**UNIVERSITY OF HUDDERSFIELD**

**DEPARTMENT OF COMPUTER SCIENCE**



**PROJECT DOCUMENTATION**

**MODULE: Team Project**

**PROJECT: Fitness Exercises Recommender Website - Work.it**

**UNDER THE GUIDANCE OF**

Mr. Jim Woodhead

**TABLE OF CONTENTS**

[I) INTRODUCTION 3](#_Toc158979947)

[1) Team Members 3](#_Toc158979948)

[2) Short Introduction 3](#_Toc158979949)

[3) Inspiration and Conceptualization 3](#_Toc158979950)

[II) DEVELOPMENT 6](#_Toc158979951)

[1) Website Features 6](#_Toc158979952)

[2) What does our app look like? 7](#_Toc158979953)

[III: PROJECT MANAGEMENT 9](#_Toc158979954)

[1) Intended Approach 9](#_Toc158979955)

[2) Development Plan 9](#_Toc158979956)

[IV: Bibliography 11](#_Toc158979957)

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# I) INTRODUCTION

## Team Members

**Group 4 – Team 4:**

|  |  |
| --- | --- |
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## Short Introduction

This report details the creation of Work.it.com, a revolutionary fitness app dedicated to delivering personalized workout plans. Through advanced algorithms, the app tailors exercise recommendations to each user's preferences and fitness goals.

The report encompasses the project's development stages, from initial requirements to design implementation, highlighting its commitment to enhancing user fitness experiences.

## Inspiration and Conceptualization

The ideas:

The Exercise Recommender employs an algorithm to process user preferences, offering a curated list of the top 10 exercises that align with their criteria.

With 67% of users being female, the app is designed to cater to a female audience but remains inclusive, emphasizing its primary goal of fitness coaching.

User goals will be stored and utilized to provide personalized exercise recommendations. The app will house a database of exercises linked to videos, allowing users to view specific workouts tailored to their preferences.

Access to the app is free, with in-app purchases available to generate revenue through partnerships with other brands.

The app aims to recommend the 10 most popular exercises, providing users with a well-rounded fitness experience.

Users have the option to customize their own workouts weekly, choosing to incorporate AI on the day or stick to their personalized routine.

Despite its focus on women, the app's colour scheme may not overtly convey this.

Gamified fitness elements, including points, badges, leaderboards, and rewards, aim to motivate and engage users.

Users can compare and compete with friends in workouts or even participate in competitions with individuals matching specific criteria (e.g., 20-year-old males, UK, Huddersfield, University Students).

The app addresses distractions by encouraging focus, offering timed workouts, and enabling alarms to notify users when they've been inactive for too long.

Fitness App Market Size Statistics:

The market for fitness apps is experiencing rapid expansion, presenting significant growth potential. According to Market Research Future, the global fitness app market is expected to reach $14.7 billion by 2026. Revenue within the Health & Fitness Apps segment is projected to reach $1,298 million in 2021, as reported by Statista. According to Statista's projections, the average revenue per user (ARPU) in the Health & Fitness Apps segment is expected to amount to $3.90. North America currently holds the largest share of the fitness app market, followed closely by Asia-Pacific and Europe, as indicated by Market Research Future. Flurry Analytics reports that the fitness app industry has grown by approximately 330% in the last three years.

* Who will use it?
  + The primary audience for the app is female, but it is not exclusively limited to females. Males are also welcome to engage with a program that is specifically tailored to meet their fitness needs.
  + The app caters to individuals who are already motivated to enhance their fitness levels. Additionally, it appeals to those with the motivation for self-improvement, encompassing two main categories: Category 1 consists of individuals who already engage in regular workouts but seek a specific program to further enhance their fitness. Category 2 includes people who currently have minimal workout routines but are determined to improve their physical shape and overall well-being.
* Why is there a need for it?
* We directed our focus primarily towards women, considering their substantial representation, accounting for about 75% of the fitness app market.
* The fitness app industry is on a growth trajectory, gaining traction, particularly since the advent of COVID-19. Our decision to incorporate AI positions us uniquely, providing a cutting-edge advantage by bringing together two thriving sectors—AI and Fitness.
* Revenue model

The global fitness app market is expected to reach $14.7 billion by 2027, growing at a CAGR of 21.6% from 2020 to 2027, according to Allied Market Research. The United States holds the largest share of the fitness app market, accounting for more than 30% of global revenue, as reported by Statista. Over 55% of fitness app revenue comes from in-app purchases and subscriptions, according to Business of Apps. As of 2021, MyFitnessPal was one of the top-grossing health and fitness apps in the U.S., generating around $25.8 million in annual revenue, according to Sensor Tower. The average revenue per user (ARPU) for fitness apps in 2022 is expected to be $20.56, based on Statista's projections. The health and fitness app industry witnessed a 28% year-over-year growth in revenue in 2020, as reported by TechCrunch. During the COVID-19 pandemic, revenue for fitness apps increased by 46% in the first half of 2020, according to Business of Apps. Female users contribute to 67% of the total revenue for health and fitness apps, as indicated by Mobile Marketer. Fitness apps that integrate with wearables see a 15% increase in user engagement and revenue, according to Jabil. Free fitness apps with in-app ads are expected to generate $1.5 billion in advertising revenue by 2025, according to eMarketer.

* What problems are we solving?
* In our exploration of fitness apps and websites, we noticed a scarcity of AI-inclusive platforms. We believe this gap presents an opportunity for us to make a significant impact.
* Our goal is to motivate users by incorporating features that encourage prolonged app usage, minimizing distractions and maintaining a realistic approach to fitness.
* We aim for the app to be easily accessible, emphasizing a simple design to prevent users from deviating from the primary focus of maintaining fitness.

Languages for web development:

* Front-end web development is concerned with what users observe and interact with on a website, involving the following technologies:
* HTML, utilized for creating documents and structuring page layouts.
* CSS, employed for styling text, colors, and layout, ensuring web pages are responsive.
* JavaScript, used to introduce interactivity and dynamism to websites.
* Back-end web development concentrates on the server-side of websites, utilizing technologies such as:
  + Python, employed for data transfer, processing, and communication with databases.
  + PHP, utilized for database connection and renowned for its speed.
* Databases play a vital role in websites, particularly in e-commerce. MySQL, a widely-used SQL-based relational database, is recognized for its efficiency in storing data.

# II) DEVELOPMENT

## Website Features

Main Features:

- When users engage with the application, they will be prompted to input information about their fitness level, exercise preferences, and specific fitness goals.

- Additionally, the application will grant users access to a comprehensive database of exercises, organized by type, body part, and equipment. Each exercise entry will feature detailed instructions, demonstration videos, and information on the specific muscle groups targeted (Gym Exercise Dataset, n.d.).

A screenshot of a computer

Description automatically generated

- Preference Analysis involves users completing a detailed questionnaire to specify their exercise preferences, covering exercise type, target body parts, preferred equipment, and current fitness level. This collected data serves as the foundation for generating personalized recommendations in the future.

-The Work.it algorithm processes user preferences, presenting a curated list of the top 10 exercises that match their specified criteria. The engine continually learns and refines these recommendations based on user feedback and engagement.

-Users have the capability to click on any of the recommended exercises and view an instructional video demonstrating the proper execution of the chosen exercise.

Other Features:

- Users will receive a reminder when attempting to close the website, ensuring they are prompted before exiting to avoid missing important information. The platform will incorporate an account system, allowing users to create accounts, rate exercises based on their personal experiences, and leave comments. This interactive feature is designed to enhance user engagement and facilitate valuable feedback.

-To better serve the female audience, the exercise database will be expanded to include a diverse range of female-oriented exercises, ensuring inclusivity and variety in workout options.

- Alongside exercise-related content, the platform will offer educational resources such as blogs covering topics like nutrition and mental health. This feature aims to provide users with a holistic approach to well-being beyond physical fitness.

## What does our app look like?

The Work.IT app boasts a user-friendly interface, commencing with an interactive AI-driven onboarding experience. Users are prompted to share their preferences, body details, and fitness goals, laying the groundwork for a highly personalized workout journey.

The main header offers a range of options to cater to diverse user needs:

1. Customize Workout: Tailor your workout based on preferences, body details, and goals.
2. Timed Workouts: Engage in time-specific exercise routines for efficient training.
3. Frozen Workout: Ensure commitment with a workout that prevents users from leaving without receiving notifications and reminders.
4. Workout with Others: Collaborate with friends or fellow users for a shared fitness experience.
5. Competitive Charts: Explore charts for competitive fitness, comparing your progress with others.

The default option is a regular workout based on the AI's personalized recommendations, providing a seamless and tailored fitness experience.

Within the workout customization feature, users can specify the type of exercise (strength or cardio), target body parts, preferred equipment, and the desired level of exercise intensity. These details are seamlessly integrated into the database, enriching the application's functionality.

The logo prominently features "Work.IT" with a search bar underneath, highlighting the AI's inclusive role in recommending exercises based on user input.

A neutral colorway is adopted to ensure a universal appeal, catering to users of all genders. The AI's prominence is visually evident, emphasizing its role as the app's central and leading feature.

Latest Trends:

* While analyzing the market, we observed prevalent trends emphasizing simplicity and user-friendly interfaces. In line with this, we opted not to overwhelm our app, choosing quality over quantity by slimming down options to the top 10 exercises, even when having a more extensive database.
* Notably absent in the market was the integration of AI into fitness apps, a rapidly growing trend in various sectors like business and education. Recognizing this gap, we incorporated AI to enhance our understanding of customers, tailoring workouts and exercises to better meet their individual needs.
* Although not implemented at the time of the presentation, we identified several emerging trends in the fitness app landscape:
* Gamified/Competitive Fitness
* Virtual Fitness
* Paid Fitness Apps
* The overarching principle we've adopted is that simplicity is key, aligning with the broader industry emphasis on easy-to-use applications.

# III: PROJECT MANAGEMENT

## Intended Approach

The team will be divided up the team to work on different aspects and technologies of the project. The roles for each team member are as follows:

- Backend Development (SQL, Web Server, Backend Scripts etc): Tyler & Muiz

- AI Development (Python): Tom

- Frontend Development (HTML, CSS, Frontend JS etc): Sulaiman & Fanik

Each member will collaborate with one another by communicating effectively to ensure that each technology will integrate seamlessly with one another.

To Ensure collaboration and effective communication within the team we will be using the following systems:

• Teams – This will be used as a central hub where all team members can contact each other to ask questions and collaborate to ensure that each feature is integrated to a high standard.

• Trello – This will be used to break the project down into smaller tasks that can be assigned to each team member. Comments and notes can be made to each task to flag potential issues (EG function not returning correct value, Backend scripts/database errors, bugs etc)

• Visual Studio Code + GitHub: This will allow each members IDE to be synchronised with each other and allows modifications to code to be reviewed and allows the creation of revisions so that if something goes wrong the code can be reverted to a known good state.

## Development Plan

A screenshot of a calendar

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* + Top Line Tech Requirements (What technologies will be used in the project)
    1. Front End: HTML, CSS and JavaScript
    2. Back End: Maria DB and PHP
    3. AI: Python (Pandas and Scikit-learn)

# IV: Bibliography

Pandit, N. (n.d.). *Gym Exercise Dataset*. Retrieved from Kaggle: https://www.kaggle.com/datasets/niharika41298/gym-exercise-data