Quantum Game Jam 2023
team-004Entangled Love

The idea is that we want to transfer 2 Quantum pairs (two men and two women) across the river given 2 monsters are there. Individuals in the pairs are coupled/entangled. This is going to be a basic game introducing different concepts of Quantum Physics but will be fun.

Action:
1) People and/or monsters get on the boat from riverbank A
2) Boat navigates through the barriers
3) People and/or monsters get out of the boat riverbank B
    - If a character gets beaten by the monster, then the character's entangled state will be broken.

Emotion:
1) If one from a pair dies then the other as well dies.
2) Each individual is trying to save their partner.

Quantum Physics in the game:
1) Quantum Entanglement: Entangled emotional+physical (EP) state: Doesn't matter where the partner is, the EP state of one automatically affects the other.

Rules:
1) There should always be one person on the boat to carry the boat around.
2) There can't be more than two monsters on the boat.

Killing Condition:
Case 1: On the boat only in the river away from the riverbanks
Case 2: If boat is berthed on the riverbank, then including people and monsters on the boat and on the riverbank

In either of the above cases,
1) If the number of monsters equals the number of women, the women get killed.
2) If the number of monsters is greater than the number of men, the men get killed.
3) Every time an individual from the pair gets killed, the partner gets killed. Entanglement!

Winning condition:
All character pairs crossed the river safely to reach riverbank B.

Losing condition:
The game is lost if all characters get killed by a monster and the game ends there.

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Scoring condition:
Scores can be given based on the time taken by the player to complete each level and the number of characters transported successfully.

Playing hints:

Players need to strategize to ensure that monsters are never in greater numbers than characters on any island/riverbank, as this would result in the death of a pair.

TEAMS

1)	**Quantum Physics:** game idea and plot	Pratiksha Gaikwad (EDT)
2)	**Game developer:** Implement the game - Coding, dev	Aansh Savla, Abdullah Kazi, Swapnil
3)	**Technical Support**	Amrit Chhetri

SCHEDULE

EEST (UTC + 3) Finland	EDT (UTC - 4) USA east coast	IST (UTC + 5.5) India	
16 Sept 2023 DAY TWO: Game development and iteration			
12:00 -15:00	5:00 -8:00	14:30 -17:30	Talks on Quantum physics, Quantum technologies, Quantum industry, Quantum Games and Art etc (Twitch)
18:00--?	11:00--?	20:30--?	?
17 Sept 2023 DAY THREE: Final touches and presenting the game to others			
13:00	06:00	15:30	Developing stops! (Twitch)
15:00	08:00	17:30	Deadline for game submissions and videos (itch.io -- page)
16:00	09:00	18:30	GAME PRESENTATIONS (Twitch + Zoom)

LEVEL ZERO GAME COMPONENTS

Sources for developing:
https://drive.google.com/drive/folders/1tt0b5DKEOUwC3z6TkBMeTtqR-7JhtnyZ

For the beginning we can begin developing the game in 2D.

Characters Given:

- Two pairs of 2 Men and 2 Women, each pair contains a man and a woman. Individuals in each pair are entangled.
- Two monsters

The number of monsters chosen should always be equal to the number of entangled characters' pairs.

Landscape:

- ★ A broad river connecting two riverbanks A and B.
- ★ A boat in the river

Abilities of characters:

- ❖ Quantum entanglement can be used creatively to solve puzzles and overcome obstacles. For example, if one character is on the boat, their entangled partner can be on an island, and they can still interact.

Scoring system for level zero:
Final score = time score + character score = 10x + 20y + bonus
If the game is completed within x minutes, then the time score is 10x.
If y number of pairs transported safely, then the character score is 20y.
If all pairs are transported successfully, then bonus 30 points.

If all pairs are transported safely, then the final score can be increased by finishing the game in a short time. The round of the game with the highest score will be the winner.

Storyline + emotional aspect:
The emotional connection between characters can be used to tell a compelling story. Choices made by players can lead to different outcomes, affecting the emotional narrative.

Suggestions from AbdullahK @AAK: The storyline can be made through some technical stuff on Quantum mechanics for example The EPR paradox and subsequent Bell's theorem tests have raised questions about the nature of entanglement and the possibility of information transfer at

speeds exceeding the speed of light. However, as you correctly pointed out, these non-local effects cannot be used to transmit classical information due to the no-communication theorem. Regarding the existence of hidden variables and the nature of randomness, it is important to note that interpretations of quantum mechanics vary, and no definitive consensus has been reached. While some interpretations suggest inherent randomness in quantum phenomena, others propose deterministic models or hidden variable theories that aim to explain the observed behavior using underlying variables that are not yet fully understood from my POV

FUTURE WORK

Increasing levels of difficulty:

Characters:
Introducing more characters. The number of monsters available will always be equal to the number of Bell pair characters.
[For example: 6 pairs, where each pair is entangled, are available to choose from; the 6 monsters will be available.]

Quantum Physics additions:

- Quantum Tunneling: Players can use quantum tunneling to move characters through the barriers in rivers in particular situations.
  Character's ability: Quantum tunneling can be used sparingly, adding an element of resource management to the game. Players must decide when and where to use this ability.
- Quantum Probability: Character pairs in the game have to calculate the quantum probability to make decisions on which characters or objects to move and when.
- Wave-Particle duality: 6 Characters can switch between behaving as a wave or particles to overcome the obstacles of the river.
- Quantum Teleportation: The 3 pairs among themselves can teleport objects (we can add levels to the game increasing the complexity by adding more pairs or objects or more obstacles or extra islands) or characters b/w different locations on the river.
- Superposition: Only Pairs can exist in superposition, so they can occupy multiple positions on the riverbank or in the boat at the same time.

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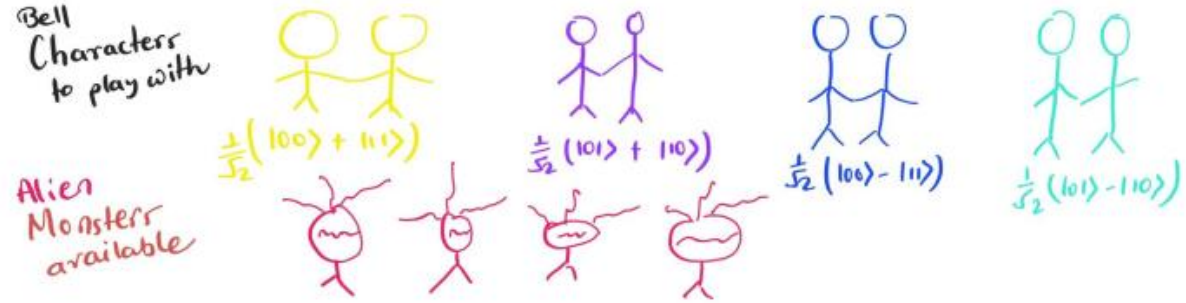
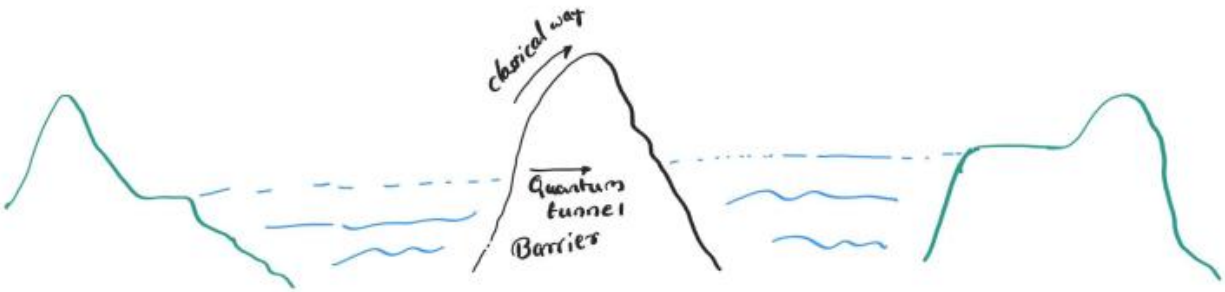
ART





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