**MythBusters Project Plan Document**

## Scope

There will be some inclusions and exclusions in the project as below:

### Inclusions:

* **Three distinct educational games:** These games will be designed with varying difficulty levels to cater to a broad audience.
* **Interactive flashcards:** A core component for quick learning and myth debunking.
* **User account system:** This will allow users to track their progress, accumulate points, and manage in-game currency.
* **Leaderboards:** A competitive feature to display user rankings based on game performance.
* **Avatar customization:** Users will be able to personalize their in-game characters using earned virtual currency.
* **Profile customization:** Users will be able to personalize their profile pictures. That also show up in leaderboards.
* **Health-related content:** All educational material will specifically pertain to common health myths and accurate health information.

### Exclusions:

* **Mobile native applications:** While the web application will be responsive, dedicated iOS or Android native apps are not within the current scope.
* **Advanced social networking features:** Features beyond leaderboards, such as direct messaging between users or friend lists, are not included.
* **User-generated content:** The platform will not support users submitting their own myths or content for inclusion. All content will be curated and developed by the project team.
* **Monetization beyond in-game currency:** The project will not include real-money transactions for in-game items or subscriptions.

## Organization – People

Here is the roles of our members:

* Batuhan Efe Alkış – Hangman Game Development
* Buğra Işın – User Interface (UI/UX) and Frontend Lead
* Doruk Demirci – Car Race Game Development
* Gökçen Enli – Backend and Database Architecture
* Zeynep Yavuz - Balloon Game Development

## Objectives

Our primary objective for the **MythBusters Project** is to actively combat the spread of health misinformation by clearly demonstrating the falsehoods of commonly held beliefs and effectively teaching accurate health information. We aim to:

* **Educate and Correct Misconceptions:** Directly address and debunk prevalent health myths that are widely accepted as true within the general public.
* **Prevent Harm from Misinformation:** Mitigate the potential for harm that arises from the practical application and word-of-mouth dissemination of incorrect health information.
* **Increase Public Health Literacy:** Engage users through an interactive and entertaining game-based platform, capturing attention that might otherwise be missed in traditional educational settings or public service announcements.
* **Foster a More Informed Society:** Contribute to the development of a more health-conscious and knowledgeable community by providing accessible, accurate, and engaging educational content.
* **Implement Core Functionalities:** Develop and integrate the following key features:
  + Three distinct, interactive games with varying difficulty levels. That is based on identifying whether the information in a question is true or false, or selecting the correct option to earn points.
  + A comprehensive set of educational flashcards.
  + A robust user account system for tracking progress, points, and in-game currency.
  + A competitive leaderboard system to foster engagement among users.
  + A customizable avatar system allowing users to personalize their in-game characters using earned currency.

## Key Phases and Timeline

### Key Project Phases:

* **Phase 1: Requirements Gathering & Planning**
  + **Status:** **Completed**
  + **Original Duration:** 2 Weeks
  + **Original Estimated Start Date:** June 10, 2025
  + **Original Estimated End Date:** June 21, 2025
  + **Deliverables:** Finalized **Project Definition Document**, detailed **Project Plan Document**, comprehensive **feature specifications**, and an initial **content outline** for games and flashcards.
* **Phase 2: Design & Prototyping**
  + **Duration:** 3 Weeks
  + **Estimated Start Date:** June 24, 2025
  + **Estimated End Date:** July 12, 2025
  + **Deliverables:** Approved **UI/UX wireframes and mockups**, detailed **game design documents** for each game, initial drafts of **health content**, and a comprehensive **database schema**.
* **Phase 3: Development**
  + **Duration:** 3 Weeks
  + **Estimated Start Date:** July 15, 2025
  + **Estimated End Date:** August 2, 2025
  + **Deliverables:** Fully functional **frontend** (user interface, game logic integration), robust **backend services** (user authentication, leaderboards, currency system), implemented **game content and flashcards**, and completion of initial **unit testing**.
* **Phase 4: Testing & Bug Fixing**
  + **Duration:** 1 Week
  + **Estimated Start Date:** August 4, 2025
  + **Estimated End Date:** August 10, 2025
  + **Deliverables:** Comprehensive **Quality Assurance (QA) test reports**, resolution of all identified **bugs and performance issues**, and successful **User Acceptance Testing (UAT)** with stakeholder feedback incorporated.

## Resource Planning

For this project, we have selected a robust and modern technology stack to ensure scalability and maintainability. Here's a detailed breakdown of the key technologies and resources we'll be utilizing:

* **Frontend Development:**
  + **Language:** **TypeScript** will be our primary language. Its strong typing capabilities enhance code quality, reduce errors, and improve developer productivity, especially as the project scales.
  + **Framework:** **React** will serve as our core JavaScript library for building the user interface. Its component-based architecture and declarative nature are ideal for creating complex, interactive, and reusable UI elements, ensuring a dynamic and responsive application.
  + **UI Library:** We plan to leverage **Material UI (MUI)**, a rich UI framework. MUI provides a comprehensive set of pre-built components that adhere to modern design principles, accelerating development and ensuring a consistent and polished look and feel across the application.
* **Backend Development:**
  + **Language:** **Java** will be the foundational language for our backend services, chosen for its robustness, performance, and extensive ecosystem.
  + **Framework:** **Spring Boot** will be utilized to develop our RESTful APIs and business logic. Its convention-over-configuration approach allows for rapid application development, simplifying setup and deployment while providing powerful features for enterprise-grade applications.
  + **Build Automation Tool:** **Maven** will manage our project dependencies and build process, ensuring consistency and efficiency in compiling, testing, and deploying our Java backend.
  + **Database:** **PostgreSQL** will be our relational database management system. Known for its reliability, robust feature set, and strong support for complex queries, PostgreSQL is an excellent choice for securely storing and managing all project data, including user profiles, game scores, and content.

## Risk Management

Effective risk management is crucial for the successful completion of the MythBusters Project. As a team of fourth-year students, we've identified several potential challenges stemming from our academic commitments and the nature of project development. Here's an overview of anticipated risks and our strategies to mitigate them:

### Identified Risks:

* **Time Constraints due to Academic Workload:** As all team members are fourth-year students, our academic schedules are inherently demanding, with heavy coursework and upcoming exams (midterms and finals). This poses a significant risk to dedicating consistent time to the project, particularly during report submissions coinciding with exam periods.
* **Challenges in Team Coordination:** Coordinating schedules and tasks among five busy individuals can be difficult. This may lead to delays in meetings, task handoffs, and overall project momentum.
* **Unfamiliarity with Specific Technologies/Tasks:** While we possess a strong foundational understanding, certain technologies within our chosen stack (e.g., specific libraries, advanced features of frameworks) or particular development tasks may be new to some team members. This could lead to a steeper learning curve and potential delays.

### Mitigation Strategies:

To proactively address these risks and ensure project success, we will implement the following measures:

* **Proactive Scheduling and Planning:** We will establish a clear, shared calendar at the outset, identifying individual availability, academic deadlines, and project milestones. This proactive approach will enable us to schedule meetings and assign tasks realistically, avoiding conflicts and maximizing productivity.
* **Robust Internal Communication:** We will maintain strict and consistent internal communication channels. This includes regular, focused check-ins (e.g. weekly syncs) to monitor progress, address blockers promptly, and ensure everyone is aligned.
* **Balanced Professionalism and Collaboration:** While fostering a friendly and supportive team environment, we will maintain a professional approach to task delivery. This involves adhering to agreed-upon deadlines, ensuring accountability for individual assignments, and prioritizing project tasks to avoid scope creep or overruns.
* **Knowledge Sharing and Cross-Training:** For new technologies or unfamiliar tasks, we will encourage knowledge sharing sessions and pair programming. This helps distribute expertise, accelerate learning, and build team resilience against individual knowledge gaps.
* **Early Identification of Bottlenecks:** Through frequent communication and regular progress reviews, we will aim to identify potential bottlenecks or areas where team members are struggling early on. This allows us to reallocate resources or provide additional support before issues escalate into significant delays.

By implementing these strategies, we aim to navigate potential challenges effectively, ensuring the MythBusters Project remains on track for timely and successful delivery.

## Communication Plan

Our primary channel for instant and accessible communication is our **WhatsApp group**. This platform allows for real-time updates on task completion, immediate reporting of challenges encountered, and rapid assistance from fellow team members if any issues arise. This ensures that no individual feels isolated or overwhelmed with a task, fostering a supportive environment where help is always readily available, leading to quick resolutions and efficient progress.

Beyond task-related updates, the WhatsApp group also serves as the central hub for coordinating logistical details, such as scheduling new meetings and determining meeting locations. This keeps everyone informed and aligned, minimizing misunderstandings and delays.

## Change Management Plan

Managing changes to our project's requirements or scope is essential for maintaining control, preventing delays, and delivering a successful product. Our team plans to follow a streamlined process to handle any proposed changes:

* **Proposing Changes:** Any team member can propose a change by formally submitting it, detailing the proposed modification and its rationale. This ensures all requests are documented consistently.
* **Assessing Impact:** Relevant team members will collaborate to assess the proposed change's impact. This includes evaluating its effect on our project timeline, effort allocation, technical complexity, and existing features. For instance, the **Backend and Database Architect** will assess technical feasibility for server-side implications, while the **UI/UX and Frontend Lead** will evaluate user experience impacts. Individual **Game Developers (Hangman, Car Race, Balloon Game)** will assess how a change might affect their specific game logic and design.
* **Review and Decision:** Our team will collectively review the change's impact. The **Project Lead** will then make the final decision to approve or reject, considering the change's urgency and strategic value. For major changes, we'll seek input from any relevant stakeholders.
* **Documenting & Communicating:** Once approved, we'll clearly document the change, its justification, and its confirmed impact in our project plan or a dedicated change log. This ensures transparency, and we'll communicate it promptly to everyone affected.
* **Implementing Changes:** Approved changes will be integrated into our development backlog and assigned to the appropriate team member for implementation, aligning with our revised timeline.

## Budget Plan

For the MythBusters Project, our "budget" primarily revolves around the **allocation of team effort and time** across the different project phases. We're prioritizing efficiency and strategic deployment of our human resources to ensure timely completion.

Our estimated effort distribution across the core project phases is as follows:

* **Phase 1: Requirements Gathering & Planning (5% of total effort):** This initial phase is crucial for laying a solid foundation, ensuring clarity before development begins.
* **Phase 2: Design & Prototyping (15% of total effort):** Significant effort is allocated here to ensure a well-thought-out user experience and game mechanics, minimizing rework later.
* **Phase 3: Development (60% of total effort):** As the core building phase, this naturally demands the largest portion of our collective time and skill. This includes all coding, integration, and initial testing.
* **Phase 4: Testing & Bug Fixing (15% of total effort):** A substantial allocation here emphasizes our commitment to quality, ensuring a stable, high-performing, and bug-free application.
* **Phase 5: Deployment & Launch (5% of total effort):** This final phase covers the technical setup for launch and initial post-deployment monitoring.

## Acceptance Tests and Acceptance Criteria

To ensure the MythBusters Project successfully meets all requirements, we'll confirm its acceptance based on these key criteria:

* **Functional Readiness:**
  + **Test:** All three games (Hangman, Car Race, Balloon Game), flashcards, user accounts, leaderboards, and avatar customization are thoroughly tested.
  + **Criteria:** All core features are fully implemented, operational, stable, and free of critical bugs across supported browsers.
* **User Experience (UX):**
  + **Test:** User Acceptance Testing (UAT) is conducted with target users.
  + **Criteria:** At least **80% of UAT participants find the application easy to use and engaging.**
* **Content Accuracy:**
  + **Test:** All health content in games and flashcards is independently reviewed.
  + **Criteria:** All educational content is **100% accurate, scientifically sound, and referenced** from reputable sources.
* **Performance:**
  + **Test:** Performance is evaluated across various devices and network conditions.
  + **Criteria:** The application loads within **3 seconds**, and all interactions are fluid and responsive.

## Task Matrix

| **Task Description** | **Responsible Person(s)** | **Status** | **Notes** |
| --- | --- | --- | --- |
| Overall Document Coordination & Final Review | Batuhan Efe Alkış | Completed | Ensures the entire document is consistent, comprehensive, and ready for submission. |
| Draft Project Summary Section | Doruk Demirci | Completed | Focused on problem, solution, and main purpose. |
| Draft Project Organization – People Section | Batuhan Efe Alkış | Completed | Outlined team roles and responsibilities within the project structure. |
| Draft Project Objectives Section | Gökçen Enli | Completed | Articulated the specific goals and desired functionalities of the project. |
| Draft Project Scope Section | Gökçen Enli | Completed | Defined project inclusions and exclusions, with emphasis on technical boundaries. |
| Draft Key Phases and Timeline Section | Batuhan Efe Alkış, Doruk Demirci | Completed | Developed the project's high-level schedule, key milestones, and deliverables. |
| Draft Resource Planning Section | Gökçen Enli, Buğra Işın | Completed | Detailed the necessary technical stack (frontend, backend, database) and development tools. |
| Draft Risk Management Section | Batuhan Efe Alkış, Buğra Işın | Completed | Identified potential project risks and proposed clear mitigation strategies. |
| Draft Communication Plan Section | Buğra Işın | Completed | Defined internal team communication protocols and external stakeholder engagement. |
| Draft Change Management Plan Section | Zeynep Yavuz | Completed | Established the process for managing changes to project requirements or scope. |
| Draft Budget Plan Section | Batuhan Efe Alkış | Completed | Outlined the allocation of team effort and resources across project phases. |
| Draft Acceptance Tests and Acceptance Criteria Section | Zeynep Yavuz, Doruk Demirci | Completed | Defined the criteria and tests for successful project completion and acceptance. |
| Review for Clarity, Conciseness, & Professionalism | Buğra Işın | Completed | Conducted a thorough review for grammar, coherence, professional tone, and overall readability. |
| Format Document for Final Presentation | Buğra Işın | Completed | Applied consistent formatting, layout, and visual presentation elements to the entire document. |