**Body-Move Challenge Application**

**User Story Cards**

**Group 4**

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1. **User Story: Overweight User**

As an overweight user, I want accessible video and voice-guided home workouts so that I can safely and effectively exercise without the need for a professional fitness trainer.

**Acceptance Criteria:**

Personalized Workout Recommendations: The system must provide personalized workout plans based on the user’s physical condition (e.g., age, weight, health status).

Simple Interaction Interface: Users should be able to start a workout session using simple interactions (e.g., voice commands or a few clicks).

Immediate Feedback: During workouts, the system should offer immediate feedback (e.g., posture correction, words of encouragement) to ensure the correctness and effectiveness of the exercise.

Workout Tracking: The system should be able to track the user's workout progress, including the number of workouts completed, calories burned, and time spent exercising.

Error Handling: If a user cannot perform an action or encounters difficulties during a workout, the system should provide alternative suggestions or show simpler alternative actions.

Health and Safety Tips: Before each workout session, the system should remind users to warm up and prompt them to stretch after exercising to prevent injuries.

Visual Aids: For users needing visual assistance, the system should offer an interface option with large fonts and high contrast, and clearly display the steps of the movement in videos.

Community Support: The system should offer a platform where users can share their progress, experiences, and challenges to receive support and encouragement from the community.

Privacy Protection: Users' health data and workout progress should be securely protected to ensure that only the user can access this information.

1. **User Story: Strength Training Technique Refinement**

As a user seeking to refine my strength training technique, I want an app that analyzes my exercise form and provides detailed feedback, so that I can correct my form, prevent injuries, and maximize the effectiveness of my workouts without the need for in-person coaching.

**Acceptance Criteria:**

Form Analysis via Video Recognition: The app should utilize the smartphone's camera or integrate with external devices to record and analyze the user's exercise form in real-time, using AI to compare it against optimal movement patterns.

Instant Feedback on Form Corrections: After analyzing the exercise form, the system must provide instant, actionable feedback to the user on how to correct their posture, movement speed, and alignment to ensure exercises are performed safely and effectively.

Customized Exercise Modifications: Based on the form analysis, the app should suggest modifications to exercises if persistent form issues are detected, recommending alternative exercises that target the same muscle groups but are easier to perform correctly.

Progressive Difficulty Adjustments: As the user's technique improves, the system should adapt the workout plan to introduce more challenging exercises, ensuring continual progress while maintaining a focus on proper form.

Educational Content on Exercise Science: The app should provide educational material explaining the importance of proper form, including the physiological and biomechanical rationale behind each exercise and common mistakes to avoid.

User Engagement and Motivation: To encourage consistent use and effort, the app should feature a progress tracking system, rewards for achieving technique milestones, and reminders to practice and improve.

Social Sharing and Peer Review: For users who wish, the app could include a feature to share videos of their exercises with a community for peer review, tips, and encouragement, enhancing the learning experience through social engagement.

Safety Tips and Injury Prevention: Before starting any workout, the app should offer safety tips and best practices to prevent injuries, including advice on warm-ups, cool-downs, and the correct use of equipment.

Accessibility and Equipment Flexibility: The app should cater to users with varying levels of access to gym equipment, offering bodyweight alternatives or exercises that can be performed with common household items.

Secure and Private Data Handling: All videos used for form analysis and any personal feedback or health data must be securely stored, with stringent privacy measures in place to protect user information and ensure confidentiality.

1. **User Story: Busy Parent with Young Children**

As a busy parent with young children, I want a selection of quick and easy family-friendly fitness activities, so that I can maintain a healthy lifestyle and engage my children in physical activity without needing extensive planning or resources.

**Acceptance Criteria:**

Family-Centric Workout Plans: The system must provide workout options that are suitable for both adults and children, taking into account the varying fitness levels and interests within a family.

User-Friendly Navigation: The interface should be designed for ease of use, allowing parents to quickly find and initiate fitness activities with minimal steps, possibly using voice commands or touch interactions.

Engagement and Motivation Features: During activities, the system should deliver engaging content and positive reinforcement to keep both adults and children motivated and focused on the activity.

Activity Tracking and Goals: The system should offer functionality to track the family’s fitness activity, including frequency, duration, and types of activities completed, and allow for setting shared fitness goals.

Adaptable Activity Recommendations: If a suggested activity is not feasible or appealing, the system should prompt alternative options that align with the family’s preferences and available space/equipment.

Safety and Preparation Guidelines: Before starting any fitness activity, the system should provide essential safety tips and preparation instructions to prevent injuries and ensure a positive experience for all family members.

Visual and Auditory Guides: To accommodate families with varying needs, the system should include options for visual demonstrations of activities, as well as auditory descriptions to guide users through each exercise.

Community Engagement: The system should feature a platform where families can share their experiences, challenges, and achievements, fostering a sense of community and support among users with similar goals.

Privacy Assurance: The system must securely handle and protect all user data, including activity tracking and personal information, ensuring that privacy is respected and information is accessible only to the user.

1. **User Story: Busy Working Paren**t

As a busy working parent, I want a convenient and effective at-home fitness app, so that I can maintain my health and well-being despite my hectic schedule.

**Acceptance Criteria:**

Personalized Fitness Plans: The system should offer personalized fitness plans tailored to the user's schedule, fitness level, and health goals. Users should be able to input their available time slots, preferred workout intensity, and any physical limitations to receive customized workout recommendations.

User-Friendly Interface: The app should feature a simple and intuitive interface that allows users to navigate easily and start workouts with minimal effort. Users should be able to access the app from various devices, including smartphones, tablets, and smart TVs, for flexibility in their workout routines.

Real-Time Feedback: During workouts, the app should provide real-time feedback on form and technique to ensure users perform exercises correctly and safely. Users should receive verbal cues and visual prompts to correct posture and maintain proper alignment throughout the workout.

Progress Tracking: The app should track users' workout progress, including completed sessions, calories burned, and fitness milestones achieved. Users should have access to visual representations of their progress, such as charts and graphs, to monitor their fitness journey over time.

Adaptive Workouts: If a user encounters difficulty or fatigue during a workout, the app should offer adaptive exercises or modifications to accommodate their needs. Users should have the option to adjust workout intensity and duration based on their energy levels and time constraints.

Warm-Up and Cool-Down Guidance: Before each workout session, the app should provide warm-up exercises to prepare the body for physical activity and reduce the risk of injury. After workouts, users should be guided through cool-down stretches to aid in muscle recovery and promote flexibility.

Accessibility Features: The app should include accessibility features such as text-to-speech capabilities, suitable font sizes, and color contrast options for users with visual or hearing impairments. Video demonstrations of exercises should include captions and audio descriptions to ensure accessibility for all users.

Community Support: Users should have the opportunity to connect with a supportive community of fellow fitness enthusiasts within the app. The app should facilitate group challenges, virtual workout classes, and peer-to-peer encouragement to foster a sense of community and accountability.

Privacy and Security: User data, including personal information and workout history, should be securely encrypted and protected against unauthorized access. The app should adhere to strict privacy policies and regulations to ensure user confidentiality and data security.

1. **User Story: User with Limited Mobility**

As a user with limited mobility, I want guided exercise routines tailored for low-impact movements, so that I can improve my physical health and mobility safely from home without needing a professional physiotherapist.

**Acceptance Criteria:**

Customized Exercise Plans: The system must offer exercise routines specifically designed for individuals with limited mobility, considering factors such as mobility level, pain points, and health goals.

Intuitive Interaction Design: Users must be able to easily navigate and initiate exercise routines through straightforward interactions, such as touch gestures or simple voice commands.

Real-time Support: While engaging in exercises, users should receive real-time feedback, including modifications for movements to accommodate pain or restricted mobility and motivational support to promote consistency and effort.

Progress Monitoring: The system should track the user's exercise achievements, including sessions completed, improvements in mobility, and overall health benefits observed over time.

Adaptive Suggestions: In case a user finds an exercise too challenging or experiences discomfort, the system should offer alternative exercises that target the same area but with reduced intensity or complexity.

Preventative Care Advice: Each exercise session should start with precautionary advice tailored to prevent strain or injury, emphasizing the importance of warming up and cooling down properly.

Accessible Interface Options: Considering users with visual impairments, the system should have settings for text size adjustments, high-contrast modes, and clear, understandable visual guides for each exercise.

Peer Support Platform: There should be a feature for users to connect, share their progress, seek advice, and offer encouragement within a community of individuals facing similar mobility challenges.

Data Security: All personal health information and progress data collected by the system must be securely stored and encrypted, ensuring that user privacy is maintained and data is accessible only by the user.

1. **Model Design for Fitness Movement Recognition**

**Acceptance Criteria:**

User-Friendly Interface: The application should provide a user-friendly interface with options to upload pre-recorded fitness movement videos or record videos directly within the application.

Video Analysis and Recognition: Upon uploading or recording a video, the application should promptly analyze and recognize the fitness movements depicted in the video.

Utilization of Models: The application should utilize KNN, MediaPipe, and OpenCV models to accurately identify fitness movements from the provided videos.

High Accuracy Rate: The recognition process should have a high accuracy rate, ensuring that common fitness movements such as squats, push-ups, lunges, etc., are correctly identified.

Feedback on Recognition Failure: If the application fails to recognize a fitness movement, it should provide clear feedback to the user, suggesting potential improvements or adjustments.

Movement Review and Statistics: Users should have the option to review the recognized movements along with relevant statistics such as repetitions, duration, and form quality.

Compatibility: The application should be capable of handling various video resolutions and formats commonly used by fitness enthusiasts.

Customizable Workouts: Users should have the ability to customize their workout routines, selecting specific movements they want to track and monitor.

Privacy and Security: The application should maintain user privacy and security by ensuring that uploaded videos are not stored or shared without explicit consent.

Intuitive UI: The UI should be intuitive and responsive, providing smooth navigation and a seamless user experience.

Cross-Platform Compatibility: The application should be compatible with both mobile and desktop devices, ensuring accessibility across different platforms.

Documentation and Support: Adequate documentation and support resources should be provided to assist users in understanding how to use the application effectively.