Risk assessment and mitigation

Risk management process

Our team followed a structured risk management process to identify, assess, and mitigate potential risks throughout the project lifecycle. This process ensured that both technical and human-related issues were anticipated and managed proactively to minimize their impact on the game's development and delivery.

At the beginning of our project, our team conducted brainstorming sessions to identify all potential risks and split them into different types that could affect the development process, but also affect the user experience negatively. These risks were categorized and decided by our group to be: Technology, Design, Human, Security, and External.

Each risk was identified and assessed with two criteria:

Likelihood – the probability of the risk occurring (Low, Medium, High).

Severity – the potential impact on the project/user if the risk occurs.

This assessment allowed the team to prioritize which risks required immediate attention and which could be monitored over time.

For each risk, we carefully set out a mitigation plan to either reduce the likelihood of risk occurring, reducing the impact of the risk or eliminating it completely. Risks were continuously monitored and updated during weekly team meetings, with their status recorded as Planned, Ongoing, To Be Assessed, or Monitoring.

The team's risk register was designed as a clear document to organize and track risks efficiently. Each entry is specified below:

- **ID:** Unique identifier (R1, R2, etc.) for easy reference of the risk.
- **Type:** Risk category (e.g., Technology, Human).
- **Description:** Concise explanation of the potential issue.
- **Likelihood** and **Severity:** Ranked according to priority of how likely and serious the issue is
- **Mitigation:** Specific actions or preventive measures of risk
- **Status/Action:** This Indicates our progress of the risk (e.g., Monitoring, Ongoing Testing)

This provided a simple overview of our project's vulnerabilities and also counter measures. By continuously monitoring the risk register, the team maintained a proactive approach to mitigating risks of all sorts, and also led to a stable game development.

Risk Management Table

ID	Type	Description	Likelihood	Severity	Mitigation	Status/Action
R1	Technology	Game Engine limitations (performance issues)	Medium	High	Choose a stable engine early on, explore options and understand pros and cons Low graphics mode can be added for lower ended devices	Mitigation Planned
R2	Design	Gameplay is not engaging, maybe its too difficult or too easy	Medium	High	Thorough playtesting, iterative design, appropriate difficulty scaling	Ongoing Testing
R3	Design	Procedural Generation of mazes may be too simple, too repetitive, can lead to boring gameplay	Medium	Medium	An appropriate procedural generation algorithm for mazes.	To be improved
R4	Human	Core Developer for the game becomes ill and becomes unable to work on the project, can lead to falling behind	Low	High	Communicate and replace developer with someone who's free and proficient with java, temporarily substitute work	Contingency in place
R5	Technology	If not properly not pushed onto git, or not saved properly, and is lost, this can lead to lost work	Low	High	Make sure files are always properly backed up, and always back up to git. Make it a habit	Monitoring
R6	Technology	Platform compatibility issues (e.g. windows, apple)	Low	Low	Use cross-platform tools, test early on each OS	To be assessed
R7	Human	Deadlines missed due to human error, fixing too many bugs, or focusing too much on one aspect of the project.	High	Medium	Communicate with team, set more time on more important tasks in order	Planned
R8	External	Dependency libraries become deprecated or unsupported	Medium	Medium	Track external dependences, plan alternatives	Monitoring

R9	Security	Potential exploits (abusing bugs, cheating)	Low	Medium	Validate inputs, secure save files, minimal exposure, make sure no bugs are able to be abused	To be assessed
R10	Human	Team conflict/poor communication	Medium	High	Regular meetings, clear task distribution using external software, conflict resolution plan.	Monitoring
R11	Human	Game is too confusing, keybinds aren't known,	Medium	Low	Create a step by step tutorial which explains keybinds, and the objective of the game	Mitigation Planned
R12	Human	Copyright issues with sprites, or specific images	Medium	High	Use copyright-free or open-licensed resources	Mitigation Planned
R13	Human	Potentially human harm such as epilepsy	Medium	High	Avoid using flashing lights, rapid color changes, or strobe effects; follow accessibility and safety guidelines for visual content.	Monitoring