Analytical Task – Simulation of an Online Casino Promotion

Task Description

In this task, you will analyze and optimize a promotional challenge designed for online casino players. Your task is to simulate player gameplay during the promotion, estimate their average spend, and determine fixed rewards for each completed level. The reward structure should be designed in such a way that the **expected value of player rewards equals 1.3 times their average spend** (including any additional deposits).

Time limit to complete the task: 7 days

Promotion Basic Idea: “Multiplier Challenge”

The player progresses through the levels by playing slot games. Upon reaching specific multipliers (e.g. x25, x50, etc.) in a limited time, the player advances to the next level. If the target is not met the challenge finishes.

Challenge Levels

Level	Target Multiplier	Time limit	Reward
1	25x	30 min	10 EUR
2	50x	1 hour	?
3	100x	2 hours	?
4	200x	3 hours	?
5	500x	4 hours	?
6	800x	6 hours	?
7	1,500x	8 hours	?
8	2,500x	12 hours	?
9	5,000x	24 hours	?

10	10,000x	48 hours	?

- Player enters a challenge at level 1 with a non zero bankroll (approx. 50 EUR).
- To advance to the next level, the player must hit a multiplier equal to or greater than the level target.
- Unused time from each level rolls over to the next.
- If a player runs out of balance during the challenge, they are allowed to deposit additional funds (limited to **up to 4 deposits**, each approximately equal to the initial bankroll).
- The challenge ends either when the player reaches the final multiplier or exhausts all attempts (runs out of time or funds).

Your Tasks

1. Simulation of Gameplay

- Model player progression through levels based on target multipliers and time constraints. Use the multiplier data provided in the attached file to simulate slot gameplay results.
- Include player behavior regarding additional deposits (i.e., when and why they decide to top up).

2. Exploration of Variables

- Analyze how results vary based on **initial bankroll size (and additional deposits)** and **bet size**.

3. Reward Design

- Define a fixed monetary reward for each level.
- Ensure the prize structure logically scales with level difficulty and encourages progression.

- The target is for the **expected value of the rewards** to equal **1.3× the player's average spend**, including all deposits. Example: A player deposits a total €100 of their funds into playing; the rewards should total €130.

Presentation

Online presentation in English (use tools such as PowerPoint or similar). Before the presentation, you must submit your conclusion along with the code (e.g., Python script or notebook). During the presentation, you should be able to run the code live, so ensure that your execution environment is set up and ready

Presentation should include:

- A brief description of your methodology and assumptions
- Tables or charts with key metrics (e.g., player distribution across levels, average spend, average rewards, etc.)
- Your proposed reward structure along with justification

Attachment

Multiplier data (consecutive multipliers) from two slot games, intended for gameplay simulation. Each file contains an array of consecutive game outcomes, e.g., [3.2, 10.2, 0, 0.66 ...], where:

- 3.2 indicates a win of 3,2× the bet,
- 0 indicates a lost round (0× the bet),
- and so on.

If you have any questions or need more details about the task, don't hesitate to contact the person provided in email.