MoonPath

Requirement Specification Document

Team 8 | Apollo

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Change Directory

Version	Date	Changes	Initiators
1.0	14.03.2025	Initial draft of projects requirements	Yeva Sokyruk
1.1	18.03.2025	Payment feature and AI feedback included	Yeva Sokyruk Ulyana Korniyenko
1.2	21.03.2025	Gamification elements added	Nikita Shevchenko
1.3	22.03.2025	Refocused project target group to students only	Anastasia Trofymenko
1.4	25.03.2025	Expanded functional requirements, documentation scope finalized	Nikita Shevchenko Arina Lyzohub Ilia Grigorev
2.0	31.03.2025	Final project refinement: structure optimized	Yeva Sokyruk

2.1. Introduction / Objective Definition

MoonPath is a **web-based platform designed for students** who want to pursue a career in IT and struggle with a lack of practical experience. Our platform allows them to step into the role of an IT professional by providing a *short-term (one-day) simulation* of a workday with given tasks and responsibilities. We offer a range of different IT professions, enabling students who study Informatics and are still discovering their career path to get an insight into what it is like to work in this field. Furthermore, our platform may underline lacking skills for a specific career and give users room for improvement, preparing them for their future jobs. By providing this immersive experience, Moonpath helps bridge the gap between theoretical knowledge and practical application, empowering students to make informed career decisions.

Therefore, our **Project Goals** are to:

1. Develop realistic workday simulations for various IT-professions.
2. Enhance career readiness and underline essential technical and soft skills.
3. Bridge the gap between education and industry needs.

2.2. Current State Analysis

1. **Lack of Practical Experience**
   Most IT students struggle to gain practical experience, as universities place greater emphasis on theory than application in the real world, which holds them back from accessing the job market.
2. **Limitations of Existing Solutions**
   Online courses like Coursera and Udemy are learning platforms with a technical bent but lack workplace simulation. Internships offer practical exposure but are competitive and sometimes ask for previous experience.
3. **Industry Expectations vs. Student Preparedness**
   Employers require technical and soft skills, but students lack experience in teamwork, problem-solving, and real-world workplace dynamics.
4. **Need for a Simulation-Based Approach**
   MoonPath addresses this need by offering accurate job simulations to allow students to experience IT jobs, assess their abilities, and prepare for their careers.

2.3. Product Deployment

Who are the actual users of the product?

The actual users of MoonPath are:

- **Students at various educational levels**, particularly those who study IT-related subjects and want to gain practical, real-world experience in IT roles.
- **Job seekers and career changers** looking to explore or transition into IT careers, using MoonPath to develop relevant skills.
- **Early-career professionals** aiming to upskill and practice workplace scenarios.
- **IT companies and employers**, as indirect stakeholders, benefit from a more career-ready, skilled talent pool trained via MoonPath.

How and where will the product ultimately be used?

MoonPath is designed for **short-term and self-guided use**, primarily:

- On **desktop computers and laptops** via web browsers with **a stable internet connection required** (no offline mode).
- **Independently by students or early-career professionals** who seek a practical preview of IT work environments, without the need for long-term training or formal mentorship.
- As a **complement to academic studies**, helping users apply their theoretical knowledge during realistic one-day simulations of IT jobs, yet **without offering official accreditations**.

What are the application areas?

MoonPath has multiple application areas, including:

1. **Realistic Workday Simulations**: Users engage in task-based scenarios that reflect the daily responsibilities of various IT professions.
2. **Career Readiness Training**: Helps users develop technical (e.g. coding, problem-solving) and soft skills (e.g. communication, teamwork).
3. **Personalized Learning Support**: Learners receive continuous constructive feedback tailored to their progress and skill level.
4. **Bridging the Education-Industry Gap**: Align educational content with workplace expectations and needs.
5. **Professional Development**: Supports professionals and career changers in practicing complex IT tasks and leadership scenarios.
6. **Collaborative Learning**: Offers virtual interaction with simulated co-workers, mentors, and team environments to improve collaboration skills.

Technical requirements for users:

To use MoonPath, users need:

- A stable **internet connection**.
- Access to the platform via a **web browser** (compatible with Windows, macOS, Linux).
- Devices such as a **desktop, laptop, or tablet**.
- No strict hardware requirements, making the platform accessible to a wide audience.

2.4 Target Concept

2.4.1 Functional Requirements (/LFxxx/)

User Management

/LF010/ User Account Creation

- **Keywords**: Registration, Security, Basic Data
- **Description**: The system allows new users (student/employer) to create an account by providing minimal personal data (name, email) and a password (or SSO). Passwords must be stored in hashed form.

/LF011/ User Login

- **Keywords**: Authentication, Session
- **Description**: Registered users can log in with their credentials (email + password or SSO).Upon successful login, a secure session is established.

/LF012/ Logout

- **Keywords**: Session Management, Security
- **Description**: Users must be able to log out at any time, end their session, and clear any authentication tokens to prevent unauthorized reuse.

/LF013/ Password Recovery

- **Keywords**: Reset Mechanism, Email Verification
- **Description**: The platform provides a password reset process, typically via a secure email link or token, enabling users to regain access if credentials are lost.

/LF014/ Full Account Deletion

- **Keywords**: Account Removal, GDPR Compliance
- **Description**: Users can permanently delete their accounts. The system removes or anonymizes personal data by data protection rules.

/LF015/ Account Deactivation for Some Time

- **Keywords**: Temporary Suspension, Data Retention
- **Description**: Users can temporarily deactivate their accounts for a set period. During this time, the account is inactive, but data is retained. The account automatically reactivates after the set period, or users can manually reactivate it. This feature ensures data protection and compliance with privacy regulations.

User Profile

/LF020/ Profile Creation

- **Keywords**: Personalization, Onboarding
- **Description**: When registering, users may set up a basic profile (e.g., full name for certificates, role, skill interests) which can affect recommended simulation scenarios or task difficulty.

/LF021/ Profile Picture

- **Keywords**: Visual Personalization, Profile Customization
- **Description**: Users can upload a profile picture to further personalize their account. This feature enhances the user experience and makes the platform more engaging.

/LF022/ Profile Editing

- **Keywords**: Profile Update, Customization
- **Description**: Users can edit profile details at any time (e.g., education level, interests). The system validates any critical changes, especially if they impact simulation settings.

/LF023/ Partial Profile Data Removal

- **Keywords**: Profile Cleanup, Privacy
- **Description**: A user can remove optional elements of their profile (e.g., interests or nonessential personal info) without deleting the entire account.

/LF024/ Skill Level Indicators

- **Keywords**: Skill Assessment, Self-Reporting
- **Description**: Users can indicate their self-assessed skill level in various IT areas (e.g., beginner, intermediate, advanced). This helps adjust simulation difficulty and tailor learning content.

/LF025/ Notification Preferences

- **Keywords**: Alerts, Communication
  Description: Users can customize their notification preferences (e.g., email, push notifications) to control how they receive updates, reminders, or news from the platform.

/LF026/ Language Preferences

- **Keywords**: Localization, Multilingual Support
- **Description**: Users can select their preferred language for the platform, ensuring a more comfortable and personalized experience, especially for international users.

Platform Usage

/LF030/ Starting a Simulation

- **Keywords**: One-day Simulation, Time Limit
- **Description**: A registered student initiates a new "workday" simulation, generally up to four hours. Introductory details are displayed (role, project context, tasks, resource points).

/LF031/ Simulation Timer

- **Keywords**: Countdown, Time Tracking
- **Description**: The system shows a countdown for the remaining real-time limit. When it reaches zero, the simulation ends automatically.

/LF032/ Task Sequence

- **Keywords**: Technical Tasks, Decision Making, Communication
- **Description**: The simulation presents a structured set of tasks (e.g., coding, prioritization, written communication). Some tasks refer back to previous steps, requiring updates or combinations of earlier solutions.

/LF033/ Revisiting Tasks

- **Keywords**: Task Revision, Iteration
- **Description**: If a solution is incomplete or incorrect, the user may revisit certain tasks (time/resources permitting) to correct mistakes before moving on.

/LF034/ Task Reminder

- **Keywords**: Task Revision, Notifications, Reminder
- **Description**: The system will send reminders if a user forgets to revisit an incomplete or incorrect task, encouraging them to return and finalize it properly (e.g., "Please return to Task X to finalize it properly").

/LF035/ AI Feedback (Per Task)

- **Keywords**: Automated Feedback, Hints, Evaluation
- **Description**: After each task submission, the system uses AI to analyze the user's response, offering quick suggestions, pointing out errors and/or giving positive reviews. This is not a substitute for human mentorship, but a quick feedback mechanism.

/LF036/ Final AI Summary

- **Keywords**: Global Analysis, Comprehensive Review
  Description: At the end of the simulation, the AI provides an overall assessment that synthesizes the user's performance, strengths, and areas for improvement.

/LF037/ Pause/Resume Simulation

- **Keywords**: Interruption Handling, Continuation
- **Description**: In case of disconnection or short breaks, the user can resume from the last confirmed task. The total real-time countdown still applies, though a small grace period might be allowed.

/LF038/ Resource Tracking

- **Keywords**: Points, Budget, Time
- **Description**: The platform updates the user's resource indicators (e.g., time, budget) after tasks or decisions, reflecting project constraints and progress.

Evaluation & Completion

/LF040/ Completion

- **Keywords**: End of Simulation, Task Finalization
- **Description**: The simulation concludes when the time limit is reached or all tasks are done. The final status displays whether tasks were successfully completed or missed, giving the user an overview of their performance.

/LF041/ Performance Assessment

- **Keywords**: Scoring, Recommendations
- **Description**: Based on speed, correctness, and resource use, the system generates personalized feedback, highlighting strengths and areas for improvement.

/LF042/ Certificate Generation

- **Keywords**: PDF, Verification Code, Proof of Participation
- **Description**: After finishing the simulation, the user receives a personalized PDF certificate with their name, date, scenario title, and a unique verification code. It confirms participation but is not officially accredited.

/LF043/ Saving/Exporting Certificate

- **Keywords**: Download, Share, Archive
- **Description**: The user can download the PDF certificate or share a verification link. The system may also store the certificate in the user's account history.

/LF044/ Detailed Final AI Overview

- **Keywords**: AI Insights, Global Feedback
- **Description**: In addition to task-specific feedback, the AI provides a comprehensive summary of the user's performance, identifying patterns, strengths, and skill gaps to guide future improvement.

Payment

/LF050/ Payment Setup

- **Keywords**: Billing Info, Payment Options
- **Description**: If a fee is required for full access, users can input billing details (credit card, PayPal, etc.) and select payment options.

/LF051/ Payment Processing

- **Keywords**: Transaction, Secure Checkout
- **Description**: The system integrates with payment gateways. Once payment succeeds, users gain access to advanced features or the entire simulation.

/LF052/ Payment History

- **Keywords**: Transaction Records, User Dashboard
- **Description**: Users can view a record of their transactions (date, amount, scenario). Past payments remain accessible for reference.

/LF053/ Stored Payment Information

- **Keywords**: Payment Data, Convenience, Security
- **Description**: The platform securely stores users' payment information for future transactions, allowing for quicker access to paid features or simulations without the need to re-enter payment details each time. Users can manage or delete their stored information from their account settings.

/LF054/ Invoice Generation

- **Keywords**: Invoice, Tax Details, Payment Summary
- **Description**: Users can generate a detailed invoice for each payment, including payment summary, tax details, and any discounts applied. The invoice is downloadable or sent via email for record-keeping.

/LF055/ Payment Failed Notifications

- **Keywords**: Payment Failure, Notification, Retry
- **Description**: If a payment fails, users are notified immediately, and they can retry the payment process. The system provides clear instructions on how to resolve the issue and avoid service interruptions.

/LF056/ Discounts and Promotions

- **Keywords**: Discounts, Promotional Codes, Special Offers
- **Description**: Users can apply discount codes or participate in promotional offers to receive reduced rates on simulations or subscriptions. Discounts are automatically applied during the payment process.

/LF057/ Refund Request (optional)

- **Keywords**: Reversal, Customer Support
- **Description**: If a user cannot access the simulation or experiences issues, a refund can be requested, subject to the platform's policy.

Gamification

/LF060/ Visual Effects

- **Keywords**: Animations, UI Enhancements
- **Description**: Certain in-simulation events (e.g., correct answers, special achievements) trigger visual animations to enhance engagement. Animations are designed to be rewarding but not distracting, providing a fun yet unobtrusive experience.

/LF061/ Sound Effects

- **Keywords**: Audio Cues, Engagement
- **Description**: The platform may play short sounds (e.g., fanfare) to celebrate a successful solution. Users can disable or customize volume in settings.

/LF062/ Reward System

- **Keywords**: Badges, Achievements, Motivation
- **Description**: Users may earn badges or achievements (e.g., “Fast Debugger”) for completing tasks under certain conditions, promoting a game-like progression.

Administration & Logging

/LF070/ Admin Panel for Scenario Management

- **Keywords**: Task Editing, Content Updates
- **Description**: Administrators can add or edit tasks, code test cases, or feedback rules. This ensures content can be updated without core code changes.

/LF071/ Admin Panel for User Management

- **Keywords**: Role Assignments, Moderation
- **Description**: Admins can update user roles (student/employer), suspend accounts, or handle reported issues. This back-end UI is restricted to authorized staff.

/LF072/ System Logging & Monitoring

- **Keywords**: Logs, Security, Diagnostics
- **Description**: The system tracks user logins, simulation runs, and admin actions for auditing and troubleshooting. Logs are securely stored and can be filtered by time, user, or action type. Admins are notified of any suspicious activity, system errors, or performance issues.

/LF073/ Real-Time Monitoring Dashboard

- **Keywords**: Performance, User Activity, System Health
- **Description**: Administrators can monitor the system's performance and user activity in real time through a dedicated dashboard. This includes tracking active simulations, resource usage, and system health, allowing for proactive issue resolution.

Employer Features

/LF080/ Employer Invitations

- **Keywords**: Unique Links, Candidate Onboarding
- **Description**: An employer can create invite links for candidates. Once a candidate signs up via that link, the employer (with consent) may view the candidate's simulation outcomes.

/LF081/ Employer Comments

- **Keywords**: Candidate Assessment, Private Notes
- **Description**: Employers can annotate candidate results with personal notes. These do not affect the simulation and remain invisible to the candidate.

/LF082/ Candidate Rating System

- **Keywords**: Candidate Evaluation, Rating
- **Description**: Employers can rate candidates based on their simulation performance (e.g., "Excellent," "Good," "Needs Improvement"). These ratings are added to the candidate's profile for future reference and can be shared with other employers or HR professionals.

Repeated Simulation & Advanced Analytics

/LF090/ Repeated Simulation

- **Keywords**: Replay, History, “One-Day” Format
- **Description**: Users may repeat the simulation for additional practice. The system can restrict how often the same scenario is replayed to preserve the unique one-day challenge.

/LF091/ Advanced Analytics

- **Keywords**: Statistics, Leaderboards, Comparative Data
- **Description**: The platform can produce in-depth reports (e.g., average completion times, resource usage comparisons, top error patterns) for user self-assessment or institutional review.

2.4.2 Non-Functional Requirements

/LL010/ System Usability

- **Keywords**: User-Friendly Interface, Navigation, Window-Based Design
- **Description**: The interface must be intuitive for both students and employers. Buttons and navigation are straightforward, with concise instructions on each screen. A mini-guide or FAQ is recommended.

/LL020/ Performance & Scalability

- **Keywords**: Response Time, Scalability
  Description: Checking answers and generating AI comments should take only a few seconds. The system supports several hundred concurrent sessions. During high load, a queue may be used, with user notifications.

/LL030/ Reliability & Availability

- **Keywords**: Autosave, High Uptime
  Description: User progress is saved after each task, so a service interruption does not cause data loss. Planned downtime is announced in advance. The system aims for at least 99% uptime.

/LL040/ Security

- **Keywords**: HTTPS, Password Hashing, Sandbox
  Description: All communication uses HTTPS, and passwords are stored securely. Protections against SQL injection, XSS, and CSRF are mandatory. User-submitted code executes in a sandbox to avoid malicious attacks.

/LL050/ Privacy & Confidentiality

- **Keywords**: GDPR, Access Consent, Data Storage
- **Description**: Simulation results remain visible only to the user unless shared (e.g., with an employer). Data may be deleted or anonymized after a specific duration, respecting privacy policies.

/LL060/ Ethical & Accurate AI

- **Keywords**: Correctness, No Discrimination, Verified Hints
  Description: Automated feedback must not be discriminatory or offensive; logic errors must be fixed promptly. The AI is a quick helper, not a full mentor.

/LL070/ Extensibility

- **Keywords**: Modularity, Future Scenarios, Additional Capabilities
  Description: The architecture should allow adding new roles, scenarios, or AI rules without major refactoring, supporting future platform evolution.

/LL080/ Compatibility

- **Keywords**: Operating Systems, Browsers, Audio/Voice Input, Responsive Design
  Description: The platform works on common operating systems (Windows, macOS, Linux, Android, iOS) through modern browsers (Chrome, Firefox, Safari, Edge). It uses responsive design but recommends a desktop or laptop for core usage. Speakers can provide audio cues; a microphone may speed text entry by voice.

/LL090/ Legal & Licensing

- **Keywords**: Copyright, Licenses, Disclaimer
  Description: All tasks and code snippets must not violate intellectual property rights. Third-party libraries must comply with license requirements. The system only assists in evaluations; hiring decisions remain with the employer.

/LL100/ Project Documentation

- **Keywords**: Version Control, GitHub Repository, Roles
- **Description**: Documentation is maintained in a GitHub repo, split by roles (PM, Dev, etc.), along with the source code under version control. Features and implementations are tracked in separate branches or sections.

2.4.3 Product Data

/LD010/ User-Related Data

- **Keywords**: Login, Password (Hash), Role, Profile
  Description: Maintains user credentials (email, hashed password) and role (student/employer). Optional profile info includes name, interests, or employer details.

/LD020/ Simulation Scenario Data

- **Keywords**: Tasks, Test Cases, Content, AI Rules
- **Description**: Contains scenario definitions (tasks, code checks, multiple-choice items, AI feedback logic). Administrators can modify it as needed.

/LD030/ Simulation Records

- **Keywords**: Answers, Start/End Time, Attempt History
- **Description**: Logs the user's answers, resource changes, and final outcomes for result reporting and analytics.

/LD040/ AI Feedback & Results

- **Keywords**: Automated Hints, Evaluation, Recommendations
  Description: Stores AI-generated tips or final comments for each task and for overall performance, viewable later by the user or, with consent, by the employer.

/LD050/ Certification

- **Keywords**: PDF, Verification Code, Completion
- **Description**: On simulation completion, a PDF certificate is created. The platform keeps minimal certificate data (ID, date, scenario) for authenticity checks.

/LD060/ Employer Notes

- **Keywords**: Private Comments, Skill Assessment
- **Description**: Employers can add personal observations about a candidate's performance, inaccessible to the candidate and with no effect on simulation scoring.

/LD070/ System Internals

- **Keywords**: Events, Technical Audit, Security
- **Description**: Includes logs of logins, simulation runs, admin actions, and errors for security, debugging, and compliance checks.

/LD080/ Analytical Insights

- **Keywords**: Statistics, Scenario Refinement, Anonymization
- **Description**: Collects aggregated, anonymized data (e.g., average times, frequent mistakes) to improve simulation design and provide internal analytics.

/LD090/ Billing & Payment

- **Keywords**: Transaction Info, Subscription, Secure Storage
- **Description**: If payment is enabled, this data set contains records of user transactions and payment status. Sensitive billing details must be securely handled per industry standards.

2.4.4 Non-Goals

- **Not a Multi-Level Educational Program**
  The platform does not offer long-term training or multiple modules; it is a short simulation with automated AI hints (both during individual tasks and at the end).

- **Does Not Provide Full Mentorship**
  All support is limited to AI-based analysis of solutions; there are no live mentors or experts guiding the student. The AI merely evaluates answers and offers recommendations.

- **Not a Full Recruiting Service**
  Employers can view candidate results, but the system does not replace a complete HR process or a job-search platform. This feature is only an additional option.

- **No Offline Mode**
  A stable internet connection is required for operation; there is no provision for using the platform without network access.

- **Not Intended for Large-Scale Corporate Deployment**
  The current version targets moderate loads (pilot mode). The needs of very large enterprises (hundreds of thousands of simultaneous users) are not covered at this stage.

- **Does Not Grant Official Accreditations**
  The certificates issued confirm participation and demonstrate skills acquired, but they do not carry any governmental or academic recognition.

2.5 Constraints

1. **Time-Bound Simulation**

The platform is designed for a single-day simulation experience, not for ongoing or continuous training.

2. **Browser-Based Delivery**

An internet connection and a modern web browser are required. No offline version is currently in scope.

3. **Focused Task Content**

The initial release centers on general software development tasks, with no further domain expansions planned at this stage.

4. **Privacy & Consent**

Users must give explicit permission before their simulation results or personal data are shared with employers or any third parties.

5. **No Long-Term Mentorship**

The system provides only a short, one-day experience with immediate feedback, without extended coaching or training programs.

6. **Resource Constraints**

The project must be completed within a few months, and the AI component runs on limited server capacity.

7. **Legal Disclaimer (Certificate)**

The certificate awarded upon completion is for recognition only and does not carry any official accreditation.

2.6 Scope of Delivery

MoonPath is a **web-based platform**:

- **Interactive Frontend**: Includes user registration/login, task presentation, and AI-driven feedback interface.
- **Backend with AI Integration**: Handles data processing, storage, and the core logic for generating tailored mentorship feedback.
- **One Complete Simulation Scenario** (IT-focused): A ready-to-use scenario featuring realistic software development tasks.
- **Automated PDF Certificates**: Generated upon successful completion of the simulation.
- **Employer Module** (planned for future development): Will allow recruiters to assess candidates and review results.

Documentation:

- **User Guide**: Covers platform usage for students and employers.
- **Admin/Developer Guide**: Provides technical details on setup, configuration, and maintenance.
- **Test Report**: Summarizes quality assurance procedures and outcomes.
- Deployment Instance (e.g., a cloud-based environment for demonstrations)
- Preconfigured for straightforward hosting and scaling.
- May include containerization scripts or an on-premise installation guide.

References:

https://www.workzone.com/wp-content/uploads/Workzone-The-Project-Management-Starter-Guide.pdf

https://go.teamleader.eu/hubfs/Content%20Kit%20Campaigns/CK1%20-%20Project%20Management/Ebooks/HQ_Ebook_CK1_Projectmanagement.pdf