

AP Computer Science

Unit 2 Makeup Assignment: The Game of Nim

In this project, we will write a simplified version of the game Nim, which will take place in a terminal window. In Nim, players take turns taking 1, 2, or 3 stones (no more, no less) from a pile. The player who takes the last stone loses the game.

You must include the following features:

- The game accommodates two human players playing against each other. You do not have to program an AI for the computer to play Nim.
- Players must choose either 1, 2, or 3 stones. If they choose any other value the program asks them to pick again.
- Each round, the program tells you how many stones are left.
- The program decides who the winner.
- After somebody wins, the program asks if the player wants to play again. They can answer with yes or no.

Here is an example of the output of one round of Nim:

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There are 18 stones left. How many stones do you take, player 1? 3
There are 15 stones left. How many stones do you take, player 2? 3
There are 12 stones left. How many stones do you take, player 1? 2
There are 10 stones left. How many stones do you take, player 2? 2
There are 8 stones left. How many stones do you take, player 1? 1
There are 7 stones left. How many stones do you take, player 2? 1
There are 6 stones left. How many stones do you take, player 1? -1
There are 6 stones left. How many stones do you take, player 1? 4
There are 6 stones left. How many stones do you take, player 1? 3
There are 3 stones left. How many stones do you take, player 2? 2
There are 1 stones left. How many stones do you take, player 1? 1
Player #2 is the winner!

Play again? N

Good-bye!
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Marks: If you complete all of the criteria of this project, you will earn back half of the marks you lost on the Unit 2 exam. For example, if you got 11/21 on your Unit 2 test and you complete this assignment, you will gain +5 marks to that test for a new score of 16/21.