

Class 7. SQL 심화

조인(JOIN)

지금까지 어떤 선수의 playerId 확인은 people 테이블에서 해야 했고,
그 playerId를 기반으로 batting 테이블이나 pitching 테이블에서 그 선수의 데이터를 조회했음.

꽤 귀찮고 번거로움.

한 번에 해결할 수 없을까?

JOIN을 활용하면 가능.

JOIN은 두 개 이상의 테이블을 조합할 때 사용되는 문법

SQLite3에는 세 가지 유형의 JOIN을 지원

| 유형 | 설명 |
|-----------------|--------------------------------------|
| INNER JOIN | 조인 중 가장 많이 사용됨 간단히 JOIN이라고 부르기도 함 |
| LEFT OUTER JOIN | 간단히 LEFT JOIN이라고 부르기도 함 |
| CROSS JOIN | |

INNER JOIN

```
sqlite> SELECT * FROM team;
```

| team_id | team_name |
|---------|-----------|
| 1 | SSG |
| 2 | LG |
| 3 | 키움 |
| 4 | KIA |
| 5 | 삼성 |
| 6 | 롯데 |
| 7 | 두산 |
| 8 | KT |
| 9 | NC |
| 10 | 한화 |

```
sqlite> SELECT * FROM player;
```

| name | team_id |
|------|---------|
| 김광현 | 1 |
| 반즈 | 6 |
| 소형준 | 8 |
| 안우진 | 3 |
| 심교훈 | |

```
SELECT * FROM player INNER JOIN team ON player.team_id = team.team_id;
```

| name | team_id | team_id | team_name |
|------|---------|---------|-----------|
| 김광현 | 1 | 1 | SSG |
| 반즈 | 6 | 6 | 롯데 |
| 소형준 | 8 | 8 | KT |
| 안우진 | 3 | 3 | 키움 |

LEFT OUTER JOIN

```
sqlite> SELECT * FROM team;
team_id  team_name
-----
1        SSG
2        LG
3        키움
4        KIA
5        삼성
6        롯데
7        두산
8        KT
9        NC
10       한화
```

```
sqlite> SELECT * FROM player;
name      team_id
-----
김광현    1
반즈      6
소형준    8
안우진    3
심교훈
```

```
SELECT * FROM player LEFT OUTER JOIN team ON player.team_id = team.team_id;
```

| name | team_id | team_id | team_name |
|------|---------|---------|-----------|
| 김광현 | 1 | 1 | SSG |
| 반즈 | 6 | 6 | 롯데 |
| 소형준 | 8 | 8 | KT |
| 안우진 | 3 | 3 | 키움 |
| 심교훈 | | | |

team_id가 없었던 행도 보여줌

CROSS JOIN

```
sqlite> SELECT * FROM team;
```

| team_id | team_name |
|---------|-----------|
| 1 | SSG |
| 2 | LG |
| 3 | 키움 |
| 4 | KIA |
| 5 | 삼성 |
| 6 | 롯데 |
| 7 | 두산 |
| 8 | KT |
| 9 | NC |
| 10 | 한화 |

```
sqlite> SELECT * FROM player;
```

| name | team_id |
|------|---------|
| 김광현 | 1 |
| 반즈 | 6 |
| 소형준 | 8 |
| 안우진 | 3 |
| 심교훈 | |

```
SELECT * FROM player CROSS JOIN team;
```

| name | team_id | team_id | team_name |
|------|---------|---------|-----------|
| 김광현 | 1 | 1 | SSG |
| 김광현 | 1 | 2 | LG |
| 김광현 | 1 | 3 | 키움 |
| 김광현 | 1 | 4 | KIA |
| 김광현 | 1 | 5 | 삼성 |
| 김광현 | 1 | 6 | 롯데 |
| 김광현 | 1 | 7 | 두산 |
| 김광현 | 1 | 8 | KT |
| 김광현 | 1 | 9 | NC |
| 김광현 | 1 | 10 | 한화 |
| 반즈 | 6 | 1 | SSG |
| 반즈 | 6 | 2 | LG |
| 반즈 | 6 | 3 | 키움 |
| 반즈 | 6 | 4 | KIA |
| 반즈 | 6 | 5 | 삼성 |
| 반즈 | 6 | 6 | 롯데 |
| 반즈 | 6 | 7 | 두산 |
| 반즈 | 6 | 8 | KT |
| 반즈 | 6 | 9 | NC |
| 반즈 | 6 | 10 | 한화 |
| 소형준 | 8 | 1 | SSG |
| 소형준 | 8 | 2 | LG |
| 소형준 | 8 | 3 | 키움 |
| 소형준 | 8 | 4 | KIA |
| 소형준 | 8 | 5 | 삼성 |
| 소형준 | 8 | 6 | 롯데 |
| 소형준 | 8 | 7 | 두산 |
| 소형준 | 8 | 8 | KT |
| 소형준 | 8 | 9 | NC |
| 소형준 | 8 | 10 | 한화 |
| 안우진 | 3 | 1 | SSG |
| 안우진 | 3 | 2 | LG |
| 안우진 | 3 | 3 | 키움 |
| 안우진 | 3 | 4 | KIA |
| 안우진 | 3 | 5 | 삼성 |
| 안우진 | 3 | 6 | 롯데 |
| 안우진 | 3 | 7 | 두산 |
| 안우진 | 3 | 8 | KT |
| 안우진 | 3 | 9 | NC |
| 안우진 | 3 | 10 | 한화 |
| 심교훈 | | 1 | SSG |
| 심교훈 | | 2 | LG |
| 심교훈 | | 3 | 키움 |
| 심교훈 | | 4 | KIA |
| 심교훈 | | 5 | 삼성 |
| 심교훈 | | 6 | 롯데 |
| 심교훈 | | 7 | 두산 |
| 심교훈 | | 8 | KT |
| 심교훈 | | 9 | NC |
| 심교훈 | | 10 | 한화 |

내부 조인(INNER JOIN)

```
SELECT <컬럼 목록>
FROM <첫번째 테이블명>
      INNER JOIN <두번째 테이블명>
      ON <조인될 조건>
[WHERE 검색 조건]
```

batting 테이블

| playerID | yearID | H | ... | HR |
|-----------------|--------|-----|-----|----|
| choosh01 | 2019 | 149 | | 24 |
| cruzne02 | 2019 | 141 | | 41 |
| ... | | | | |
| alonspe01 | 2020 | 155 | | 53 |
| yelicch01 | 2020 | 161 | | 44 |

```
SELECT <컬럼 목록>
FROM batting
      INNER JOIN people
      ON batting.playerID = people.playerID
[WHERE 검색 조건]
```

people 테이블

| playerID | ... | nameFirst | nameLast |
|-----------------|-----|-----------|----------|
| aardsda01 | | David | Aardsma |
| abadijo01 | | John | Abadie |
| ... | | | |
| choosh01 | | Shin-soo | Choo |
| parkch01 | | Chan-ho | Park |

두 행
결합

내부 조인(INNER JOIN)

```
SELECT <컬럼 목록>
FROM <첫번째 테이블명>
      INNER JOIN <두번째 테이블명>
      ON <조인될 조건>
[WHERE 검색 조건]
```

```
SELECT <컬럼 목록>
FROM batting
      INNER JOIN people
      ON batting.playerID = people.playerID
[WHERE 검색 조건]
```

| playerID | yearID | H | ... | HR | playerID | ... | nameFirst | nameLast |
|------------------|--------|-----|-----|----|------------------|-----|-----------|----------|
| choosh01 | 2019 | 149 | | 24 | choosh01 | | Shin-soo | Choo |
| cruzne02 | 2019 | 141 | | 41 | cruzne02 | | Nelson | Cruz |
| ... | | | | | | | | |
| alonspe01 | 2020 | 155 | | 53 | alonspe01 | | Pete | Alonso |
| yelicch01 | 2020 | 161 | | 44 | yelicch01 | | Christian | Yelich |

결합된 결과

내부 조인(INNER JOIN)

1) 2019년 MLB 한국 선수 홈런 개수를 알아보자(playerID 대신에 선수 이름이 보이도록)

```
SELECT batting.*, people.* FROM batting INNER JOIN people ON batting.playerID = people.playerID WHERE batting.yearID = 2019 and people.birthCountry = 'South Korea';
```

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----------------|------------|----------|--------------|------------|-----------|-----------|------------|----------|--------------|------------|-----------|-----------|----------|-----------|--------|--------|------|--------|------------|------------|-----------|----------|------------|------|--|--|
| sqlite> SELECT batting.*, people.* FROM batting INNER JOIN people ON batting.playerID = people.playerID WHERE batting.yearID = 2019 and people.birthCountry = 'South Korea'; | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ID | playerID | yearID | stint | teamID | team_ID | lgID | G | G_batting | AB | R | H | 2B | 3B | HR | RBI | SB | CS | BB | SO | IBB | HBP | SH | SF | GIDP | play | | |
| erID | birthYear | birthMonth | birthDay | birthCountry | birthState | birthCity | deathYear | deathMonth | deathDay | deathCountry | deathState | deathCity | nameFirst | nameLast | nameGiven | weight | height | bats | throws | debut | finalGame | retroID | bbrefID | birth_date | debu | | |
| t_date | finalgame_date | death_date | | | | | | | | | | | | | | | | | | | | | | | | | |
| ----- | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106135 | choijj01 | 2019 | 1 | TBA | 2922 | AL | 127 | | 410 | 54 | 107 | 20 | 2 | 19 | 63 | 2 | 3 | 64 | 108 | 2 | 6 | 0 | 7 | 7 | choi | | |
| j101 | 1991 | 5 | 19 | South Korea | Incheon | Incheon | | | | | | | Ji-Man | Choi | Ji-Man | 250 | 73 | L | R | 2016-04-05 | 2019-09-29 | choijj001 | choijj01 | 1991-05-19 | 2016 | | |
| -04-05 | 2019-09-29 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106136 | choosh01 | 2019 | 1 | TEX | 2923 | AL | 151 | | 563 | 93 | 149 | 31 | 2 | 24 | 61 | 15 | 1 | 78 | 165 | 3 | 18 | 0 | 1 | 6 | choo | | |
| sh01 | 1982 | 7 | 13 | South Korea | Busan | Busan | | | | | | | Shin-Soo | Choo | Shin-Soo | 210 | 71 | L | L | 2005-04-21 | 2019-09-29 | choos001 | choosh01 | 1982-07-13 | 2005 | | |
| -04-21 | 2019-09-29 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106506 | kangju01 | 2019 | 1 | PIT | 2917 | NL | 65 | | 172 | 15 | 29 | 7 | 1 | 10 | 24 | 0 | 0 | 11 | 60 | 0 | 1 | 0 | 1 | 4 | kang | | |
| ju01 | 1987 | 4 | 5 | South Korea | Gwangju | Gwangju | | | | | | | Jung Ho | Kang | Jung Ho | 210 | 72 | R | R | 2015-04-08 | 2019-07-29 | kangj001 | kangju01 | 1987-04-05 | 2015 | | |
| -04-08 | 2019-07-29 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 106076 | ohse01 | 2019 | 1 | COL | 2904 | NL | 21 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ohse | | |
| 01 | 1982 | 7 | 15 | South Korea | North Jeol | Jeongeup | | | | | | | Seunghwan | Oh | Seunghwan | 205 | 70 | R | R | 2016-04-03 | 2019-05-30 | oh--s001 | ohse01 | 1982-07-15 | 2016 | | |
| -04-03 | 2019-05-30 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 107087 | ryuhy01 | 2019 | 1 | LAN | 2909 | NL | 30 | | 51 | 3 | 8 | 1 | 0 | 1 | 3 | 0 | 0 | 4 | 23 | 0 | 0 | 12 | 0 | 0 | ryuh | | |
| y01 | 1987 | 3 | 25 | South Korea | Incheon | Incheon | | | | | | | Hyun-Jin | Ryu | Hyun-Jin | 255 | 75 | R | L | 2013-04-02 | 2019-09-28 | ryu-h001 | ryuhy01 | 1987-03-25 | 2013 | | |
| -04-02 | 2019-09-28 | | | | | | | | | | | | | | | | | | | | | | | | | | |

```
SELECT batting.yearID, people.nameLast, people.nameFirst, batting.HR FROM batting INNER JOIN people ON batting.playerID = people.playerID WHERE batting.yearID = 2019 and people.birthCountry = 'South Korea';
```

| yearID | nameLast | nameFirst | HR |
|--------|----------|-----------|----|
| 2019 | Choi | Ji-Man | 19 |
| 2019 | Choo | Shin-Soo | 24 |
| 2019 | Kang | Jung Ho | 10 |
| 2019 | Oh | Seunghwan | 0 |
| 2019 | Ryu | Hyun-Jin | 1 |

내부 조인(INNER JOIN)

2) 2015년 “오른손” 타자 중에 안타를 가장 많이 친 선수 5명은 누구일까?

```
SELECT batting.yearID, people.nameFirst, people.nameLast, people.bats, batting.H FROM batting INNER JOIN people ON batting.playerID = people.playerID WHERE batting.yearID = 2015 and people.bats = 'R' ORDER BY batting.H DESC LIMIT 5;
```

| yearID | nameFirst | nameLast | bats | H |
|--------|-----------|-----------|------|-----|
| 2015 | Jose | Altuve | R | 200 |
| 2015 | Xander | Bogaerts | R | 196 |
| 2015 | A. J. | Pollock | R | 192 |
| 2015 | Ian | Kinsler | R | 185 |
| 2015 | Josh | Donaldson | R | 184 |

3) 2015년 “왼손” 투수 중에 탈삼진을 가장 많이 잡은 선수 5명은 누구일까?

```
SELECT pitching.yearID, people.nameFirst, people.nameLast, peoplethrows, pitching.SO FROM pitching INNER JOIN people ON pitching.playerID = people.playerID WHERE pitching.yearID = 2015 and peoplethrows = 'L' ORDER BY pitching.SO DESC LIMIT 5;
```

| yearID | nameFirst | nameLast | throws | SO |
|--------|-----------|-----------|--------|-----|
| 2015 | Clayton | Kershaw | L | 301 |
| 2015 | Chris | Sale | L | 274 |
| 2015 | Madison | Bumgarner | L | 234 |
| 2015 | Dallas | Keuchel | L | 216 |
| 2015 | Jon | Lester | L | 207 |

내부 조인(INNER JOIN)

4) 2019년 월드시리즈에서 가장 많은 탈삼진을 잡은 선수 10명의 기록은?

```
SELECT pitchingpost.yearID, pitchingpost.round, pitchingpost.teamID, people.nameFirst, people.nameLast, pitchingpost.SO FROM pitchingpost JOIN people ON pitchingpost.playerID = people.playerID WHERE pitchingpost.yearID = 2019 AND pitchingpost.round = 'WS' ORDER BY pitchingpost.SO DESC LIMIT 10;
```

| yearID | round | teamID | nameFirst | nameLast | SO |
|--------|-------|--------|-----------|-----------|----|
| 2019 | WS | HOU | Gerrit | Cole | 15 |
| 2019 | WS | WAS | Stephen | Strasburg | 14 |
| 2019 | WS | WAS | Patrick | Corbin | 10 |
| 2019 | WS | WAS | Max | Scherzer | 10 |
| 2019 | WS | HOU | Zack | Greinke | 9 |
| 2019 | WS | HOU | Justin | Verlander | 9 |
| 2019 | WS | WAS | Daniel | Hudson | 5 |
| 2019 | WS | HOU | Josh | James | 5 |
| 2019 | WS | HOU | Will | Harris | 4 |
| 2019 | WS | HOU | Brad | Peacock | 4 |

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| AL | W | L | GB | SRS |
|---------------------|----|----|------|------|
| East | | | | |
| NYY | 29 | 13 | -- | 1.1 |
| TBR | 24 | 17 | 4.5 | 0.0 |
| TOR | 22 | 20 | 7.0 | -0.1 |
| BOS | 19 | 22 | 9.5 | 0.0 |
| BAL | 18 | 25 | 11.5 | -0.6 |
| Central | | | | |
| MIN | 26 | 16 | -- | 0.4 |
| CHW | 21 | 20 | 4.5 | -0.7 |
| CLE | 18 | 20 | 6.0 | 0.0 |
| DET | 14 | 27 | 11.5 | -1.3 |
| KCR | 14 | 27 | 11.5 | -1.6 |

| NL | W | L | GB | SRS |
|---------------------|----|----|------|------|
| East | | | | |
| NYM | 29 | 15 | -- | 1.4 |
| PHI | 20 | 22 | 8.0 | 0.9 |
| ATL | 19 | 23 | 9.0 | -0.1 |
| MIA | 18 | 22 | 9.0 | 0.6 |
| WSN | 14 | 29 | 14.5 | -1.1 |
| Central | | | | |
| MIL | 26 | 16 | -- | 0.2 |
| STL | 24 | 18 | 2.0 | 0.9 |
| CHC | 17 | 24 | 8.5 | -0.4 |
| PIT | 17 | 24 | 8.5 | -1.3 |
| CIN | 12 | 29 | 13.5 | -1.7 |

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베이스볼레퍼런스에서는 검색창에 2019 world series 라고 검색하면,
2019년 월드시리즈 관련 기록 페이지로 바로 이동!

내부 조인(INNER JOIN)

5) 2015년 홈런 TOP 10의 이름과 팀 이름은? (3개 테이블 조인)

```
SELECT batting.yearID, teams.teamID, teams.name, people.playerID, people.nameFirst, people.nameLast,  
batting.HR FROM batting JOIN people ON batting.playerID = people.playerID  
JOIN teams ON batting.teamID = teams.teamID  
WHERE batting.yearID = 2015 AND teams.yearID = 2015 ORDER BY batting.HR DESC LIMIT 10;
```

| yearID | teamID | name | playerID | nameFirst | nameLast | HR |
|--------|--------|-------------------|-----------|-----------|------------|----|
| 2015 | BAL | Baltimore Orioles | davisch02 | Chris | Davis | 47 |
| 2015 | SEA | Seattle Mariners | cruzne02 | Nelson | Cruz | 44 |
| 2015 | COL | Colorado Rockies | arenano01 | Nolan | Arenado | 42 |
| 2015 | WAS | Washington Nation | harpebr03 | Bryce | Harper | 42 |
| 2015 | TOR | Toronto Blue Jays | donaljo02 | Josh | Donaldson | 41 |
| 2015 | LAA | Los Angeles Angel | troutmi01 | Mike | Trout | 41 |
| 2015 | TOR | Toronto Blue Jays | bautijo02 | Jose | Bautista | 40 |
| 2015 | COL | Colorado Rockies | gonzaca01 | Carlos | Gonzalez | 40 |
| 2015 | LAA | Los Angeles Angel | pujolal01 | Albert | Pujols | 40 |
| 2015 | TOR | Toronto Blue Jays | encared01 | Edwin | Encarnacio | 39 |

| yearID | teamID | name | playerID | nameFirst | nameLast | HR |
|--------|--------|-------------------|-----------|-----------|------------|----|
| 2015 | BAL | Baltimore Orioles | davisch02 | Chris | Davis | 47 |
| 2015 | SEA | Seattle Mariners | cruzne02 | Nelson | Cruz | 44 |
| 2015 | COL | Colorado Rockies | arenano01 | Nolan | Arenado | 42 |
| 2015 | WAS | Washington Nation | harpebr03 | Bryce | Harper | 42 |
| 2015 | TOR | Toronto Blue Jays | donaljo02 | Josh | Donaldson | 41 |
| 2015 | LAA | Los Angeles Angel | troutmi01 | Mike | Trout | 41 |
| 2015 | TOR | Toronto Blue Jays | bautijo02 | Jose | Bautista | 40 |
| 2015 | COL | Colorado Rockies | gonzaca01 | Carlos | Gonzalez | 40 |
| 2015 | LAA | Los Angeles Angel | pujolal01 | Albert | Pujols | 40 |
| 2015 | TOR | Toronto Blue Jays | encared01 | Edwin | Encarnacio | 39 |

Player Standard Batting

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| Rk | Name | Age | Tm | Lg | G | PA | AB | R | H | 2B | 3B | HR | RBI | SB | CS | BB | SO | BA | OBP | SLG | OPS | OPS+ | TB | GDP | HBP | SH | SF | IBB | Pos Summary |
|----|-----------------------------------|-----|---------------------|----|-----|-----|-----|-----|-----|----|----|----|-----|----|----|-----|-----|------|------|------|-------|------|-----|-----|-----|----|----|-----|-------------|
| 1 | Chris Davis* | 29 | BAL | AL | 160 | 670 | 573 | 100 | 150 | 31 | 0 | 47 | 117 | 2 | 3 | 84 | 208 | .262 | .361 | .562 | .923 | 147 | 322 | 6 | 8 | 0 | 5 | 6 | *39D |
| 2 | Nelson Cruz | 34 | SEA | AL | 152 | 655 | 590 | 90 | 178 | 22 | 1 | 44 | 93 | 3 | 2 | 59 | 164 | .302 | .369 | .566 | .936 | 159 | 334 | 6 | 5 | 0 | 1 | 9 | 9D |
| 3 | Nolan Arenado | 24 | COL | NL | 157 | 665 | 616 | 97 | 177 | 43 | 4 | 42 | 130 | 2 | 5 | 34 | 110 | .287 | .323 | .575 | .898 | 124 | 354 | 17 | 4 | 0 | 11 | 13 | *5/H |
| 4 | Bryce Harper* | 22 | WSN | NL | 153 | 654 | 521 | 118 | 172 | 38 | 1 | 42 | 99 | 6 | 4 | 124 | 131 | .330 | .460 | .649 | 1.109 | 198 | 338 | 15 | 5 | 0 | 4 | 15 | *98/D |
| 5 | Josh Donaldson | 29 | TOR | AL | 158 | 711 | 620 | 122 | 184 | 41 | 2 | 41 | 123 | 6 | 0 | 73 | 133 | .297 | .371 | .568 | .939 | 151 | 352 | 16 | 6 | 2 | 10 | 0 | *5/DH |
| 6 | Mike Trout | 23 | LAA | AL | 159 | 682 | 575 | 104 | 172 | 32 | 6 | 41 | 90 | 11 | 7 | 92 | 158 | .299 | .402 | .590 | .991 | 176 | 339 | 11 | 10 | 0 | 5 | 14 | *8/D |
| 7 | Jose Bautista | 34 | TOR | AL | 153 | 666 | 543 | 108 | 136 | 29 | 3 | 40 | 114 | 8 | 2 | 110 | 106 | .250 | .377 | .536 | .913 | 145 | 291 | 19 | 5 | 0 | 8 | 2 | *9D/H |
| 8 | Carlos Gonzalez* | 29 | COL | NL | 153 | 608 | 554 | 87 | 150 | 25 | 2 | 40 | 97 | 2 | 0 | 46 | 133 | .271 | .325 | .540 | .864 | 116 | 299 | 11 | 1 | 1 | 6 | 6 | *9/H |
| 9 | Albert Pujols | 35 | LAA | AL | 157 | 661 | 602 | 85 | 147 | 22 | 0 | 40 | 95 | 5 | 3 | 50 | 72 | .244 | .307 | .480 | .787 | 118 | 289 | 15 | 6 | 0 | 3 | 10 | 3D/5 |
| 10 | Edwin Encarnacion | 32 | TOR | AL | 146 | 624 | 528 | 94 | 146 | 31 | 0 | 39 | 111 | 3 | 2 | 77 | 98 | .277 | .372 | .557 | .929 | 148 | 294 | 14 | 9 | 0 | 10 | 5 | D3/H |

서브쿼리(subquery)

서브쿼리(subquery): 쿼리문 안에 포함되어 있는 또 다른 쿼리문

서브쿼리 사용시 주의사항

- 1. 서브쿼리는 괄호로 감싸줘야 함
- 2. 서브쿼리에서는 ORDER BY 사용 불가

| 서브쿼리 사용 가능 위치 |
|--------------------|
| SELECT 절 |
| FROM 절 |
| WHERE 절 |
| HAVING 절 |
| ORDER BY 절 |
| INSERT 문의 VALUES 절 |
| UPDATE 문의 SET 절 |

데이터 추가시 사용

데이터 수정시 사용

1. FROM 절에 서브쿼리가 사용된 경우(추신수 2019 OPS)

```
SELECT playerID, (SLG + OBP) AS OPS FROM (SELECT playerID, CAST((((H - "2B" - "3B" - HR) + 2*"2B" + 3*"3B" + 4*HR) AS REAL)/AB AS SLG, CAST((H + BB + HBP) AS REAL)/(AB + BB + HBP + SF) AS OBP FROM batting WHERE yearID = 2019 and playerID = 'choosh01');
```

| | |
|----------|-------------------|
| playerID | OPS |
| choosh01 | 0.825919048387965 |

서브쿼리(subquery)

2. SELECT 절에 서브쿼리가 사용된 경우

```
SELECT COUNT(*), (SELECT AVG(salary) FROM salaries WHERE playerID = 'choosh01') FROM batting WHERE playerID = 'choosh01';
```

| COUNT(*) | (SELECT AVG(salary) FROM salaries WHERE playerID = 'choosh01') |
|----------|--|
| 16 | 7280200.0 |

3. WHERE 절에 서브쿼리가 사용된 경우

1) 2019년에 커쇼가 기록한 탈삼진보다 더 많은 탈삼진을 기록한 2019년 투수 기록은?

```
SELECT playerID, SO FROM pitching  
WHERE  
SO > (SELECT SO FROM pitching WHERE playerID = 'kershcl01' and yearID = 2019)  
and yearID = 2019;
```

189

| playerID | SO |
|-----------|-----|
| berrijo01 | 195 |
| biebesh01 | 259 |
| boydma01 | 238 |
| buehlwa01 | 215 |
| bungama01 | 203 |
| castilu02 | 226 |
| college01 | 326 |
| corbipa01 | 238 |
| darviyu01 | 229 |
| degroja01 | 255 |
| flaheja01 | 231 |
| giolilu01 | 228 |
| grayso01 | 205 |
| lynnla01 | 246 |
| minormi01 | 200 |
| mortoch02 | 240 |
| nolaaa01 | 229 |
| rayro02 | 235 |
| rodried05 | 213 |
| salech01 | 218 |
| scherma01 | 243 |
| strasst01 | 251 |
| syndeno01 | 202 |
| verlaju01 | 300 |
| wheelza01 | 195 |

서브쿼리(subquery)

2) 일본 출생 선수들의 타자 기록은?

```
SELECT * FROM batting WHERE playerID IN (SELECT playerID FROM people WHERE birthCountry = 'Japan');
```

| ID | playerID | yearID | stint | teamID | team_ID | lgID | G | G_batting | AB | R | H | 2B | 3B | HR | RBI | SB | CS | BB | SO | IBB | HBP | SH | SF | GIDP |
|--------|-----------|--------|-------|--------|---------|------|-----|-----------|-----|----|-----|----|----|----|-----|----|----|----|-----|-----|-----|----|----|------|
| 95646 | aokino01 | 2012 | 1 | MIL | 2701 | NL | 151 | | 520 | 81 | 150 | 37 | 4 | 10 | 50 | 30 | 8 | 43 | 55 | 1 | 13 | 7 | 5 | 6 |
| 97051 | aokino01 | 2013 | 1 | MIL | 2731 | NL | 155 | | 597 | 80 | 171 | 20 | 3 | 8 | 37 | 20 | 12 | 55 | 40 | 1 | 11 | 8 | 3 | 9 |
| 98469 | aokino01 | 2014 | 1 | KCA | 2757 | AL | 132 | | 491 | 63 | 140 | 22 | 6 | 1 | 43 | 17 | 8 | 43 | 49 | 0 | 6 | 8 | 1 | 5 |
| 99905 | aokino01 | 2015 | 1 | SFN | 2800 | NL | 93 | | 355 | 42 | 102 | 12 | 3 | 5 | 26 | 14 | 5 | 30 | 25 | 0 | 6 | 1 | 0 | 8 |
| 101392 | aokino01 | 2016 | 1 | SEA | 2829 | AL | 118 | | 417 | 63 | 118 | 24 | 4 | 4 | 28 | 7 | 9 | 34 | 45 | 0 | 9 | 5 | 1 | 9 |
| 102883 | aokino01 | 2017 | 1 | HOU | 2846 | AL | 71 | | 202 | 28 | 55 | 12 | 1 | 2 | 19 | 5 | 2 | 15 | 29 | 1 | 2 | 1 | 4 | 11 |
| 102884 | aokino01 | 2017 | 2 | TOR | 2864 | AL | 12 | | 32 | 4 | 9 | 1 | 0 | 3 | 8 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 1 | 0 |
| 102885 | aokino01 | 2017 | 3 | NYN | 2854 | NL | 27 | | 102 | 16 | 29 | 7 | 1 | 0 | 8 | 5 | 0 | 13 | 10 | 0 | 1 | 0 | 0 | 1 |
| 71972 | bowiej01 | 1994 | 1 | OAK | 2173 | AL | 6 | | 14 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 |
| 67607 | chitrst01 | 1990 | 1 | OAK | 2065 | AL | 8 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 68727 | chitrst01 | 1991 | 1 | OAK | 2091 | AL | 56 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 95910 | darviyu01 | 2012 | 1 | TEX | 2713 | AL | 29 | | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 97327 | darviyu01 | 2013 | 1 | TEX | 2743 | AL | 32 | | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 98729 | darviyu01 | 2014 | 1 | TEX | 2773 | AL | 22 | | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 101651 | darviyu01 | 2016 | 1 | TEX | 2833 | AL | 17 | | 3 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 103135 | darviyu01 | 2017 | 1 | TEX | 2863 | AL | 22 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 103136 | darviyu01 | 2017 | 2 | LAN | 2849 | AL | 9 | | 17 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 14 | 0 | 0 | 2 | 0 | 0 |
| 104639 | darviyu01 | 2018 | 1 | CHN | 2871 | NL | 8 | | 12 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 2 | 0 | 0 |
| 106188 | darviyu01 | 2019 | 1 | CHN | 2901 | NL | 31 | | 56 | 1 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 31 | 0 | 0 | 3 | 1 | 1 |
| 50224 | fenwibo01 | 1972 | 1 | HOU | 1599 | NL | 36 | | 50 | 7 | 9 | 3 | 0 | 0 | 4 | 0 | 1 | 3 | 13 | 1 | 0 | 0 | 0 | 1 |
| 51123 | fenwibo01 | 1973 | 1 | SLN | 1636 | AL | 5 | | 6 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 97462 | fujikky01 | 2013 | 1 | CHN | 2721 | NL | 12 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 98874 | fujikky01 | 2014 | 1 | CHN | 2751 | NL | 15 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100320 | fujikky01 | 2015 | 1 | TEX | 2803 | AL | 2 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90514 | fukudko01 | 2008 | 1 | CHN | 2571 | NL | 150 | | 501 | 79 | 129 | 25 | 3 | 10 | 58 | 12 | 4 | 81 | 104 | 9 | 1 | 2 | 5 | 7 |
| 91898 | fukudko01 | 2009 | 1 | CHN | 2601 | NL | 146 | | 499 | 79 | 129 | 38 | 5 | 11 | 54 | 6 | 10 | 93 | 112 | 3 | 3 | 3 | 5 | 15 |
| 93279 | fukudko01 | 2010 | 1 | CHN | 2631 | NL | 130 | | 358 | 45 | 94 | 20 | 2 | 13 | 44 | 7 | 8 | 64 | 67 | 1 | 0 | 3 | 4 | 5 |
| 94641 | fukudko01 | 2011 | 1 | CHN | 2661 | NL | 87 | | 293 | 33 | 80 | 15 | 2 | 3 | 13 | 2 | 2 | 46 | 57 | 1 | 1 | 5 | 0 | 2 |
| 94642 | fukudko01 | 2011 | 2 | CLE | 2663 | AL | 59 | | 237 | 26 | 59 | 12 | 1 | 5 | 22 | 2 | 4 | 15 | 53 | 3 | 3 | 1 | 2 | 6 |
| 90047 | fukudko01 | 2012 | 1 | CHA | 2690 | AL | 24 | | 41 | 2 | 7 | 1 | 0 | 0 | 4 | 0 | 1 | 8 | 9 | 0 | 0 | 0 | 2 | 0 |
| 90515 | fukumka01 | 2008 | 1 | TEX | 2593 | AL | 4 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 75877 | hasegsh01 | 1997 | 1 | ANA | 2238 | AL | 50 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 77127 | hasegsh01 | 1998 | 1 | ANA | 2266 | AL | 61 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 78400 | hasegsh01 | 1999 | 1 | ANA | 2296 | AL | 64 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 79767 | hasegsh01 | 2000 | 1 | ANA | 2326 | AL | 66 | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 81146 | hasegsh01 | 2001 | 1 | ANA | 2356 | AL | 46 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 82476 | hasegsh01 | 2002 | 1 | SEA | 2410 | AL | 53 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 83008 | hasegsh01 | 2003 | 1 | SEA | 2440 | AL | 63 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 85213 | hasegsh01 | 2004 | 1 | SEA | 2470 | AL | 68 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 86533 | hasegsh01 | 2005 | 1 | SEA | 2499 | AL | 46 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 104975 | hiranyo01 | 2018 | 1 | ARI | 2866 | NL | 75 | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 106531 | hiranyo01 | 2019 | 1 | ARI | 2896 | NL | 62 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 79819 | housecr01 | 2000 | 1 | COL | 2335 | NL | 16 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 93444 | igarary01 | 2010 | 1 | NYN | 2644 | NL | 34 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 94820 | igarary01 | 2011 | 1 | NYN | 2674 | NL | 45 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 96222 | igarary01 | 2012 | 1 | TOR | 2714 | AL | 2 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 96223 | igarary01 | 2012 | 2 | NYA | 2703 | AL | 2 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 89294 | igawake01 | 2007 | 1 | NYA | 2553 | AL | 14 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 90696 | igawake01 | 2008 | 1 | NYA | 2583 | AL | 2 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 86592 | iguchta01 | 2005 | 1 | CHA | 2480 | AL | 135 | | 511 | 74 | 142 | 25 | 6 | 15 | 71 | 15 | 5 | 47 | 114 | 0 | 6 | 11 | 6 | 16 |
| 87921 | iguchta01 | 2006 | 1 | CHA | 2510 | AL | 138 | | 555 | 97 | 156 | 24 | 0 | 18 | 67 | 11 | 5 | 59 | 110 | 0 | 3 | 8 | 2 | 7 |
| 89295 | iguchta01 | 2007 | 1 | CHA | 2540 | AL | 90 | | 327 | 45 | 82 | 17 | 4 | 6 | 31 | 8 | 1 | 44 | 65 | 1 | 2 | 1 | 3 | 5 |
| 89296 | iguchta01 | 2007 | 2 | PHI | 2556 | NL | 45 | | 138 | 22 | 42 | 10 | 0 | 3 | 12 | 6 | 1 | 13 | 23 | 0 | 1 | 1 | 3 | 1 |
| 90697 | iguchta01 | 2008 | 1 | SDN | 2588 | NL | 81 | | 303 | 29 | 70 | 14 | 1 | 2 | 24 | 8 | 1 | 26 | 75 | 0 | 0 | 1 | 0 | 11 |

서브쿼리(subquery)

3) 2016년에 MLB 평균연봉 이상을 수령한 선수는 상위 몇 퍼센트?

```
SELECT (SELECT COUNT(*)+0.0 FROM salaries WHERE yearID = 2016 AND salary >= (SELECT AVG(salary) FROM salaries WHERE yearID = 2016))/(SELECT COUNT(*) FROM salaries WHERE yearID = 2016);
```

0.30715123094959

상위 30%

IN의 활용

playerID가 parkch01 또는 ryuhy01 또는 kimby01 중에 하나인 선수의 ERA를 조회하라

```
SELECT playerID, yearID, ERA FROM pitching
WHERE playerID IN ('parkch01', 'ryuhy01', 'kimby01');
```



```
SELECT playerID, yearID, ERA FROM pitching
WHERE playerID = 'parkch01' OR playerID = 'ryuhy01' OR playerID = 'kimby01';
```

```
SELECT playerID, yearID, ERA FROM pitching
WHERE playerID NOT IN ('parkch01', 'ryuhy01', 'kimby01');
```

위 playerID인 선수들의 데이터를 제외한 나머지 선수들의 데이터 조회하고 싶을 때

| playerID | yearID | ERA |
|----------|--------|-------|
| kimby01 | 1999 | 4.61 |
| kimby01 | 2000 | 4.46 |
| kimby01 | 2001 | 2.94 |
| kimby01 | 2002 | 2.04 |
| kimby01 | 2003 | 3.56 |
| kimby01 | 2003 | 3.18 |
| kimby01 | 2004 | 6.23 |
| kimby01 | 2005 | 4.86 |
| kimby01 | 2006 | 5.57 |
| kimby01 | 2007 | 10.5 |
| kimby01 | 2007 | 4.16 |
| kimby01 | 2007 | 23.63 |
| kimby01 | 2007 | 8.21 |
| parkch01 | 1994 | 11.25 |
| parkch01 | 1995 | 4.5 |
| parkch01 | 1996 | 3.64 |
| parkch01 | 1997 | 3.38 |
| parkch01 | 1998 | 3.71 |
| parkch01 | 1999 | 5.23 |
| parkch01 | 2000 | 3.27 |
| parkch01 | 2001 | 3.5 |
| parkch01 | 2002 | 5.75 |
| parkch01 | 2003 | 7.58 |
| parkch01 | 2004 | 5.46 |
| parkch01 | 2005 | 5.66 |
| parkch01 | 2005 | 5.91 |
| parkch01 | 2006 | 4.81 |
| parkch01 | 2007 | 15.75 |
| parkch01 | 2008 | 3.4 |
| parkch01 | 2009 | 4.43 |
| parkch01 | 2010 | 5.6 |
| parkch01 | 2010 | 3.49 |
| ryuhy01 | 2013 | 3.0 |
| ryuhy01 | 2014 | 3.38 |
| ryuhy01 | 2016 | 11.57 |
| ryuhy01 | 2017 | 3.77 |
| ryuhy01 | 2018 | 1.97 |
| ryuhy01 | 2019 | 2.32 |

BETWEEN ... AND ... 의 활용

2019년 세이브 개수가 20이상 30이하인 선수의 세이브 수를 조회하라

```
SELECT playerID, yearID, SV FROM pitching WHERE (SV BETWEEN 20 AND 30) AND yearID = 2019;
```

| playerID | yearID | SV |
|-----------|--------|----|
| colomal01 | 2019 | 30 |
| diazed04 | 2019 | 26 |
| doolise01 | 2019 | 29 |
| gileske01 | 2019 | 23 |
| greensh02 | 2019 | 22 |
| hendrli01 | 2019 | 25 |
| kenneia01 | 2019 | 30 |
| martica04 | 2019 | 24 |
| nerishe01 | 2019 | 28 |
| paganem01 | 2019 | 20 |
| riverfe01 | 2019 | 28 |
| robleha01 | 2019 | 23 |
| rogerta01 | 2019 | 30 |

GROUP BY의 활용

GROUP BY는 그룹으로 묶어주는 역할을 함
GROUP BY는 보통 SUM, COUNT 등의 집계함수와 함께 사용됨

batting 테이블을 활용하여 2019 시즌 각 팀의 총 안타 개수를 조회하라

```
SELECT playerId, teamID, H FROM batting WHERE yearID = 2019 ORDER BY teamID;
```

```
SELECT teamID, SUM(H) FROM batting WHERE yearID = 2019 GROUP BY teamID;
```

batting 테이블을 활용하여 2019 시즌 각 팀 총 안타 개수가 1500개 초과인 팀의 총 안타 개수를 조회하라

```
SELECT teamID, SUM(H) FROM batting WHERE yearID = 2019 GROUP BY teamID  
HAVING SUM(H) > 1500;
```

GROUP BY 절 내에서 집계 함수에 대해서 조건을 주고 싶을 때는 HAVING을 사용

| teamID | SUM(H) |
|--------|--------|
| ARI | 1419 |
| ATL | 1432 |
| BAL | 1379 |
| BOS | 1554 |
| CHA | 1443 |
| CHN | 1378 |
| CIN | 1328 |
| CLE | 1354 |
| COL | 1502 |
| DET | 1333 |
| HOU | 1538 |
| KCA | 1356 |
| LAA | 1368 |
| LAN | 1414 |
| MIA | 1326 |
| MIL | 1366 |
| MIN | 1547 |
| NYA | 1493 |
| NYN | 1445 |
| OAK | 1384 |
| PHI | 1369 |
| PIT | 1497 |
| SDN | 1281 |
| SEA | 1305 |
| SFN | 1332 |
| SLN | 1336 |
| TBA | 1427 |
| TEX | 1374 |
| TOR | 1299 |
| WAS | 1460 |

| teamID | SUM(H) |
|--------|--------|
| BOS | 1554 |
| COL | 1502 |
| HOU | 1538 |
| MIN | 1547 |

GROUP BY의 활용

GROUP BY 한 것을 정렬해주려면?

| teamID | SUM(H) |
|--------|--------|
| ----- | ----- |
| BOS | 1554 |
| COL | 1502 |
| HOU | 1538 |
| MIN | 1547 |

```
SELECT teamID, SUM(H) FROM batting WHERE yearID = 2019 GROUP BY teamID  
HAVING SUM(H) > 1500 ORDER BY SUM(H) DESC;
```

| teamID | SUM(H) |
|--------|--------|
| ----- | ----- |
| BOS | 1554 |
| MIN | 1547 |
| HOU | 1538 |
| COL | 1502 |

[통산 병살타 순위 TOP10]

```
sqlite> SELECT playerID, sum(GIDP) as sum_gidp FROM batting GROUP BY playerID ORDER BY sum_gidp DE  
SC LIMIT 10;
```

| playerID | sum_gidp |
|-----------|----------|
| ----- | ----- |
| pujolal01 | 395 |
| ripkeca01 | 350 |
| rodriiv01 | 337 |
| aaronha01 | 328 |
| yastrca01 | 323 |
| winfida01 | 319 |
| cabremi01 | 318 |



qjqj7890

SQL 문법 순서

SELECT 컬럼명

FROM 테이블명

WHERE 조건식

GROUP BY 컬럼명

HAVING 조건식

ORDER BY 컬럼명

ORDER BY가 WHERE 앞에 오면 안됨

```
sqlite> SELECT playerID, HR FROM batting ORDER BY HR WHERE yearID = 2019;  
Error: near "WHERE": syntax error
```

에러 발생

CASE의 활용

조건에 따라 분기를 줘야할 경우에 사용

2019년 탈삼진 개수로 선수들에게 등급을 줘보자

< 250: S등급

< 200: A등급

< 150: B등급

< 100: C등급

나머지: F등급

```
SELECT yearID, playerID, SO,  
CASE  
WHEN SO > 250 THEN 'S'  
WHEN SO > 200 THEN 'A'  
WHEN SO > 150 THEN 'B'  
WHEN SO > 100 THEN 'C'  
ELSE 'F'  
END AS grade  
FROM pitching WHERE yearID = 2019 ORDER BY SO DESC LIMIT 200;
```

| yearID | playerID | S0 | grade |
|--------|-----------|-----|-------|
| 2019 | colege01 | 326 | S |
| 2019 | verlaju01 | 300 | S |
| 2019 | biebesh01 | 259 | S |
| 2019 | degroja01 | 255 | S |
| 2019 | strasst01 | 251 | S |
| 2019 | lynnla01 | 246 | A |
| 2019 | scherma01 | 243 | A |
| 2019 | mortoch02 | 240 | A |
| 2019 | boydma01 | 238 | A |
| 2019 | corbipa01 | 238 | A |
| 2019 | rayro02 | 235 | A |
| 2019 | flaheja01 | 231 | A |
| 2019 | darviyu01 | 229 | A |
| 2019 | nolaaa01 | 229 | A |
| 2019 | giolilu01 | 228 | A |
| 2019 | castilu02 | 226 | A |
| 2019 | salech01 | 218 | A |
| 2019 | buehlwa01 | 215 | A |
| 2019 | rodried05 | 213 | A |
| 2019 | grayso01 | 205 | A |
| 2019 | bumgama01 | 203 | A |
| 2019 | syndeno01 | 202 | A |
| 2019 | minormi01 | 200 | B |
| 2019 | berrijo01 | 195 | B |
| 2019 | wheelza01 | 195 | B |
| 2019 | kershcl01 | 189 | B |
| 2019 | paxtoja01 | 186 | B |
| 2019 | bauertr01 | 185 | B |
| 2019 | odorija01 | 178 | B |
| 2019 | marquge01 | 175 | B |
| 2019 | friedma01 | 173 | B |
| 2019 | clevimi01 | 169 | B |
| 2019 | lopezre01 | 169 | B |
| 2019 | maedake01 | 169 | B |
| 2019 | smithca03 | 168 | B |
| 2019 | desclan01 | 167 | B |
| 2019 | lestejo01 | 165 | B |
| 2019 | junisja01 | 164 | B |
| 2019 | ryuhy01 | 163 | B |
| 2019 | bundydy01 | 162 | B |
| 2019 | teherju01 | 162 | B |
| 2019 | gibsoky01 | 160 | B |
| 2019 | kellyme01 | 158 | B |
| 2019 | lucchjo01 | 158 | B |
| 2019 | musgrjo01 | 157 | B |
| 2019 | germado01 | 153 | B |
| 2019 | matzst01 | 153 | B |

Player Standard Pitching

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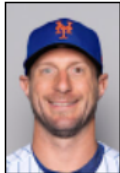
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| Rk | Name | Age | Tm | Lg | W | L | W-L% | ERA | G | GS | GF | CG | SHO | SV | IP | H | R | ER | HR | BB | IBB | SO ▼ | HBP | BK | WP | BF | ERA+ | FIP | WHIP | H9 | HR9 | BB9 | SO9 | SO/W |
|----|------------------------------------|-----|---------------------|-----|----|----|------|------|----|----|----|----|-----|----|-------|-----|-----|-----|----|----|-----|---------|-----|----|----|-----|------|------|-------|-----|-----|-----|------|------|
| 1 | Gerrit Cole | 28 | HOU | AL | 20 | 5 | .800 | 2.50 | 33 | 33 | 0 | 0 | 0 | 0 | 212.1 | 142 | 66 | 59 | 29 | 48 | 0 | 326 | 3 | 3 | 4 | 817 | 185 | 2.64 | 0.895 | 6.0 | 1.2 | 2.0 | 13.8 | 6.79 |
| 2 | Justin Verlander | 36 | HOU | AL | 21 | 6 | .778 | 2.58 | 34 | 34 | 0 | 2 | 1 | 0 | 223.0 | 137 | 66 | 64 | 36 | 42 | 0 | 300 | 6 | 0 | 4 | 847 | 179 | 3.27 | 0.803 | 5.5 | 1.5 | 1.7 | 12.1 | 7.14 |
| 3 | Shane Bieber | 24 | CLE | AL | 15 | 8 | .652 | 3.28 | 34 | 33 | 1 | 3 | 2 | 0 | 214.1 | 186 | 86 | 78 | 31 | 40 | 1 | 259 | 6 | 1 | 6 | 859 | 144 | 3.32 | 1.054 | 7.8 | 1.3 | 1.7 | 10.9 | 6.48 |
| 4 | Jacob deGrom | 31 | NYM | NL | 11 | 8 | .579 | 2.43 | 32 | 32 | 0 | 0 | 0 | 0 | 204.0 | 154 | 59 | 55 | 19 | 44 | 1 | 255 | 7 | 0 | 2 | 804 | 169 | 2.67 | 0.971 | 6.8 | 0.8 | 1.9 | 11.3 | 5.80 |
| 5 | Trevor Bauer | 28 | TOT | MLB | 11 | 13 | .458 | 4.48 | 34 | 34 | 0 | 1 | 1 | 0 | 213.0 | 184 | 118 | 106 | 34 | 82 | 0 | 253 | 19 | 0 | 10 | 911 | 105 | 4.34 | 1.249 | 7.8 | 1.4 | 3.5 | 10.7 | 3.09 |
| 6 | Stephen Strasburg | 30 | WSN | NL | 18 | 6 | .750 | 3.32 | 33 | 33 | 0 | 0 | 0 | 0 | 209.0 | 161 | 79 | 77 | 24 | 56 | 4 | 251 | 10 | 0 | 8 | 841 | 135 | 3.25 | 1.038 | 6.9 | 1.0 | 2.4 | 10.8 | 4.48 |
| 7 | Lance Lynn | 32 | TEX | AL | 16 | 11 | .593 | 3.67 | 33 | 33 | 0 | 0 | 0 | 0 | 208.1 | 195 | 89 | 85 | 21 | 59 | 0 | 246 | 8 | 0 | 18 | 875 | 141 | 3.13 | 1.219 | 8.4 | 0.9 | 2.5 | 10.6 | 4.17 |
| 8 | Max Scherzer | 34 | WSN | NL | 11 | 7 | .611 | 2.92 | 27 | 27 | 0 | 0 | 0 | 0 | 172.1 | 144 | 59 | 56 | 18 | 33 | 2 | 243 | 7 | 0 | 0 | 693 | 154 | 2.45 | 1.027 | 7.5 | 0.9 | 1.7 | 12.7 | 7.36 |
| 9 | Charlie Morton | 35 | TBR | AL | 16 | 6 | .727 | 3.05 | 33 | 33 | 0 | 0 | 0 | 0 | 194.2 | 154 | 71 | 66 | 15 | 57 | 0 | 240 | 12 | 1 | 5 | 790 | 144 | 2.81 | 1.084 | 7.1 | 0.7 | 2.6 | 11.1 | 4.21 |
| 10 | Matthew Boyd* | 28 | DET | AL | 9 | 12 | .429 | 4.56 | 32 | 32 | 0 | 0 | 0 | 0 | 185.1 | 178 | 101 | 94 | 39 | 50 | 1 | 238 | 8 | 4 | 6 | 788 | 104 | 4.32 | 1.230 | 8.6 | 1.9 | 2.4 | 11.6 | 4.76 |
| 11 | Patrick Corbin* | 29 | WSN | NL | 14 | 7 | .667 | 3.25 | 33 | 33 | 0 | 1 | 1 | 0 | 202.0 | 169 | 81 | 73 | 24 | 70 | 2 | 238 | 3 | 0 | 4 | 835 | 138 | 3.49 | 1.183 | 7.5 | 1.1 | 3.1 | 10.6 | 3.40 |
| 12 | Robbie Ray* | 27 | ARI | NL | 12 | 8 | .600 | 4.34 | 33 | 33 | 0 | 0 | 0 | 0 | 174.1 | 150 | 91 | 84 | 30 | 84 | 5 | 235 | 5 | 0 | 7 | 747 | 103 | 4.29 | 1.342 | 7.7 | 1.5 | 4.3 | 12.1 | 2.80 |
| 13 | Jack Flaherty | 23 | STL | NL | 11 | 8 | .579 | 2.75 | 33 | 33 | 0 | 0 | 0 | 0 | 196.1 | 135 | 62 | 60 | 25 | 55 | 2 | 231 | 7 | 0 | 6 | 772 | 152 | 3.46 | 0.968 | 6.2 | 1.1 | 2.5 | 10.6 | 4.20 |
| 14 | Yu Darvish | 32 | CHC | NL | 6 | 8 | .429 | 3.98 | 31 | 31 | 0 | 0 | 0 | 0 | 178.2 | 140 | 82 | 79 | 33 | 56 | 1 | 229 | 11 | 0 | 11 | 731 | 111 | 4.18 | 1.097 | 7.1 | 1.7 | 2.8 | 11.5 | 4.09 |
| 15 | Aaron Nola | 26 | PHI | NL | 12 | 7 | .632 | 3.87 | 34 | 34 | 0 | 0 | 0 | 0 | 202.1 | 176 | 91 | 87 | 27 | 80 | 3 | 229 | 11 | 0 | 3 | 852 | 115 | 4.03 | 1.265 | 7.8 | 1.2 | 3.6 | 10.2 | 2.86 |
| 16 | Lucas Giolito | 24 | CHW | AL | 14 | 9 | .609 | 3.41 | 29 | 29 | 0 | 3 | 2 | 0 | 176.2 | 131 | 69 | 67 | 24 | 57 | 1 | 228 | 4 | 0 | 6 | 705 | 134 | 3.43 | 1.064 | 6.7 | 1.2 | 2.9 | 11.6 | 4.00 |
| 17 | Luis Castillo | 26 | CIN | NL | 15 | 8 | .652 | 3.40 | 32 | 32 | 0 | 0 | 0 | 0 | 190.2 | 139 | 76 | 72 | 22 | 79 | 0 | 226 | 7 | 3 | 5 | 781 | 137 | 3.70 | 1.143 | 6.6 | 1.0 | 3.7 | 10.7 | 2.86 |
| 18 | Chris Sale* | 30 | BOS | AL | 6 | 11 | .353 | 4.40 | 25 | 25 | 0 | 1 | 1 | 0 | 147.1 | 123 | 80 | 72 | 24 | 37 | 0 | 218 | 13 | 0 | 2 | 612 | 110 | 3.39 | 1.086 | 7.5 | 1.5 | 2.3 | 13.3 | 5.89 |
| 19 | Walker Buehler | 24 | LAD | NL | 14 | 4 | .778 | 3.26 | 30 | 30 | 0 | 2 | 0 | 0 | 182.1 | 153 | 77 | 66 | 20 | 37 | 0 | 215 | 7 | 0 | 4 | 737 | 127 | 3.01 | 1.042 | 7.6 | 1.0 | 1.8 | 10.6 | 5.81 |
| 20 | Eduardo Rodriguez* | 26 | BOS | AL | 19 | 6 | .760 | 3.81 | 34 | 34 | 0 | 0 | 0 | 0 | 203.1 | 195 | 88 | 86 | 24 | 75 | 2 | 213 | 7 | 0 | 3 | 859 | 128 | 3.86 | 1.328 | 8.6 | 1.1 | 3.3 | 9.4 | 2.84 |
| 21 | Sonny Gray | 29 | CIN | NL | 11 | 8 | .579 | 2.87 | 31 | 31 | 0 | 0 | 0 | 0 | 175.1 | 122 | 59 | 56 | 17 | 68 | 1 | 205 | 7 | 1 | 7 | 708 | 162 | 3.42 | 1.084 | 6.3 | 0.9 | 3.5 | 10.5 | 3.01 |
| 22 | Madison Bumgarner* | 29 | SFG | NL | 9 | 9 | .500 | 3.90 | 34 | 34 | 0 | 0 | 0 | 0 | 207.2 | 191 | 99 | 90 | 30 | 43 | 3 | 203 | 10 | 0 | 3 | 844 | 107 | 3.90 | 1.127 | 8.3 | 1.3 | 1.9 | 8.8 | 4.72 |
| 23 | Noah Syndergaard | 26 | NYM | NL | 10 | 8 | .556 | 4.28 | 32 | 32 | 0 | 1 | 1 | 0 | 197.2 | 194 | 101 | 94 | 24 | 50 | 2 | 202 | 6 | 0 | 4 | 825 | 96 | 3.60 | 1.234 | 8.8 | 1.1 | 2.3 | 9.2 | 4.04 |
| 24 | Mike Minor* | 31 | TEX | AL | 14 | 10 | .583 | 3.59 | 32 | 32 | 0 | 2 | 1 | 0 | 208.1 | 190 | 86 | 83 | 30 | 68 | 1 | 200 | 7 | 0 | 2 | 863 | 144 | 4.25 | 1.238 | 8.2 | 1.3 | 2.9 | 8.6 | 2.94 |
| 25 | Jose Berrios | 25 | MIN | AL | 14 | 8 | .636 | 3.68 | 32 | 32 | 0 | 1 | 0 | 0 | 200.1 | 194 | 94 | 82 | 26 | 51 | 0 | 195 | 9 | 1 | 8 | 842 | 123 | 3.85 | 1.223 | 8.7 | 1.2 | 2.3 | 8.8 | 3.82 |
| 26 | Zack Wheeler | 29 | NYM | NL | 11 | 8 | .579 | 3.96 | 31 | 31 | 0 | 0 | 0 | 0 | 195.1 | 196 | 93 | 86 | 22 | 50 | 4 | 195 | 2 | 0 | 5 | 828 | 103 | 3.48 | 1.259 | 9.0 | 1.0 | 2.3 | 9.0 | 3.90 |
| 27 | Clayton Kershaw* | 31 | LAD | NL | 16 | 5 | .762 | 3.03 | 29 | 28 | 0 | 0 | 0 | 0 | 178.1 | 145 | 63 | 60 | 28 | 41 | 0 | 189 | 2 | 1 | 7 | 706 | 137 | 3.86 | 1.043 | 7.3 | 1.4 | 2.1 | 9.5 | 4.61 |
| 28 | Zack Greinke | 35 | TOT | MLB | 18 | 5 | .783 | 2.93 | 33 | 33 | 0 | 0 | 0 | 0 | 208.2 | 175 | 73 | 68 | 21 | 30 | 2 | 187 | 4 | 1 | 2 | 810 | 154 | 3.22 | 0.982 | 7.5 | 0.9 | 1.3 | 8.1 | 6.23 |
| 29 | James Paxton* | 30 | NYY | AL | 15 | 6 | .714 | 3.82 | 29 | 29 | 0 | 0 | 0 | 0 | 150.2 | 138 | 71 | 64 | 23 | 55 | 0 | 186 | 2 | 1 | 7 | 633 | 116 | 3.86 | 1.281 | 8.2 | 1.4 | 3.3 | 11.1 | 3.38 |
| 30 | Jake Odorizzi | 29 | MIN | AL | 15 | 7 | .682 | 3.51 | 30 | 30 | 0 | 0 | 0 | 0 | 159.0 | 139 | 65 | 62 | 16 | 53 | 0 | 178 | 4 | 0 | 4 | 658 | 129 | 3.36 | 1.208 | 7.9 | 0.9 | 3.0 | 10.1 | 3.36 |

QUIZ

2019년 FIP로 규정 이닝 이상 던진 투수들을 등급매겨보자(2019 cFIP = 3.214)
다음과 똑같이 출력되게 할 것.



Max Scherzer

Position: Pitcher
Bats: Right • Throws: Right
6-3, 208lb (190cm, 94kg)
Team: [New York Mets](#) (majors, 15-day IL)
Born: [July 27, 1984](#) (Age: 37-302d) in St. Louis, [MO](#) 
Draft: Drafted by the [St. Louis Cardinals](#) in the 43rd round of

| Fielding Independent Pitching (FIP) | | |
|-------------------------------------|---------------|------|
| | Rating | FIP |
| | Excellent | 3.20 |
| | Great | 3.50 |
| | Above Average | 3.80 |
| | Average | 4.20 |
| | Below Average | 4.40 |
| | Poor | 4.70 |
| | Awful | 5.00 |
| Based on 2016 Run Environment | | |

| playerID | FIP | grade |
|-----------|------------------|------------|
| scherma01 | 2.44804255319149 | Excellent |
| colege01 | 2.639431711146 | Excellent |
| degroja01 | 2.67478431372549 | Excellent |
| mortoch02 | 2.81331506849315 | Excellent |
| buehlwa01 | 3.00559049360146 | Excellent |
| ryuhy01 | 3.09903649635036 | Excellent |
| lynnta01 | 3.1276 | Excellent |
| strasst01 | 3.25227751196172 | Great |
| verlaju01 | 3.26781165919283 | Great |
| biebesh01 | 3.32130948678072 | Great |
| grayso01 | 3.41932319391635 | Great |
| giolilu01 | 3.43475471698113 | Great |
| sorokmi01 | 3.45445801526718 | Great |
| flaheja01 | 3.46357555178268 | Great |
| wheelza01 | 3.48021160409556 | Great |
| corbipa01 | 3.48627722772277 | Great |
| syndeno01 | 3.59848566610455 | Above Aver |
| hendrky01 | 3.6094802259887 | Above Aver |
| castilu02 | 3.69651748251748 | Above Aver |
| friedma01 | 3.7150060362173 | Above Aver |
| quintjo01 | 3.79879532163743 | Above Aver |
| musgrjo01 | 3.81869667318982 | Average |
| herrjo01 | 3.85293510815308 | Average |
| kershcl01 | 3.85885981308411 | Average |
| rodried05 | 3.86318032786885 | Average |
| bumgama01 | 3.90260353130016 | Average |
| noaaaa01 | 4.03442833607908 | Average |
| marquge01 | 4.0588275862069 | Average |
| gonzama02 | 4.15488669950739 | Average |
| lucchjo01 | 4.17326680244399 | Average |
| darviyu01 | 4.17668656716418 | Average |
| minormi01 | 4.246 | Below Aver |
| lestejo01 | 4.25671844660194 | Below Aver |
| tanakma01 | 4.26894505494506 | Below Aver |
| mikolmi01 | 4.27378260869565 | Below Aver |
| rayro02 | 4.28665774378585 | Below Aver |
| boydma01 | 4.32011510791367 | Below Aver |
| kellebr01 | 4.35109677419355 | Below Aver |
| wainwad01 | 4.35574757281553 | Below Aver |
| desclan01 | 4.426 | Poor |
| sanchan01 | 4.4429156626506 | Poor |
| mileywa01 | 4.51081274900398 | Poor |
| kellyme01 | 4.51218181818182 | Poor |
| alcansa01 | 4.55183783783784 | Poor |
| anderbr04 | 4.57195454545455 | Poor |
| samarje01 | 4.58716176470588 | Poor |
| perezma02 | 4.65956451612903 | Poor |
| teherju01 | 4.66247328244275 | Poor |
| porceri01 | 4.76275717017208 | Awful |
| junisja01 | 4.82236501901141 | Awful |
| eflinza01 | 4.85481632653061 | Awful |
| hudsoda02 | 4.9258320610687 | Awful |
| fiersmi01 | 4.96851263537906 | Awful |
| novaiv01 | 4.97870588235294 | Awful |
| lopezre01 | 5.04008695652174 | Awful |

LIKE의 활용용

MLB에서 뭘 한국에서 태어난 선수들을 검색하고 싶음.

그런데 한국이 Korea로 들어가 있을 지,
Republic of Korea로 들어가 있을 지,
South Korea로 들어가 있을 지는 모르는 상황.

어쨌든 Korea는 들어가 있을 것으로 예상됨.

이런 상황에 LIKE를 사용할 수 있음.

```
SELECT * FROM people WHERE birthCountry LIKE '%Korea%';
```

여기서 %는 무엇이든 허용한다는 뜻

| playerID | birthYear | birthMonth | birthDay | birthCountry | birthState | birthCity | deathYear | deathMonth | deathDay | deathCountry | deathState | deathCity | nameFirst | nameLast | nameGiven | weight | height | bat |
|----------|-----------|------------|-----------|--------------|-------------|-------------------|------------|----------------|------------|--------------|------------|-----------|-----------|----------|-----------|--------|--------|-----|
| ts | throws | debut | finalGame | retroID | bbrefID | birth_date | debut_date | finalgame_date | death_date | | | | | | | | | |
| baekch01 | R | 1980 | 5 | 29 | South Korea | Busan | 2004-08-08 | 2008-09-28 | | | | | Cha-Seung | Baek | Cha-Seung | 190 | 76 | R |
| bongju01 | L | 1980 | 7 | 15 | South Korea | Seoul | 2002-04-23 | 2004-06-20 | | | | | Jung | Bong | Jung Keun | 175 | 75 | L |
| choihe01 | L | 1979 | 3 | 16 | South Korea | South Jeol Hwasun | 2002-09-03 | 2005-10-02 | | | | | Hee-Seop | Choi | Hee-Seop | 235 | 77 | L |
| choiji01 | R | 1991 | 5 | 19 | South Korea | Incheon | 2016-04-05 | 2019-09-29 | | | | | Ji-Man | Choi | Ji-Man | 250 | 73 | L |
| choji01 | R | 1975 | 8 | 16 | South Korea | North Jeol Jeonju | 1998-07-04 | 1999-07-30 | | | | | Jin Ho | Cho | Jin Ho | 175 | 72 | R |
| choosh01 | | 1982 | 7 | 13 | South Korea | Busan | | | | | | | Shin-Soo | Choo | Shin-Soo | 210 | 71 | L |

LIKE의 활용

레먼데이터베이스에서 teamID는 3글자로 구성되어 있음.
BAL, DET, WAS, HOU, TOR 등.
teamID가 T로 시작하는 팀들을 조회하고 싶을 때는
teamID LIKE 'T__'를 사용할 수 있음.

```
SELECT yearID, teamID, name FROM teams WHERE yearID = 2019 and teamID LIKE 'T__';
```

언더바(_) 두번

| yearID | teamID | name |
|--------|--------|----------------|
| 2019 | TBA | Tampa Bay Rays |
| 2019 | TEX | Texas Rangers |
| 2019 | TOR | Toronto Blue J |

아메리칸리그

1. 동부

- 볼티모어 오리올스, Baltimore Orioles, BAL
- 보스턴 레드삭스, Boston Red Sox, BOS
- 뉴욕 양키스, New York Yankees, NYA
- 탬파베이 레이스, Tampa Bay Rays, TBA
- 토론토 블루제이스, Toronto Blue Jays, TOR

2. 중부

- 시카고 화이트삭스, Chicago White Sox, CHA
- 클리블랜드 가디언스, Cleveland Guardians, CLE: 2021년까지 "클리블랜드 인디언스"였음
- 디트로이트 타이거스, Detroit Tigers, DET
- 캔자스시티 로열스, Kansas City Royals, KCA
- 미네소타 트윈스, Minnesota Twins, MIN

3. 서부

- 휴스턴 애스트로스, Houston Astros, HOU
- 로스앤젤레스 에인절스, Los Angeles Angels, LAA
- 오클랜드 애슬레틱스, Oakland Athletics, OAK
- 시애틀 매리너스, Seattle Mariners, SEA
- 텍사스 레인저스, Texas Rangers, TEX

내셔널리그

1. 동부

- 애틀랜타 브레이브스, Atlanta Braves, ATL
- 마이애미 말린스, Miami Marlins, MIA
- 뉴욕 메츠, New York Mets, NYN
- 필라델피아 필리스, Philadelphia Phillies, PHI
- 워싱턴 내셔널스, Washington Nationals, WAS

2. 중부

- 시카고 컵스, Chicago Cubs, CHN
- 신시내티 레즈, Cincinnati Reds, CIN
- 밀워키 브루어스, Milwaukee Brewers, MIL
- 피츠버그 파이리츠, Pittsburgh Pirates, PIT
- 세인트루이스 카디널스, St. Louis Cardinals, SLN

3. 서부

- 애리조나 다이아몬드백스, Arizona Diamondbacks, ARI
- 콜로라도 로키스, Colorado Rockies, COL
- 로스앤젤레스 다저스, Los Angeles Dodgers, LAN
- 샌디에이고 파드리스, San Diego Padres, SDN
- 샌프란시스코 자이언츠, San Francisco Giants, SFN

DISTINCT의 활용

중복된 것은 1개씩만 보여주고 싶을 때

MLB에서 역대 댄 선수들의 출생국가를 조회해보자

```
SELECT birthCountry FROM people;
```

이렇게 하면 중복된 국가가 엄청나게 많이 조회됨

```
SELECT DISTINCT birthCountry FROM people;
```

```
SELECT COUNT(DISTINCT birthCountry) FROM people;
```

```
sqlite> SELECT COUNT(DISTINCT birthCountry) FROM people;
```

57

57개 국가에서 태어난 선수들이 MLB에 입성했음

Russia
Curacao
Colombia
Nicaragua
Germany
Norway
Japan
Ireland
Italy
Bahamas
United Kingdom
South Korea
Australia
Czech Republic
V.I.
Netherlands
France
Aruba

Sweden
Hong Kong
Afghanistan
Spain
Greece
Taiwan
Philippines
Jamaica
Poland
Honduras
Brazil
Viet Nam
Guam
Denmark
Switzerland
Austria
Singapore
China
Belgium
Peru
Belize
Indonesia
Finland
Lithuania
South Africa
At Sea
Slovakia
American Samoa
Saudi Arabia
Portugal
Latvia

문자열 합치기

두 컬럼의 문자열을 연결해서 보여주고 싶을 때

컬럼명 || 컬럼명

```
sqlite> SELECT nameFirst || ' ' || nameLast as name FROM people LIMIT 10;  
name  
-----  
David Aardsma  
Hank Aaron  
Tommy Aaron  
Don Aase  
Andy Abad  
Fernando Abad  
John Abadie  
Ed Abbaticchi  
Bert Abbey  
Charlie Abbey
```

Quiz

2019년 teamID가 A로 끝나는 팀 선수 중 BABIP이 좋은 타자 5명의 데이터를 조회하시오.
다음과 똑같이 출력되게 할 것.

| playerID | teamID | name | BABIP |
|-----------|---------------------------------------|--------------|-------------------|
| moncayo01 | CHA <small>Chicago White Sox</small> | Yoan Moncada | 0.405970149253731 |
| anderti01 | CHA | Tim Anderson | 0.399463806970509 |
| garcile02 | CHA | Leury Garcia | 0.353348729792148 |
| merriwh01 | KCA <small>Kansas City Royals</small> | Whit Merrifi | 0.349907918968692 |
| lemahdj01 | NYA <small>New York Yankees</small> | DJ LeMahieu | 0.348979591836735 |

참고로 지금까지의 내용을 완벽히 이해하지 않았다면 어렵습니다...ㅠㅠ