

Problem 1 (100pt): Design a game ‘Battles with Enemy’

The player will have a number of battles with enemy. Both of them have the same amount of health points in the beginning. The player decides how many points to put in each battle and the computer assigns random integers as enemy's health points. If there is only one battle left, computer uses all points. For each battle, the one has the higher health points wins the battle. The final winner is the one who wins more battles. Whenever there is a tie, computer (enemy) wins the battle or the game.

The main function is given in the file `main.cpp` in order to show how we want to use this class. You need to construct a class `Player` with the following information.

All data fields must remain private, and they are:

- `string name` represents the name of the player;
- `int health` represents the remaining health points;
- `int n_battle` represents the number of remaining battles;
- `int n_win` represents the number of winning battles that the player has gained.

The public methods include:

- two constructors with different parameter lists:

```
Player();
```

```
Player(string myname, int mystamina, int mybattles);
```

The default constructor initializes the data field as follows:

```
name = "MyPlayer";
```

```
health = 0;
```

```
n_battle = 0;
```

```
n_win = 0;
```

The constructor `player(string myname, int myhealth, int mybattle)` sets `name`, `health`, and `n_battle` with given values and initialize `n_win` with zero.

- member function `battle` that mimics the process of having one battle and returns true if the player wins. `battle` also prints battle information to the console, such as how many points the computer uses, etc. (see sample output).

```
bool battle(Player& enemy);
```
- member function `game` that mimics the process of having one game (multiple battles) and returns true if the player wins the game, i.e., player wins more battles than enemy.

```
bool game(Player& enemy);
```

Instructions:

- Download the `main.cpp` from CCLE to see how we plan to use the class. Do not modify `main.cpp`. You can assume that users will always enter valid health values. Here is an output statement you need in your code.
`cout << "*****\n";`
- (5pt) Submit two files `Player.h` (header file) and `Player.cpp` (implementation file), where `player.h` contains class interface and `Player.cpp` contains class implementation. This is related to "separate compilation" which is introduced in Friday's lecture. You should not include `int main` in your code.
- (5pt) Write your code with good coding practice. Comment on your code to make it readable and add description of this file in the beginning to show your ownership.
- (80pt) `main.cpp` compiles with your code and has correct results. You are not allowed to use global variables.

To receive full credits, your output should be the same as follows. Here are two examples of the given `main` function with different user inputs: (see next page)

```
10[enter]50[enter]30[enter]
50[enter]20[enter]30[enter]
```

```
There are 3 more battles left.
You have 100 health points left.
How many health points do you want to use? 10
Anakin Skywalker choose to use 10 health points.
Darth Vader choose to use 54 health points.
Darth Vader wins this battle!
*****
There are 2 more battles left.
You have 90 health points left.
How many health points do you want to use? 50
Anakin Skywalker choose to use 50 health points.
Darth Vader choose to use 2 health points.
Anakin Skywalker wins this battle!
*****
There are 1 more battles left.
You have 40 health points left.
How many health points do you want to use? 30
Anakin Skywalker choose to use 30 health points.
Darth Vader choose to use 44 health points.
Darth Vader wins this battle!
*****
The final winner is Darth Vader.
```

```
There are 3 more battles left.
You have 100 health points left.
How many health points do you want to use? 50
Anakin Skywalker choose to use 50 health points.
Darth Vader choose to use 35 health points.
Anakin Skywalker wins this battle!
*****
There are 2 more battles left.
You have 50 health points left.
How many health points do you want to use? 20
Anakin Skywalker choose to use 20 health points.
Darth Vader choose to use 41 health points.
Darth Vader wins this battle!
*****
There are 1 more battles left.
You have 30 health points left.
How many health points do you want to use? 30
Anakin Skywalker choose to use 30 health points.
Darth Vader choose to use 24 health points.
Anakin Skywalker wins this battle!
*****
The final winner is Anakin Skywalker.
```