
##           2000          2001          2002          2003          2004
##     "O'Connor"    "O'Connor"    "O'Connor"    "O'Connor"    "O'Connor"
##           2005          2006          2007          2008
##      "Kennedy"     "Kennedy"     "Kennedy"     "Kennedy"
```

2.2. How many terms did the justice with the median ideal point in the most terms serve on the Court?

```
max(table(median.name))
```

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

```
print("White")
```

```
## [1] "White"
```

2.3. What was this justice's average ideal point over his/her entire tenure on the Court?

```r
mean(justices$idealpt[justices$justice == "White"])
```

```
## [1] 0.4401563
```

Question 3

3.1. Turning to the relationship between Supreme Court ideology and presidential party, we want to see how the ideology of the Supreme Court changes over the course of each president's time in office. Begin by creating two empty 'container' vectors: one to hold values for each unique Democratic president (call it `Democrat.Change`), and another to hold values for each unique Republican president (call it `Republican.Change`). The vectors should also be named. Use the `names()` function to label the elements of both vectors with the corresponding presidents' names. Print the (empty) content of both vectors.

```r
Democrat.Change <- rep(NA, len = length(unique(justices$pres[justices$pparty ==
    "D"])))
Republican.Change <- rep(NA, len = length(unique(justices$pres[justices$pparty ==
    "R"])))

names(Democrat.Change) <- unique((justices$pres[justices$pparty ==
    "D"]))
names(Republican.Change) <- unique((justices$pres[justices$pparty ==
    "R"]))

Democrat.Change
```

```
##  Truman Kennedy Johnson  Carter Clinton
##      NA      NA      NA      NA      NA
```

```r
Republican.Change
```

```
## Eisenhower       Nixon        Ford      Reagan BushSenior BushJunior
##         NA          NA          NA          NA          NA          NA
```

3.2. For each Democratic president, calculate the shift in Supreme Court ideology by subtracting the Court's median ideal point in the president's first year from its median ideal point in the president's last year. Use a loop to store these values in your Democratic container vector `Democrat.Change`. Print the results.

```r
Democratic.presidents <- unique(justices$pres[justices$pres ==
    "Truman" | justices$pres == "Kennedy" | justices$pres ==
    "Johnson" | justices$pres == "Carter" | justices$pres ==
    "Clinton"])

for (i in 1:length(Democratic.presidents)) {

    dem.presidents <- justices[justices$pres == Democratic.presidents[i],
        ]
    first.idealpt <- median(dem.presidents$idealpt[dem.presidents$term ==
        min(dem.presidents$term)])
    second.idealpt <- median(dem.presidents$idealpt[dem.presidents$term ==
        max(dem.presidents$term)])

    Democrat.Change[i] <- second.idealpt - first.idealpt

}
Democrat.Change
```

```
##  Truman Kennedy Johnson  Carter Clinton
##   1.138  -0.837  -0.364  -0.206  -0.257
```

3.3. Repeat the same process for Republican presidents, using a loop to store these values in your Republican container vector `Republican.Change`. Print the results.

```
Republican.Pres <- unique(justices$pres[justices$pparty == "R"])

for (i in 1:length(Republican.Pres)) {

    Republican.Change[i] <- (median(justices$idealpt[justices$pres ==
        Republican.Pres[i] & justices$term == max(justices$term[justices$pres ==
        Republican.Pres[i]])])) - (median(justices$idealpt[justices$pres ==
        Republican.Pres[i] & justices$term == min(justices$term[justices$pres ==
        Republican.Pres[i]])]))

}

Republican.Change
```

```
##  Eisenhower        Nixon         Ford       Reagan  BushSenior  BushJunior
## -0.06099999  0.54000003 -0.04800004  1.01399999 -0.09400004  0.28099999
```

Question 4

4.1. What was the mean and standard deviation of the Supreme Court ideology shifts you just calculated for Democratic presidencies?

```
sd(Democrat.Change)
```

```
## [1] 0.7384542
```

```
mean(Democrat.Change)
```

```
## [1] -0.1052
```

4.2. What about for the Republican presidencies?

```
sd(Republican.Change)
```

```
## [1] 0.4403894
```

```
mean(Republican.Change)
```

```
## [1] 0.272
```

4.3. Which Republican president's tenure had the largest conservative (positive) shift on the Court?

```
max(Republican.Change)
```

```
## [1] 1.014
```

```
Republican.Change[4]
```

```
## Reagan
##  1.014
```

4.4. Which Democratic president's tenure had the largest liberal (negative) shift?

```
min(Democrat.Change)
```

```
## [1] -0.837
```

Democrat.Change[2]

```
## Kennedy
##  -0.837
```