

**Instructions:**

1. Click on File -> Make a copy

**Include your IPO Chart with your code in Eclipse IDE:** We will discuss and demonstrate this in the computer lab.

## **IPO CHART**

Program name:	Nim Game (Nim)	
INPUT	PROCESS	OUTPUT
Hint: What will the user input?	Hint: What is the program going to do with the input information?	Hint: What will the screen display after user input?
The user will input how many stones they want to take ( <i>int</i> )  <b>Not inputs but Constants/Limits:</b> <ul style="list-style-type: none"><li>• Minimum starting stones (15)</li><li>• Maximum starting stones (30)</li><li>• Maximum stones to take (3)</li></ul>	<ol style="list-style-type: none"><li>1. Initialization:<ul style="list-style-type: none"><li>• Generate a random starting number of stones for the pile. (<i>int, Random</i>)</li><li>• Initialize the game state variables, including <i>stones</i> (<i>static int</i>) and the <i>userLost</i> flag (<i>boolean</i>).</li></ul></li><li>2. User Turn Handling (<i>handleUserTurn</i>):<ul style="list-style-type: none"><li>• Read the user's input using the <i>Scanner</i> object.</li><li>• Validate the move (check if it's an integer, between 1 and 3, and legal) using <i>isValidEntry</i> (<i>boolean</i>).</li><li>• Update the <i>stones</i> count by subtracting the user's choice.</li><li>• Determine if the user's move caused <i>stones == 0</i> (user loses).</li></ul></li><li>3. Computer Turn Handling (<i>handleComputerTurn</i>):<ul style="list-style-type: none"><li>• Generate a random, legal move (<i>computerChoice</i>,</li></ul></li></ol>	<ol style="list-style-type: none"><li>1. Game State/Prompts:<ul style="list-style-type: none"><li>• The current number of remaining stones. (<i>String</i>)</li><li>• Prompts asking the user for their move. (<i>String</i>)</li></ul></li><li>2. Moves &amp; Status:<ul style="list-style-type: none"><li>• Messages reporting the number of stones the computer took. (<i>String</i>)</li><li>• Messages for invalid user input or illegal moves. (<i>String</i>)</li></ul></li><li>3. Result/Win Condition:<ul style="list-style-type: none"><li>• Final message declaring the winner: "The player beats the computer!" or "The computer beats the player!". (<i>String</i>)</li></ul></li></ol>

	<p><i>int)</i> using <code>drawStones</code>.</p> <ul style="list-style-type: none"><li>• Update the <code>stones</code> count by subtracting the computer's choice.</li></ul> <p>4. Game Flow (Main Loop):</p> <ul style="list-style-type: none"><li>• Alternate turns until the winning condition (<code>stones == 0</code>) is met.</li><li>• Identify the winner (the player who did not take the last stone).</li></ul>	
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