

# Homework 06 (55 points)

- Create a database that holds the variable information and team data and the solution of active games (10 points)
- Build a (0,1) integer programming model that develops the 2018 NFL schedule
  - Maximizes game quality across the season
  - Using only the following core constraints:
    1. Each game is played exactly once during the season (3 points)
    2. Teams play exactly one game per week (count the BYE as a game –where BYE is the home team) (3 points)
    3. Byes can only happen between weeks 4 and 12 (3 points)
    4. No more than 6 byes in a given a week (3 points)
    5. No team that had an early bye (week 4) in 2017 can have an early bye game (week 4) in 2018 (2 points)
    6. There is one Thursday Night Game per week for weeks 1 through 15 (no Thursday Night Game in weeks 16 and 17) (3 points)
    7. There are two Saturday Night Games each in Weeks 15 and 16 (one SatE and one SatL each week) (3 points)
    8. The following rules apply to Sunday Double Header games:
      - There is only one “double header” game in weeks 1 through 16 (and two in week 17) (5 points)
      - CBS and FOX cannot have more than two double headers in a row (3 points)
      - CBS and FOX will each have a double header in week 17 (2 points)
    9. There is exactly one Sunday Night Game per week in weeks 1 through 16 (no Sunday Night Game in week 17) (5 points)
    10. The following rules apply to Monday night games:
      - There are two Monday night games in week 1 (3 points)
      - The late Monday Night Game must be hosted by a West Coast Team or Mountain team (LAC, SF, SEA, OAK, LAR, DEN, ARI) (4 points)
      - There in exactly one Monday night game per week in weeks 2 through 16 (no Monday Night Game in Week 17) (3 points)
  - Constraint names will use the following convention:
    - Constraint names will start with the constraint number (e.g., 01\_, 02\_, 03\_, ..., 10a\_, 10b\_10c\_)
    - Single digit constraint numbers will be preceded with a “0”  
eg: “01\_EachGameOnce\_DAL\_WAS”
    - Sub constraints will have letters following  
eg: “10b\_WestCoastOnlyMon\_1”