

# C++ Programming Assignment (#10)

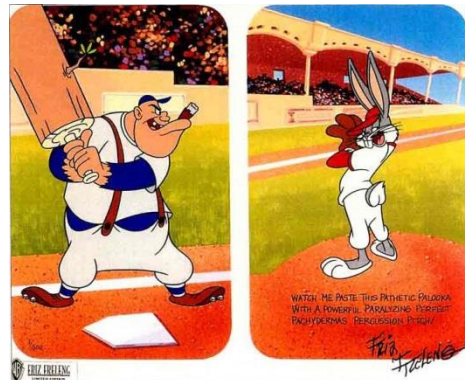
Date: May 26, 2016

Instructor: Yoo, Younghwan

Due date: June 1, 2016

## Programming Projects

1. Write a program to compute the next year salary of baseball players. A player's position is either a pitcher or a batter. **You must use the inheritance and the file I/O for this project.** First, define a base class `Player` and derive the classes for two different types of players from it. The member data for the two types of players are as follows:



Pitcher	Batter
name	name
number	number
thisYearSalary	thisYearSalary
nextYearSalary	nextYearSalary
numWins // # of wins	totalBat // # of batting chances
numLoses // # of loses	numHits // # of hits
numHolds // # of holdings	numBoB // # of base-on-balls
numSaves // # of saves	RBI // run batted in
ERA // earned run average	

The class `Player` has a member function named `nextSalary()` which just prints out "The next year salary is computed in a different way depending on the player's position..." This function should be redefined in each derived class and the actual formulas for a pitcher and a batter are as followings:

For a pitcher,

```
nextYearSalary = 0.5*thisYearSalary + $1,500*numWins
                + $100*numHolds + $500*numSaves
                + $10,000*(1/ERA) .
```

For a batter,

$$\begin{aligned}\text{nextYearSalary} &= 0.5 * \text{thisYearSalary} + \$200 * \text{RBI} \\ &\quad + \$5,000 * \text{batAvg},\end{aligned}$$

where `batAvg` is the batting average and calculated as:

$$\text{batAvg} = \text{numHits} / (\text{totalBat} - \text{numBoB}).$$

Use the `BBPlayers.txt` file for the input, and the file format is like this:

```
P          // indicator for Pitcher or Batter
Choi Dong-Won // name
27          // player's uniform number
45000       // this year salary
14          // # of won games
5           // # of lost games
2           // # of holds
8           // # of saves
2.37        // ERA

B          // indicator for Pitcher or Batter
Lee Man-Soo // name
43         // player's uniform number
35000      // this year salary
323        // # of total batting chances
98         // # of hits
29         // # of base-on-balls
88         // # of RBIs
```

The output should be also stored in a file as follows:

```
Pitcher: 27 Choi Dong-Won
This year salary: 45000
Next year salary: 51919

Batter: 43 Lee Man-Soo
This year salary: 35000
Next year salary: 36766
```