```sql
-- This file contains the SQL query
-- for all the analytical questions
-- that were mentioned in the Business Proposal doc

USE BUDT703_Project_0506_15

-- Which year did UMD win the most number of games

--SELECT YEAR(g.gameDate) AS 'Year', COUNT(CASE WHEN (s.terpRuns -
s.opponentRuns)>0 THEN 1 ELSE NULL END) AS 'Number of Wins'
--FROM Game g, Score s
--WHERE g.scoreId = s.scoreId
--GROUP BY YEAR(g.gameDate)
--ORDER BY YEAR(g.gameDate);

-- What was the year wise win percentage
SELECT DISTINCT YEAR(g.gameDate) AS 'Year',
       ROUND((SUM(CASE WHEN (s.opponentRuns - s.terpRuns)<0 THEN 1 ELSE NULL END))/
                        CAST(COUNT(s.opponentRuns) AS FLOAT),2)
                        AS 'Win Percentage'
FROM Game g, Score s
WHERE g.scoreId = s.scoreId
GROUP BY YEAR(g.gameDate)
ORDER BY YEAR(g.gameDate)

-- How many games won by MD were at home away and neutral
SELECT
    gameAt AS 'Game At',
    gameOutcome AS 'Result',
    COUNT(*) AS NumGames
FROM (
    SELECT
        G.gameId,
        G.gameAt,
        CASE
            WHEN (G.umdTerpId = S.umdTerpId AND S.terpRuns > S.opponentRuns) AND
G.gameAt='home' THEN 'win'
                    WHEN (G.umdTerpId = S.umdTerpId AND S.terpRuns < S.opponentRuns)
AND G.gameAt='home' THEN 'loss'
                    WHEN (G.umdTerpId = S.umdTerpId AND S.terpRuns > S.opponentRuns)
AND G.gameAt='away' THEN 'win'
            WHEN (G.umdTerpId = S.umdTerpId AND S.terpRuns < S.opponentRuns) AND
G.gameAt='away' THEN 'loss'
                    WHEN (G.umdTerpId = S.umdTerpId AND S.terpRuns > S.opponentRuns)
AND G.gameAt='neutral' THEN 'win'
                    WHEN (G.umdTerpId = S.umdTerpId AND S.terpRuns < S.opponentRuns)
AND G.gameAt='neutral' THEN 'loss'
        END AS gameOutcome
    FROM
        Game G
        JOIN Score S ON G.scoreId = S.scoreId -- Assuming Maryland's teamId is 100
) AS MarylandGames
WHERE gameOutcome IN ('win', 'loss')
GROUP BY gameAt,gameOutcome;

-- Which month did UMD win the most games?
SELECT MONTH(G.gameDate) AS GameMonth,COUNT(*) AS NumWins
FROM Game G
JOIN Score  R ON G.gameId = R.gameId
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WHERE
    (G.umdTerpId = 100 AND R.umdTerpId = 100 AND R.terpRuns > R.opponentRuns)
    OR
    (G.opponentId = 100 AND R.umdTerpId = 100 AND R.opponentRuns > R.terpRuns)
GROUP BY MONTH(G.gameDate)
ORDER BY NumWins DESC;

-- What was the state wise winning percentage in the past sixteen years?
SELECT DISTINCT (l.locState) AS 'State',
       ROUND(SUM (CASE WHEN (s.opponentRuns - s.terpRuns)<0 THEN 1 ELSE NULL END) /
             CAST (COUNT(s.terpRuns) AS FLOAT),4)*100 AS 'Win Percentage'
FROM Game g, Score s, Location l
WHERE g.scoreId = s.scoreId AND g.locId = l.locId
GROUP BY l.locState;

-- What was the average winning and losing margin per year ?
SELECT DISTINCT (YEAR(g.gameDate)) AS 'Year',
       AVG(CASE WHEN (s.opponentRuns - s.terpRuns) < 0 THEN (s.terpRuns -
s.opponentRuns) ELSE NULL END  ) AS 'Average Win Margin',
       AVG(CASE WHEN (s.opponentRuns - s.terpRuns) > 0 THEN (s.opponentRuns -
s.terpRuns) ELSE NULL END  ) AS 'Average Lose Margin'
FROM Game g, Score s
WHERE g.scoreId = s.scoreId
GROUP BY  YEAR(g.gameDate)
ORDER BY YEAR(g.gameDate);

-- What was the average number of hits to run ratio per year?
SELECT DISTINCT (YEAR(g.gameDate)) AS 'Year',
       ROUND(AVG( CASE WHEN s.terpHits >0 THEN (CAST (s.terpRuns AS
FLOAT)/s.terpHits) ELSE 0 END),2) AS 'Avg. Run to Hit Ratio'
FROM Game g, Score s
WHERE g.scoreId = s.scoreId
GROUP BY  YEAR(g.gameDate)
ORDER BY YEAR(g.gameDate) ASC;

-- What was the average number of errors made per year ?
SELECT DISTINCT (YEAR(g.gameDate)) AS 'Year', ROUND( AVG(CAST(s.terpErrors AS
FLOAT)),2) AS 'Avg. Errors'
FROM Score s, Game g
WHERE g.scoreId = s.scoreId
GROUP BY YEAR(g.gamedate)
ORDER BY YEAR(g.gameDate) ASC;

-- Which team defeated UMD by the highest margin every year in the past sixteen
years?
WITH RankedResults AS (
  SELECT
    t.teamName,
    YEAR(g.gameDate) AS 'Year',
    (s.opponentRuns - s.terpRuns) AS 'Lose_Margin',
    ROW_NUMBER() OVER (PARTITION BY YEAR(g.gameDate) ORDER BY (s.opponentRuns -
s.terpRuns) DESC) AS RowNum
  FROM
    Game g
    JOIN Score s ON g.scoreId = s.scoreId
    JOIN Team t ON t.teamId = s.opponentId
  WHERE
    (s.opponentRuns - s.terpRuns) > 0
)
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SELECT Year,
  teamName  As 'Opponent',
  Lose_Margin AS 'Lose Margin'
FROM
  RankedResults
WHERE
  RowNum = 1;


-- Which team has UMD defeated by the highest margin every year in the past years?
WITH RankedResults AS (
  SELECT
    t.teamName,
    YEAR(g.gameDate) AS 'Year',
    (s.terpRuns - s.opponentRuns) AS 'Win_Margin',
    ROW_NUMBER() OVER (PARTITION BY YEAR(g.gameDate) ORDER BY ( s.terpRuns -
s.opponentRuns) DESC) AS RowNum
  FROM
    Game g
    JOIN Score s ON g.scoreId = s.scoreId
    JOIN Team t ON t.teamId = s.opponentId
  WHERE
    (s.terpRuns - s.opponentRuns) > 0
)
SELECT Year,
  teamName  As 'Opponent',
  Win_Margin AS 'Win Margin'
FROM
  RankedResults
WHERE
  RowNum = 1;
```