3D Marble Madness - Project Plan

Team: Group4_SGS

Project Duration: 6 weeks

Team Members:

- Tran Phan Hoang Phuc (s3929597)
- Nguyen Doan Trung Truc (s3974820)
- Nguyen Vo Truong Toan (s3979056)

Week 1-2: Project Setup and Core Systems

Timeline: Project initiation and foundation development

Truc's Responsibilities:

- Set up Godot project structure and version control
- Research and implement basic UI framework (main menu, pause menu)
- Begin enemy AI research and NavigationAgent3D exploration
- Establish basic game state management system

Toan's Responsibilities:

- Design overall game concept and visual theme
- Create initial level design concepts and sketches
- Research GridMap system and MeshLibrary creation
- Begin environmental asset planning (lighting, audio)

Phuc's Responsibilities:

- Implement basic marble ball physics using RigidBody3D
- Research and test movement mechanics with angular velocity
- Set up camera system and player controls (WASD + spacebar)
- Begin respawn system implementation

Week 3: Core Gameplay Development

Timeline: Basic gameplay mechanics implementation

Truc's Responsibilities:

- Implement enemy AI pathfinding and chase behavior
- Create collision detection systems for enemy interactions
- Develop basic timer functionality
- Begin scoreboard system development

Toan's Responsibilities:

- Create MeshLibrary with 6 block types (floor, border, corner, ramp, target)
- Design and build Level 1 using GridMap system
- Implement level-specific lighting and environmental themes
- Add background music and basic sound effects

Phuc's Responsibilities:

- Complete tutorial Level 0 design and implementation
- Develop moving platform systems using AnimatableBody3D
- Implement platform movement patterns (horizontal/vertical)
- Create basic safety net mechanisms for platform sections

Week 4: Advanced Features and Level Design

Timeline: Feature expansion and level completion

Truc's Responsibilities:

- Complete enemy AI with smooth movement and state management
- Integrate timer system with level progression
- Develop victory zone detection and level transition logic
- Implement death zone mechanics and respawn triggers

Toan's Responsibilities:

- Complete Level 2 and Level 3 design and construction
- Balance difficulty progression across all levels
- Refine environmental lighting and audio for each level
- Add UI buttons and HUD elements

Phuc's Responsibilities:

- Solve moving platform death loop problem with Area3D safety zones
- Implement weaker enemy type with different collision behavior
- Refine platform physics interactions with marble ball
- Complete relative positioning system for easy platform placement

Week 5: Integration and Testing

Timeline: System integration and comprehensive testing

Truc's Responsibilities:

- Integrate all UI systems with game state management
- Complete sound effects integration and audio management
- Conduct comprehensive enemy AI testing and optimization
- Debug level transition and progression systems

Toan's Responsibilities:

- Conduct extensive level testing and gameplay balance refinement
- Adjust lighting and audio based on playtesting feedback
- Optimize level performance and frame rates
- Finalize UI elements and visual polish

Phuc's Responsibilities:

- Test and refine all moving platform interactions
- Implement Area3D trigger systems for respawn override
- Conduct physics tuning and marble movement optimization

- Integrate tutorial elements with main game progression

Week 6: Final Polish and Deployment

Timeline: Bug fixes, optimization, and project completion

All Team Members:

- **Collaborative Testing:** Comprehensive game testing sessions
- **Bug Fixes:** Address all identified issues and edge cases
- **Performance Optimization:** Ensure stable frame rates across all levels
- **Documentation:** Complete design document and individual contributions
- **Build Preparation:** Create final executable and repository organization

Specific Final Week Responsibilities:

Truc:

- Final UI polish and menu system refinement
- Complete audio system integration and testing
- Performance optimization and debugging

Toan:

- Final level balance adjustments based on testing
- Environmental polish and visual consistency
- Audio timing and level-specific music integration

Phuc:

- Final physics tuning and platform mechanism testing
- Safety system verification and edge case handling
- Tutorial flow optimization and player guidance

Rules:

- **Always text on the group chat, never private inbox**
- **If any problems occur, notify the others immediately**

- **Weekly meetings to check-up on progress report**