COMSATS University Islamabad,
Abbottabad Campus

Project Proposal

(SCOPE DOCUMENT)

for

TREASURE HUNT ADVENTURE

By

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Sumitted To

Mr Mukhtiar Zamin

SCOPE DOCUMENT REVSION HISTORY

No.	Comment	Action

Supervisor Signature _____

Date: _____

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Abstract

Players in the AR-based mobile game Treasure Hunt Adventures can navigate treasure hunts that appear within their real-world environment. Mobile phones using video cameras and position trackers guide players through digital maps containing virtual data that leads to concealed treasure puzzles. Through its game procedure the system offers genuine world discovery to users who must solve innovative problems to gain leadership position through its leaderboard system. The project facilitates operation through Unity platform and AR Foundation to achieve Android and iOS platform compatibility. The platform links video game immersion with physical exercise while including mental problem-solving activities for participants.

Introduction

This document presents Treasure Hunt Adventures as the merge of Augmented Reality technological systems with mobile game development projects. The document describes both the challenging issue and the proposed remedy alongside the technical plan and modular structure plus potential results. Complete AR system solutions provide limited integration with treasure hunting concepts according to the exciting premise. The game implements exploration features and AR elements and puzzles to deliver users engaging gameplay as well as mental stimulation. The mobile gaming interface presents dynamic entertainment by integrating user decisions while using physical activities of the real world.

Problem Statement

Most current AR mobile games have simple object interaction features which do not create sufficient gameplay complexity. Gameplay activities of players are brief before they get disinterested due to unexciting objectives alongside missing storylines. Players typically do not persist with such basic gameplay systems which produce minimal gameplay choices. A mobile AR game needs to fill market gaps by joining puzzle resolution mechanics to virtual world travel functions and rewarding gameplay elements. User-friendly AR applications need GPS and camera-based object detection and AI-powered clue systems as well as personalization features in gameplay. The project solution incorporates AR treasure hunts along with increasing challenge difficulty to meet this demand.

Problem Solution for Proposed System

The use of AR navigation with real-world exploration as well as puzzle-based gameplay enables "Treasure Hunt Adventures" to address game problems. The player uses an AR-generated map to navigate actual physical structures that display digital objects. Distinctive puzzles in the game emerge at each stop to maintain player engagement at a high level throughout the experience. Besides AR markers the system provides memory challenge tasks and riddles that combine with multiple puzzle categories. Players can sustain gameplay duration by using a reward system that the developers implemented. The correct implementation of sign-in mechanics enables automatic progress storage and ensures equitable competition between all users. The user database information together with leaderboards management resides within Firebase's platform. The application delivers flawless operation on both Android devices because it uses AR Foundation along with the multi-platform Unity engine.

Related System Analysis/Literature Review

Table 1 Related System Analysis with proposed project solution

Application Name	Weakness	Proposed Project Solution
Pokémon GO	Simple interaction, lacks puzzle depth	Introduces complex AR-based puzzles and storylines
Geocaching Apps	No AR integration, low visual engagement	Adds AR visual layers and interactive object detection
ARise (AR puzzle game)	Short gameplay, limited variety in challenges	Provides diverse puzzle types across various locations

Advantages/Benefits of Proposed System

- Encourages physical activity through real-world exploration
- Enhances cognitive skills via diverse puzzles
- Engages players with immersive AR visuals
- Offers cloud-based progress saving and restoration
- Provides competitive motivation with a leaderboard system
- Potential for business partnerships in sponsored treasure hunts
- Scalable architecture with Firebase backend

Scope

Android users can play this AR-based mobile adventure using GPS to locate real-world treasures throughout various locations. Players search different locations to find puzzles including Sudoku, Riddle based, symbol matching, Jigsaw, Lock and Key and Memory Challenge together with logic-based riddles that grant access to the subsequent treasure or hint. Through AR Foundation the game places virtual items such as treasure chests onto actual surrounding environment objects. The game experiences interaction through phone devices which let players solve virtual puzzles and obtain digital prizes. The game presents a basic interface that smoothly transitions between AR mapping and puzzle challenge screens. The game data storage will happen in Firebase to track player achievements while a leaderboard system enables players to compete for the top times. The primary version of the game will be designed for one player but future updates may introduce in-app purchases together with advertisements as additional revenue streams.

What to Do:

The development should revolve around making AR Foundation deliver a smooth AR experience that includes integrated real-world Sudoku puzzles. Smooth transitions should exist between the AR navigation system and puzzle-solving activities and your solution will utilize Firebase tracking features. The user interface must retain its simplicity while maintaining excellent user experience guidelines with emphasis on the one-player game mode. Provide optimal performance levels for mobile devices while conducting tests on various mobile phones.

What Not to Do:

Complexity in puzzles should be avoided as it leads to frustration for players. Interface complexity and confusing transition processes should be avoided. Delay both the monetization strategy and multiplayer components introduction until the right time. Check for performance breakdowns through complete testing while guaranteeing the hardware accuracy of AR to prevent objects from appearing in the wrong positions.

Modules

Module 1: User Interface Module: The module offers user sign-in combined with an onboarding tutorial while managing game settings. Through this module the game environment guarantees simple navigation along with profile customization features for players to interact seamlessly.

Module 2: AR Engine Module: As part of his responsibilities he integrates AR features through AR Foundation framework use. The technology finds flat surfaces while it can place virtual items

and it tracks movements between actual physical locations. The spatial accuracy of the system benefits from GPS and camera data input.

Module 3: Puzzle & Clue System: The application produces and administers multiple puzzle types which include riddles together with symbol matching and memory testing followed by AR-based maze navigation. The system delivers different types of puzzles as well as gradually increasing their difficulty throughout the game experience.

Module 4: Treasure Collection System: This component executes procedures for searching and acquiring digital treasures through AR. AR gesture interactions allow users to access chests which trigger point or item rewards.

Module 5: Leaderboard System: Program follows and records both player advancement in the game as well as rewards and score results. Live rankings in real time are managed through the use of Firebase to stop users from tampering.

Module 6: Reward & Achievement System: The module operates as a tracking system that records player development as well as achieves unlocked for completing different objectives such as puzzles and distance traveled and treasure locations. The game program offers virtual currencies and badges as well as content availability as in-game rewards. The system achieves player maintenance through gamified elements and leads to reflection of performance in a leaderboard view. The system enables the delivery of time-limited incentives to stimulate players to remain active throughout the year.

System Limitations/Constraints

- AR functionality may vary across different device models and camera qualities
- Battery consumption may be high due to GPS and camera use
- Internet access required for cloud-based features
- Real-world accessibility and safety must be considered

Software Process Methodology

The system development requires Object-Oriented Methodology for designing its construction process. The chosen implementation method benefits platforms using modular structures to link their system with both Unity APIs and Firebase APIs in a simple manner.

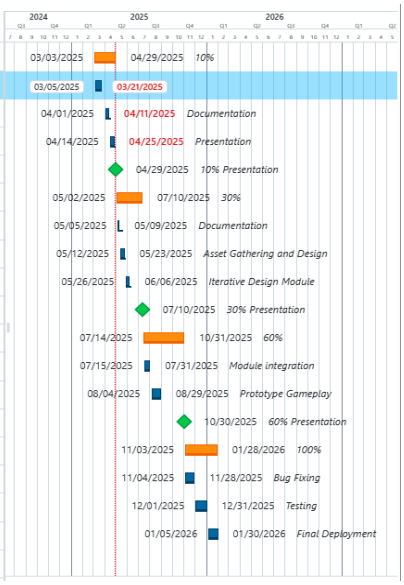
Tools and Technologies

Table 2Tools and Technologies for Proposed Project

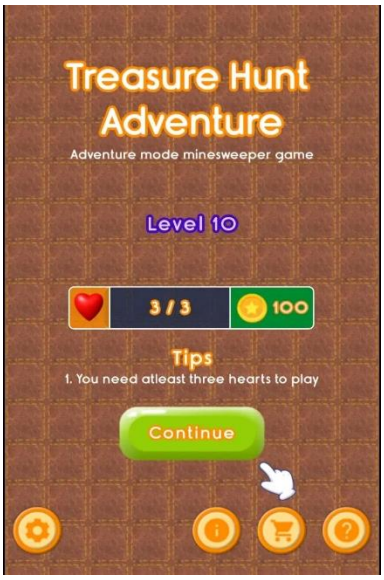
	Tools	**Version**	**Rationale**
Tools And Technologies	Unity	2022+	Game Engine with AR support
	AR Foundation	Latest	AR cross-platform development
	Firebase	Latest	Backend services
	Android Studio	Latest	Android testing/debugging
	MS Word	2015	Documentation
	MS Power Point	2015	Presentation
	Pencil	2.0.5	Mockups Creation
	Technology	**Version**	**Rationale**
	C#	6.0	Programming language
	SQL	2013	Query Language

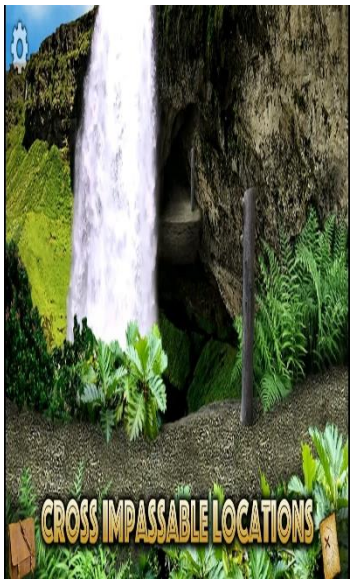
Gantt chart

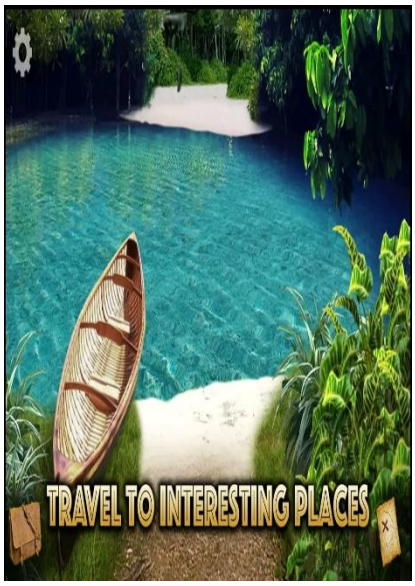
ID	TYPE	SUBJECT	STATUS	START DATE	FINISH DATE	DURATION
37	SUMMARY TASK	10%	New	03/03/2025	04/29/2025	42 days
38	TASK	Project Approval	New	03/05/2025	03/21/2025	13 days
39	TASK	Documentation	New	04/01/2025	04/11/2025	9 days
40	TASK	Presentation	New	04/14/2025	04/25/2025	10 days
41	MILESTONE	10% Presentation	New	04/29/2025	04/29/2025	
42	SUMMARY TASK	30%	New	05/02/2025	07/10/2025	50 days
43	TASK	Documentation	New	05/05/2025	05/09/2025	5 days
44	TASK	Asset Gathering and Design	New	05/12/2025	05/23/2025	10 days
45	TASK	Iterative Design Module	New	05/26/2025	06/06/2025	10 days
46	MILESTONE	30% Presentation	New	07/10/2025	07/10/2025	
47	SUMMARY TASK	60%	New	07/14/2025	10/31/2025	80 days
48	TASK	Module Integration	New	07/15/2025	07/31/2025	13 days
49	TASK	Prototype Gameplay	New	08/04/2025	08/29/2025	20 days
50	MILESTONE	60% Presentation	New	10/30/2025	10/30/2025	
51	SUMMARY TASK	100%	New	11/03/2025	01/28/2026	63 days
52	TASK	Bug Fixing	New	11/04/2025	11/28/2025	19 days
53	TASK	Testing	New	12/01/2025	12/31/2025	23 days
54	TASK	Final Deployment	New	01/05/2026	01/30/2026	20 days
55	MILESTONE	100% Presntation	New	-	-	



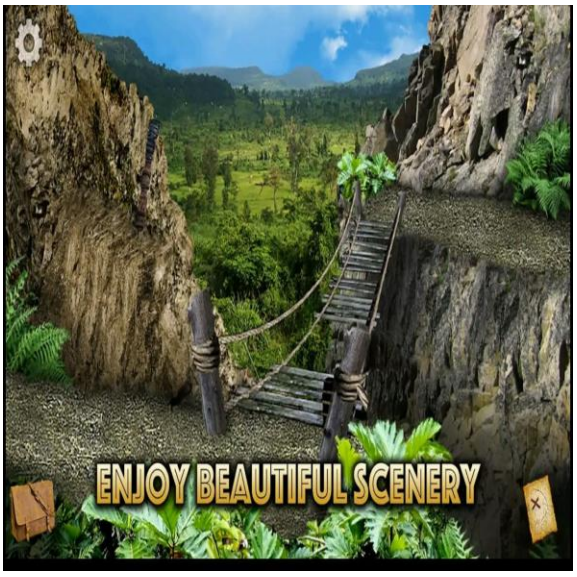
Mockups


Treasure Hunt Adventure
Adventure mode minesweeper game
Level 10
3 / 3
100
Tips
1. You need atleast three hearts to play
Continue


CROSS IMPASSABLE LOCATIONS


TRAVEL TO INTERESTING PLACES

SOLVE MIND-BENDING PUZZLES


ENJOY BEAUTIFUL SCENERY

Conclusion

"The Treasure Hunt Adventures" represents a fresh mobile app that uses augmented reality to drive players towards mapping outdoor locations while stimulating their cognitive functions. This application mixes immersive technology together with practical game features which creates an enjoyable educational device that scales to various game levels. Our goal is to produce an excellent cross-platform product through our use of Unity and Firebase platform.

References

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