**Functional Requirements**

**1. Game Initialization and Setup**

* The system shall allow the player to start a new game
* The system shall allow the player to select the difficulty level (easy, medium, hard).
* The system shall allow the player always to select the speed level (hour/ day/ week).
* The system shall initialize randomly the map with small water sources, bushes, trees, grassy areas, an entrance and an exit, and one road from entrance to exit.
* The system shall allocate an initial capital for the player, enough to be able to purchase a jeep, so tourist can visit.

**2. Transaction Management and Placement of Game Assets**

* The system shall allow the player to buy things, only if they have enough money for the purchase.
* The system shall allow the player to buy animals.
* The system shall allow the player to sell animals, to earn money
* The system shall allow the player to buy and place in the safari water sources.
* The system shall allow the player to buy and place trees in the safari.
* The system shall allow the player to buy and place roads in the safari area.
* The system shall allow the player to buy jeeps.
* The system shall allow the player to buy cameras.
* The system shall allow the player to place bought cameras to a fixed point in the safari.
* The system shall allow the player to buy airships.
* The system shall allow the player to buy drones, only if there is already recharge points on the safari..
* The system shall allow the player to assign patrol routes with waypoints to airships and drones.
* The system shall allow the player to buy Recharge points.
* The system shall allow the player to pay Rangers, only at the beginning of each month.
* The system shall allow the player to be able to always look at the number of visitors, herbivorous and carnivorous animals, and the capital.

**3. Animal Behavior and Interactions**

* The system shall allow herbivore animals to eat trees, brushes, and grass.
* The system shall allow carnivore animals to eat herbivore animals.
* The system shall allow animals to drink water from water sources and ponds.
* The system shall allow animals to migrate in groups of their own species.
* The system shall allow groups of animals containing adult individuals to reproduce.
* The system shall allow well-fed animals to rest for hours and then randomly move to another point of the map,repeating this behavior until they become hungry.
* The system shall allow animals to remember and know only the placement of things in the safari, that they have already visited.
* The system shall allow animals to try to reach food or water sources.

**4. Vehicle and Tourist Interactions**

* The system shall allow jeeps to carry up to four passengers.
* The system shall allow jeeps to only move on top of roads.
* The system shall allow jeeps to move only on navigable roads( navigable road = a road path from the entrance to the exit)
* The system shall allow jeeps to return to the entrance after transporting passengers to exit.
* The system shall allow tourists to visit the safari.
* The system shall allow tourists are visiting the safari to rent a jeep, and buy animals

**5. Poachers and Rangers**

* The system shall allow Poachers to shoot animals
* The system shall generate poachers randomly during gameplay.
* The system shall allow Poachers to capture and bring outside of the safari animals.
* The system shall allow Poachers to be visible only when tourists or rangers are nearby, or if they are near surveillance systems.
* The system shall allow Rangers to eliminate predators.
* The system shall allow Rangers to protect against poachers by eliminating them when in close proximity.

**6. Drone Behavior**

* The system shall allow drones to land and recharge every hour.

**7. Graphics**

* The system shall allow the graphics to be in 2.5D, meaning that objects visually extend beyond their own cells.

**8. Win/Lose Conditions**

* The game shall be won if the player maintains required thresholds for visitors, animals, and capital for: 3, 6, or 12 consecutive months.
* The game shall be lost immediately if the player goes bankrupt or all animals become extinct.
* The system shall signal an error message if the player tries to buy something with insufficient capital.

**Non-functional specification**

* **Efficiency**:

Minimal load on the processor, memory and back-up memory.

Fast (under 1 second) response time to all inputs on a low-end computer.

No networking required.

* **Reliability**:

Normal Operation: No bugs or error messages are displayed during normal use.  
Input Validation: In case of incorrect human input, an error message is displayed, and the input can be repeated.  
Program Stability: The program does not stop unexpectedly.  
Data Storage: Since no data storage is implemented, no errors related to data storage will occur.

* **Security:**

The program does not store data and is not connected to the Internet, so it is not relevant.

* **Portability:**

Compatible with most personal computers running Windows 8, 10, or 11 as a standalone application.

* **Usability:**

User-friendly interface: simple, intuitive, and easy to navigate.

* **Environment:**

Does not interact with any external software or services.

* **Operational:**

Usually short, continuous run time: 0.5-1 hours.

Daily use

Number of users: 1.

No expertise required

* **Development:**

Java

Clean Code

Unit testing

Using GitLab

Documentation