Python OOP – Object Oriented Programming for Beginners

OOP Analysis: Design a Videogame

Case Study:

As an intern in a small startup, you are in charge **selecting and writing the classes** that will be created for a small project. You must also **select the class attributes, instance attributes, and methods** that you think are most relevant for this project. To do this, you must first read the summary of the interview that a member of your team had with the client.

Note: you do not need to implement the videogame nor a videogame class. This task is assigned to another member of the team. You are in charge of designing the smaller classes that make the videogame according to the specifications provided by the client. You will probably need to ask more details in a subsequent meeting, but you need to start working with the information available.

The client is asking for: A 2D videogame similar to Pac-Man.

The videogame must have these initial features:

- The player has to be able to move up, move down, move left, and move right as long as it is not beyond the boundaries of the window (0, 450) both horizontally and vertically.
- The player initially has 10 lives and it displays a welcome message when the game starts.
- The player has a specific character assigned.
- The player is able to shoot candy.
- Candy acts like a bullet in the game. It moves either horizontally or vertically. This is determined when the instance is created.
- The speed of the candy has to be a specific number within a range from 5 to 45.
- Enemies are created at random locations, so their initial x coordinates and y coordinates are randomly generated integers in a range from 0 to 450.
- Enemies have a fixed direction of movement (vertical or horizontal).
- When an enemy reaches the end of the screen (0 or 450 vertically or horizontally), it changes direction (if the previous direction was vertical, it will now move horizontally and vice versa).
- The speed of the enemies depends on the difficulty of the game selected by the human player, and it is determined when the instances are created.
- Enemies initially have 15 lives.
- When a player collides with an enemy, the player loses one life.
- When the candy shot by the player hits an enemy, the enemy loses one life.

Noun – Classes ; Adjectives – Attributes ; Verbs - Methods