

**1. 변형된 피보나치 수열의 생성**

```
> f<-vector(length=10)
> f[1]<-2
> f[2]<-2
> for (i in 3:10) f[i]<-f[i-1]+f[i-2]
> f
[1] 2 2 0 -2 -2 0 2 2 0 -2
```

**2. 국회 의석수의 구성**

```
> seat <- c(158,11,85,19,1,5,0,3,0,3,0,1,0,1,6,4)
> seat.m <- matrix(seat,8,2,byrow=T)
> party.seat <- apply(seat.m,1,sum)
> party <- as.factor(rep(c("A","B","C","D","E","F","G","H"),party.seat))
> sort <- as.factor(rep(rep(c("local","representative"),8),seat))
> index <- sample(1:297, 30, replace=F)
> table(party[index], sort[index])
```

	local	representative
A	15	2
B	9	2
C	0	1
D	0	0
E	0	0
F	0	1
G	0	0
H	0	0

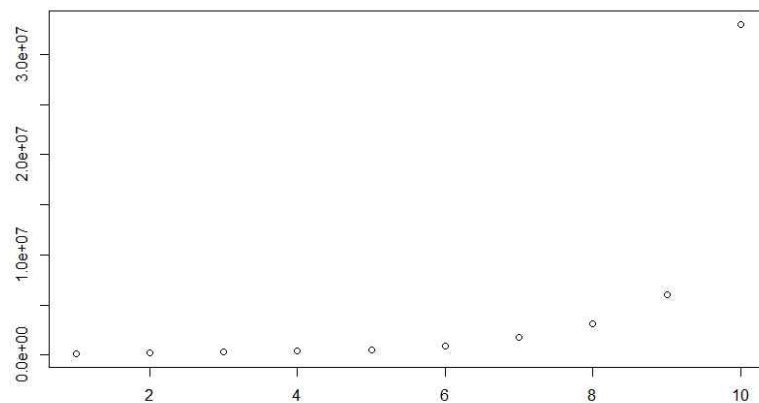
**3. 파스칼의 삼각형**

```
> L <- 1
> for (i in 1:10) { L<- c(0, L) + c(L, 0); print(L) }
[1] 1 1
[1] 1 2 1
```

```
[1] 1 3 3 1
[1] 1 4 6 4 1
[1] 1 5 10 10 5 1
[1] 1 6 15 20 15 6 1
[1] 1 7 21 35 35 21 7 1
[1] 1 8 28 56 70 56 28 8 1
[1] 1 9 36 84 126 126 84 36 9 1
[1] 1 10 45 120 210 252 210 120 45 10 1
```

#### 4. 10분위수 수열의 로그변환

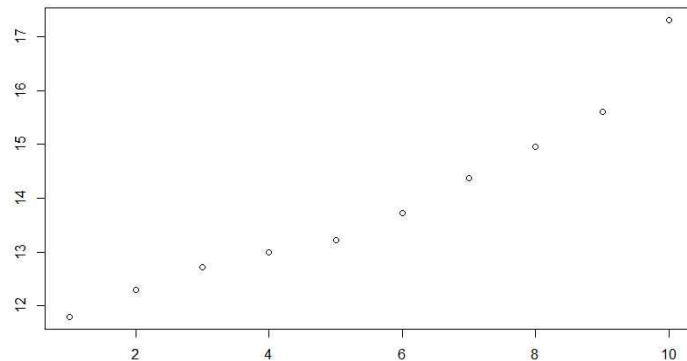
```
> library(Lahman)
> data('Salaries', 'Batting', 'Pitching')
> quantile(Salaries$salary, prob=c(0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1))
      10%      20%      30%      40%      50%
132500.0 220000.0 335000.0 440000.0 550000.0
      60%      70%      80%      90%     100%
911290.2 1750000.0 3125000.0 6000000.0 33000000.0
> Q <- quantile(Salaries$salary, prob=c(0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1))
> plot(Q)
```



∴ 증가하는 수열의 패턴이 드러난다.

```
> log(Q)
      10%      20%      30%      40%      50%
11.79434 12.30138 12.72189 12.99453 13.21767
      60%      70%      80%      90%     100%
13.72262 14.37513 14.95494 15.60727 17.31202
```

```
> plot(log(Q))
```



∴ 수열의 로그변환 패턴이다. 변환 이전과 비교하였을 때 증가율의 차이가 드러난다.

## 5. 메이저리그 팀별 중간연봉 막대그래프

```
> library(Lahman)
```

```
> data(Salaries)
```

```
> Salaries.2015 <- subset(Salaries, yearID==2015)
```

```
> attach(Salaries.2015)
```

```
> table(teamID)
```

```
teamID
```

```
ANA ARI ATL BAL BOS CAL CHA CHN CIN CLE COL DET FLO HOU
```

```
0 29 24 28 32 0 27 28 27 29 25 25 0 28
```

```
KCA LAA LAN MIA MIL MIN ML4 MON NYA NYN OAK PHI PIT SDN
```

```
27 27 29 24 29 25 0 0 29 25 28 26 29 26
```

```
SEA SFN SLN TBA TEX TOR WAS
```

```
25 27 26 29 30 25 29
```

```
> tab <- table(teamID)
```

```
> teamID.1 <- factor(teamID)
```

```
> levels(teamID.1) <- names(tab)[tab>0]
```

```
> dim(table(teamID.1))
```

```
[1] 30
```

```
> tapply(salary, teamID.1, median)
```

ARI	ATL	BAL	BOS	CHA	CHN	CIN
800000	1400000	3200000	2125000	1950000	2515000	1850000
CLE	COL	DET	HOU	KCA	LAA	LAN
1550000	1500000	3000000	1068750	2640000	1312000	4000000
MIA	MIL	MIN	NYA	NYN	OAK	PHI

```

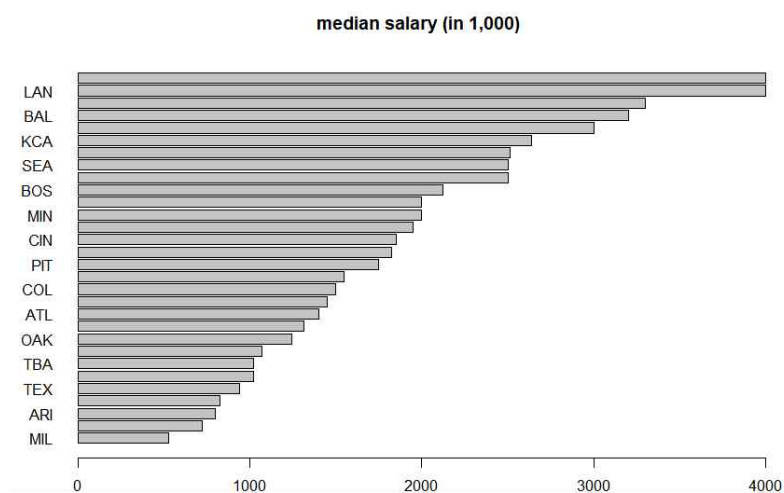
1450000 525500 2000000 3300000 725000 1243750 825000
    PIT    SDN    SEA    SFN    SLN    TBA    TEX
1750000 1825000 2505000 4000000 2000000 1021800 937500
    TOR    WAS
1021600 2500000

```

```

> par(mar=c(2,4,4,2))
> barplot(sort(tapply(salary/1000, teamID.1, median)), horiz=T, las=1, main="median
salary (in 1,000)")

```



```

> team.median <- tapply(salary,teamID.1,median)
> result <- max(team.median)/min(team.median)
> result
[1] 7.611798

```

∴ 최대 중간연봉 대 최소 중간연봉의 비는 7.611798이다.

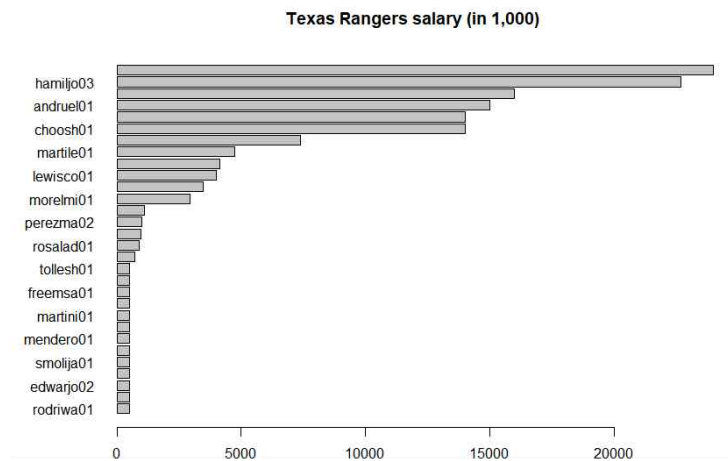
## 6. Texas Rangers 추신수 선수의 연봉 (5번 코딩에서 이어짐)

```

> tex <- team.median['TEX']
> tex
    TEX
937500
> Salaries.2015.s <- split(Salaries.2015, teamID.1)
> names(Salaries.2015.s)
[1] "ARI" "ATL" "BAL" "BOS" "CHA" "CHN" "CIN" "CLE"
[9] "COL" "DET" "HOU" "KCA" "LAA" "LAN" "MIA" "MIL"

```

```
[17] "MIN" "NYA" "NYN" "OAK" "PHI" "PIT" "SDN" "SEA"
[25] "SFN" "SLN" "TBA" "TEX" "TOR" "WAS"
> attach(Salaries.2015.s$TEX)
> names(salary) <- playerID
> par(mar=c(2,7,4,2))
> barplot(sort(salary/1000), horiz=T, las=1, main="Texas Rangers salary (in 1,000)")
```



```
> result <- subset(Salaries.2015, playerID=="choosh01")
> result
      yearID teamID lgID playerID  salary
25496   2015    TEX    AL choosh01 14000000
> result$salary/tex
14.93333
```

∴ 추신수 선수의 연봉은 Texas Rangers 중간 연봉의 14.93333배이다.

## 7. 투수연봉이 차지하는 비율

```
> library(Lahman)
> data(Salaries, Pitching)
> Salaries.2015 <- subset(Salaries, yearID==2015)
> Pitching.2015 <- subset(Pitching, yearID==2015)

> all <- sum(Salaries.2015$salary)
> all
[1] 3514142569
∴ 전체 연봉
```

```
> DF1 <- Salaries.2015[, c("playerID", "salary")]
> DF2 <- as.data.frame(Pitching.2015[, c("playerID")])
> colnames(DF2) <- c("playerID")
> result <- merge(DF1, DF2, by="playerID")
> pit <- sum(result$salary)
> pit
[1] 1855167546
∴ 투수 연봉
```

```
> pit/all
[1] 0.5279147
```

∴ 총 연봉 중 투수 연봉이 차지하는 비율은 약 52.8%이다.