COP 3337 **Assignment 4: Interfaces** **Fall 2017**

Pestaina **Due: Sunday, November 12**

Objective

To demonstrate understanding of the design and use of interfaces.

Problem Statement

This assignment is based on Project P10.28, page 517, of the textbook.

1. Design and test an interface *InteractiveGame* that generalizes the playing of any two-person game between a *human* player and the *computer*.
2. Implement the game *Nim* to be played via your *InteractiveGame* interface. *Nim* is described in Project P6.6, page 299 of the textbook.

Specific Requirements

1. After studying the *GamePlayer* client, write the *InteractiveGame* interface. Validate your interface by playing the *GuessingGame* (provided) via the *GamePlayer* client. Note that the client decides whether the computer plays smart, and who makes the first move by prompting the human player (contrary to the textbook's description).
2. Write an implementation of *Nim* that implements your *InteractiveGame* interface. ***Nim* should have the following 4 instance variables only**:

   private int *pileSize*; //The number of marbles currently in the pile

   private boolean *playSmart*; //***true*** iff the computer plays smart

   private boolean *playersTurn*; //***true*** iff it is the player's turn to make a move

   private *String gameRecord* //Complete history of the game's progression

   - The constructor parameters provide initial values for *playSmart* and *playersTurn*.
   - The constructor generates a random number, 10 ... 100, to initialize *pileSize*.
   - Instance variable, *gameRecord*, **must be updated on every move** to maintain a clear complete record of the game at each turn.
   - Implement the textbook strategy for playing *smart*.
3. The prompt for a player's move must include a clear representation of the current state of the game, and must show sufficient information to allow the human player to decide on their next move. Assume that the human player is unfamiliar with the game being played. The player prompts must be implemented using **JOptionPane** methods.

Submitting Your Assignment

- Your *InteractiveGame* interface must be completed and submitted **by Sunday 11/05**. A solution for the interface will be posted on Sunday 11/05.
- You must zip and upload your source (.java) files in SCIS Moodle by the due date, Sunday 11/12. **Moodle will not allow late submissions.**