- **Hackathon Project Phases Template** for the **Real-time fitness Adjustments App** project.

Hackathon Project Phases Template

Project Title:

Real fit.

Team Name:

TEAM ASH.

Team Members:

- ASMITHA.E
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- AKSHAYA.A
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Phase-1: Brainstorming & Ideation

Objective:

The objective of this phase is to generate innovative ideas and define the core features of the real-time fitness system using LLaMA.

Key Points:

1. Data Collection:

Wearables and IoT Devices: Sensors like heart rate monitors, step trackers, GPS systems, and accelerometers can collect real-time data on the user's physical activity, health metrics, and performance.

User Inputs: The system could also take manual inputs from the user, such as feelings of fatigue, hunger, or emotional state.
Environmental Data: External factors like weather or altitude, which may affect physical performance, could also be gathered.

2. AI Analysis and

Validation and Verification:

Ensure that the requirements align with business goals and stakeholders' needs. The validation ensures they are feasible and realistic, while verification checks whether the delivered product meets these requirements.

Phase-3: Project Design

Objective:

The objective of this phase is to design the architecture and system components for the real-time fitness system using LLaMA.

Key Points:

1.key features:

✅ Real-Time Adjustments: AI adapts workouts based on fatigue, performance, and biometrics.

✅ Personalized Training: Tailors plans to user goals (e.g., weight loss, strength, endurance).

✅ Multimodal Input Processing: Integrates data from wearables, cameras, or manual input.

✅ Natural Language Coaching: AI-generated verbal or text coaching during workouts.

✅ Progress Tracking: AI monitors improvements and suggests modifications.

2. System Architecture:

Input Sources:

Wearables (Apple Watch, Fitbit, Garmin, etc.) – Heart rate, motion, calories burned.

Camera-based Computer Vision (e.g., OpenPose, MediaPipe) – Posture analysis.

User Input – Manual feedback on exercise difficulty or comfort.

3.Processing Layer:

LLaMA 3 AI Model – Processes user input and generates personalized recommendations.

Machine Learning Algorithms – Predicts fatigue, optimizes workout intensity.

Cloud/Edge AI Processing – Low-latency analysis for real-time feedback.

4.Output Layer:

Real-time Adjustments – AI-modified exercise recommendations.

Voice/Text Coaching – Guidance on performance and motivation.

Visual Analytics Dashboard – Progress tracking & insights.

Phase-4: Project Planning (Agile Methodologies)

Objective:

The objective of this phase is to plan the development and delivery of the real-time fitness system using Agile methodologies. This involves defining the project's scope, creating a roadmap, organizing tasks into sprints, and ensuring continuous iteration, feedback, and collaboration throughout the project lifecycle.

Sprint Planning with Priorities

Sprint 1: Research & System Architecture (High Priority)

Goals:

✅ Define core system requirements
✅ Research AI model feasibility (LLaMA 3, wearable APIs, CV models)
✅ Plan tech stack, database schema, and API design

Tasks & Priorities:

AI Model Selection & Training Feasibility (High)
Wearable API Research (Google Fit, Apple Health, Garmin, etc.) (High)
Computer Vision Research (MediaPipe, OpenPose, etc.) (Medium)
Database Schema Design (High)
Backend Architecture Definition (High)

Sprint 2: MVP Backend & Data Pipeline (High Priority)

Goals:

✅ Develop basic backend with user authentication
✅ Implement API connections for wearables
✅ Set up database and data storage

Tasks & Priorities:

User Authentication (OAuth, JWT, Firebase Auth) (High)
Wearable Data Collection API (High)
Database Integration (PostgreSQL / Firebase Firestore) (High)
Basic AI Data Processing Pipeline (Medium)
Testing API calls and latency checks (Medium)

Sprint 3: AI Model Integration & Real-Time Adjustments (High Priority)

Goals:

✅ Integrate LLaMA 3 for natural language coaching
✅ Build an AI model for workout intensity adjustments
✅ Implement real-time decision-making logic

Tasks & Priorities:
LLaMA 3 API Integration for Personalized Coaching (High)

Develop Workout Adjustment Algorithm (Fatigue, HR, Form) (High)
Formulate Rule-Based Real-Time Modifications (Medium)
Develop Basic Feedback Mechanism (User Ratings for AI) (Medium)
Prototype AI Recommendations in Console/Logs (Low)

Phase-5: Project Development

Objective:

The objective of the development phase is to implement the system based on the design and planning established earlier, ensuring that it meets all functional, non-functional, and technical requirements while adhering to Agile principles. This phase involves actual coding, integration, testing, and deployment of features, ensuring continuous progress with iterative improvements.

Key Points:

1.Developement roadmap(Agile Approach):

Methodology: Agile with 2-week sprints

Total Duration: ~4-6 months for MVP

2. Research & Planning:

✅ Finalize feature list, tech stack, and architecture

✅ Identify data sources (wearables, cameras, user input)

✅ Develop project timeline and define sprint deliverables

3. Backend & AI Infrastructure:

✅ Set up cloud backend (AWS/Firebase) & database (PostgreSQL/Firestore)

✅ Integrate wearable APIs (Google Fit, Apple Health, Garmin)

✅ Develop AI pipeline with LLaMA 3 for fitness coaching

4. Real-Time AI Workout Adjustments:

✅ Implement AI logic for adjusting workout intensity, rest periods, and difficulty

✅ Build NLP model to provide real-time coaching responses

✅ Test AI-generated workout plans based on biometric & user feedback

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Phase-6: Functional & Performance Testing

Objective:

The objective of this phase is to validate that the real-time fitness system meets its functional and performance requirements by executing comprehensive testing strategies. This will ensure that the system operates correctly, provides accurate results, and performs efficiently under real-world conditions.

Final Submission

1. **Project Report Based on the templates**
2. **Demo Video (3-5 Minutes)**
3. **GitHub/Code Repository Link**
4. **Presentation**