Attack the Virus

Software Engineering-II (CS–442), Fall 2024

GROUP 4

Apoorv Lodhi	**Ragini Kalvade**
Niyati Malik	**Ryder Douglas**

PROJECT OUTLINE

Educational game focused on teaching about vaccines, illnesses, and the immune system. Combines fun gameplay with informative content.

Key Objectives

- Increase awareness of the importance of vaccines.
- Provide an engaging learning experience about real-world diseases.
- Promote health education in an interactive way.

Target Audience

- Students and young adults.
- Gamers interested in educational content.
- Individuals curious about vaccines and disease prevention.

KEY TECHNOLOGY & FRAMEWORKS

Frontend Framework: Angular

- Dynamic, responsive user interface.
- Incorporates GSAP for advanced neon animations
- ng-character-select-carousel npm package for avatar carousel

CSS Frameworks: Bootstrap

Backend Framework: Spring Boot

REST API development for handling user data. Language: Java

Database - MySQL

Stores user profiles, quiz progress, clinic locations, and gameplay data

KEY TECHNOLOGY & FRAMEWORKS

Game Features & Logic

- Interactive Components:
  - Custom game loops for quizzes and Virus-Breaker game logic.
  - JSON-based data storage for disease and vaccine information.
- Map Integration: Google Maps API for location-based clinic finder.

Tools & Environments

- Version Control: GitHub
- IDE: IntelliJ IDEA (Backend) and VS Code (Frontend)

VS Code

PROJECT PROGRESS

RELEASE 1

- Basic functionality implemented, including quiz questions and scoring.
- Initial homepage design with interactive UI (neon theme using GSAP).
- Backend setup with Spring Boot and MySQL database

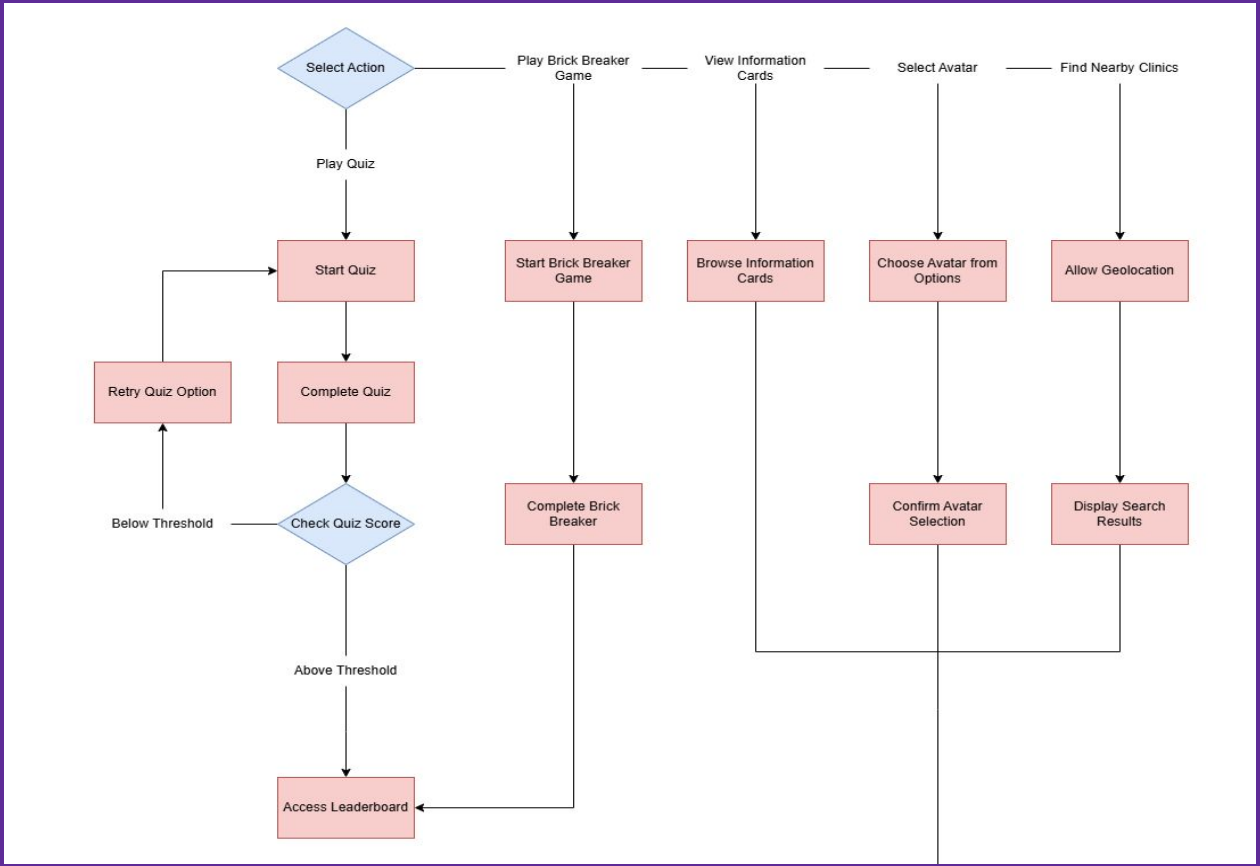
RELEASE 2

- Added features: Personalized avatars
- User testing feedback implemented to improve UI/UX.
- Location-based clinic finder integrated using Google Maps API.
- Launched "Virus-Breaker" minigame

RELEASE 3

- Leaderboard and integrated scoring to track user progress.
- Launched MInesweeper game
- Expanded quiz content and difficulty levels
- Advanced educational cards

SYSTEM FLOW


Select Action
Play Brick Breaker Game
View Information Cards
Select Avatar
Find Nearby Clinics
Play Quiz
Start Quiz
Start Brick Breaker Game
Browse Information Cards
Choose Avatar from Options
Allow Geolocation
Retry Quiz Option
Complete Quiz
Below Threshold
Check Quiz Score
Complete Brick Breaker
Confirm Avatar Selection
Display Search Results
Above Threshold
Access Leaderboard

FUTURE SCOPE

ADVANCED GAMEPLAY FEATURES

- Introducing AI-powered adaptive difficulty levels to customize user experience.
- Gamifying social engagement with team-based challenges and tournaments.

EXPANDED EDUCATIONAL CONTENT

- Adding new modules on pandemic preparedness and emerging global health concerns.
- Partnering with health organizations for real-time updates and information.

DYNAMIC AVATARS: Evolve user avatars based on achievements or in-game milestones.

Software Engineering Tools and Practices

SE VALUES & PRACTICES USED

PAIR PROGRAMMING

- Collaborative Development: Real-time feedback and continuous improvement.
- Efficient Problem Solving: Leveraged diverse expertise for faster issue resolution.

COLLABORATION AND COMMUNICATION

- Daily Standups & Agile Workflow: Used Discord for real-time communication and task tracking.

OWNERSHIP AND ACCOUNTABILITY

- Task Ownership: Team members took responsibility for specific modules
- Shared Responsibility: Team embraced shared accountability for deadlines and goals.
- Feature Ownership: Developers owned key features (e.g., leaderboard, virus simulation).

RETROSPECTIVE

WHAT WORKED AND WHAT DIDN'T

Ideaboardz

What Worked:

- Jira Kanban Boards: Streamlined task tracking.
- Feature Ownership: Reduced dependencies.
- Standups: Ensured alignment.

What Didn't Work:

- Pair Programming: Created bottlenecks.
- 1-Week Sprints: Limited progress and testing time.
- Scope Creep: Lack of strict prioritization caused challenges in meeting sprint goals.

Takeaway: Leveraging tools like Jira and focusing on feature ownership improved efficiency, while minimizing dependencies can further optimize workflows.

PROJECT DEMO

The "Attack the Virus" project successfully blended education with interactivity, creating an engaging game that raises awareness about the immune system, vaccines, and disease prevention. With interactive quizzes, information cards, avatars, a clinic finder, and the Virus-Breaker mini-game, it ensures a fun and informative user experience.