PARSHWANATH CHARITABLE TRUST'S
A.P. SHAH INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering
Data Science

AI Fitness Trainer

Student ID	Group Member
21107019	Riya Rajesh Sawant
21107012	Rutuja Patil
21107006	Tanvi Panchal
22207008	Sneha Sabat

Project Guide
Prof. Sheetal Jadhav

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1. Introduction

- Problem Identified :

  Generic workout routines and a lack of tailored advice often lead to inefficient workouts, frustration, and difficulty in achieving their fitness goals. Additionally, without proper monitoring and motivation, users may struggle to maintain a consistent and healthy exercise routine.

- Solution Proposed :

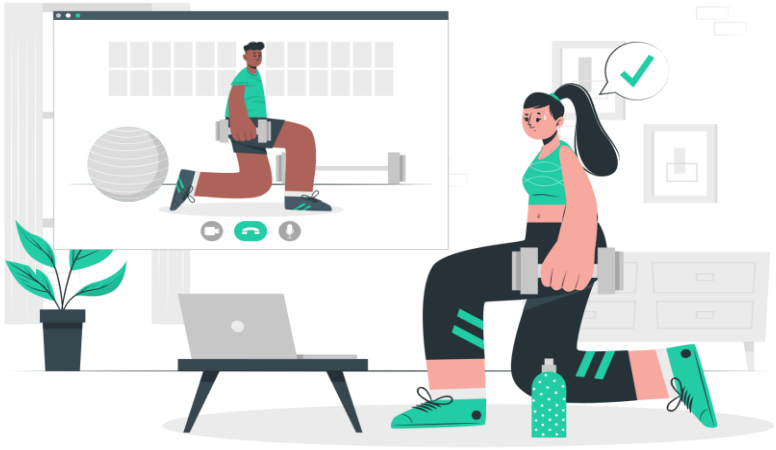
  Our project aims to address this problem by developing an AI fitness trainer that provides personalized workout plans, tracks progress, offers nutritional advice, and motivates users to maintain a healthy and active lifestyle, ensuring efficient and effective fitness routines.

2. Objectives

1. To enhance exercise and nutrition recommendation accuracy
2. To provide personalized fitness guidance and support with the help of Genetic Algorithm
3. To optimize workout plans based on individual goals and preferences
4. To offer tailored nutrition and dietary recommendations using Genetic Algorithm
5. To create a user friendly fitness training platform
6. To promote healthy and active lifestyles among users

3. Scope

1. The project can be applied in various different areas such as fitness centers, home workouts, corporate wellness programs, etc.
2. The users seeking for fitness training along with workout and nutrition plans can utilize this platform.
3. The recommendation engines used in our project can be customizable to be used with other projects or purposes.

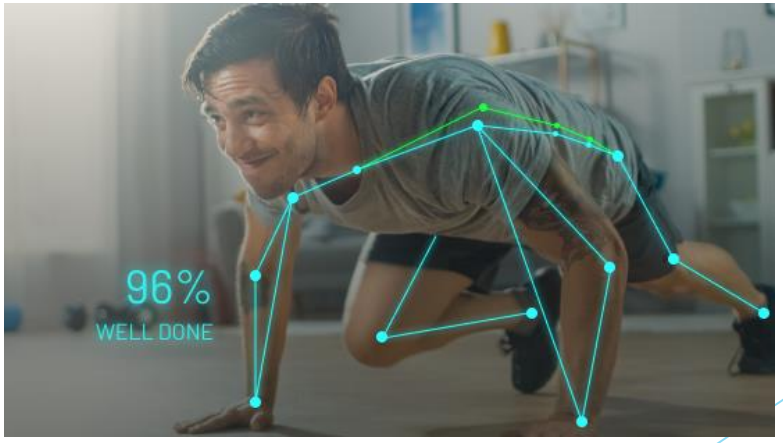


4. Feature /Functionality

1. **Workout Recommendation** – Based on the user's inputs the system will recommend them with a workout plan.
2. **Diet Plan Recommendation** – Based on the user's preferences the system will recommend them with a weekly diet plan.
3. **AI Fitness Trainer** – This is a computerized coach that can guide users through physical fitness routines. It uses computer vision techniques to track the user's movements and provides feedback on form and technique.
4. **BMI Calculator** – Based on the data collected from the user, this feature will generate the body mass index of the user.

5. Outcome of Project

1. User can register and login.
2. Accurate exercises will be suggested to the trainees.
3. Relevant diet plans will be recommended to the users.
4. User can keep track of exercises during a workout.
5. User can calculate the body mass index.



6. Technology Stack

Tools used for the development of AI Fitness Trainer

1. HTML5
2. CSS3
3. Javascript (ES6)
4. Django Framework
5. MediaPipe 0.8.9.1
6. Cvzone 1.5.4
7. Algorithms used – Genetic Algorithm

7. Block Diagram

The Block Diagram is divided into four sections:

1. Recommending Exercises
2. Recommending Diet plans
3. AI Trainer
4. Generating BMI

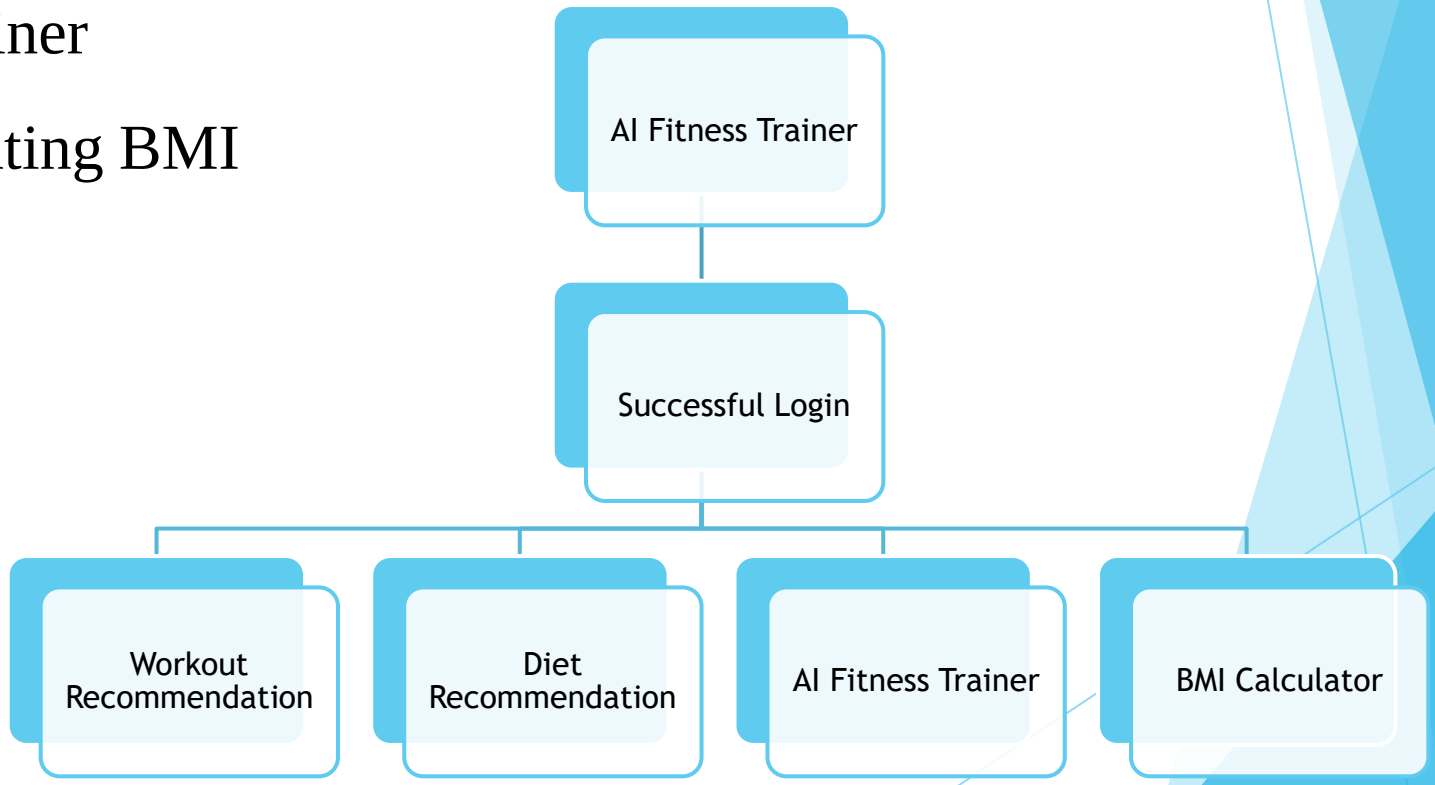


Fig 1. Working of the AI Fitness Trainer

Block Diagram 1: Recommending Exercises

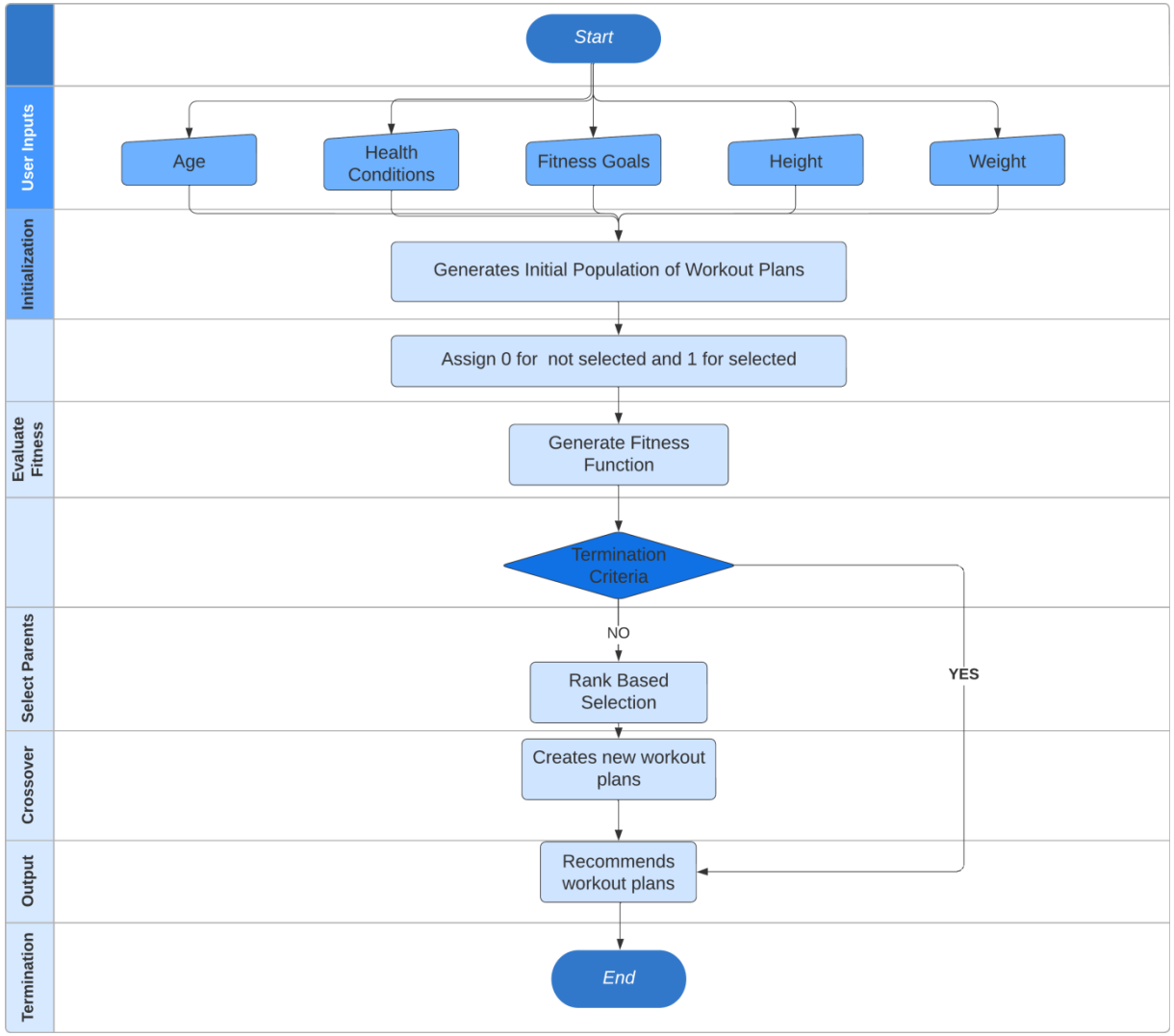


Fig 2. Working of Workout Recommendation Engine

Block Diagram 2: Recommending Diet Plans

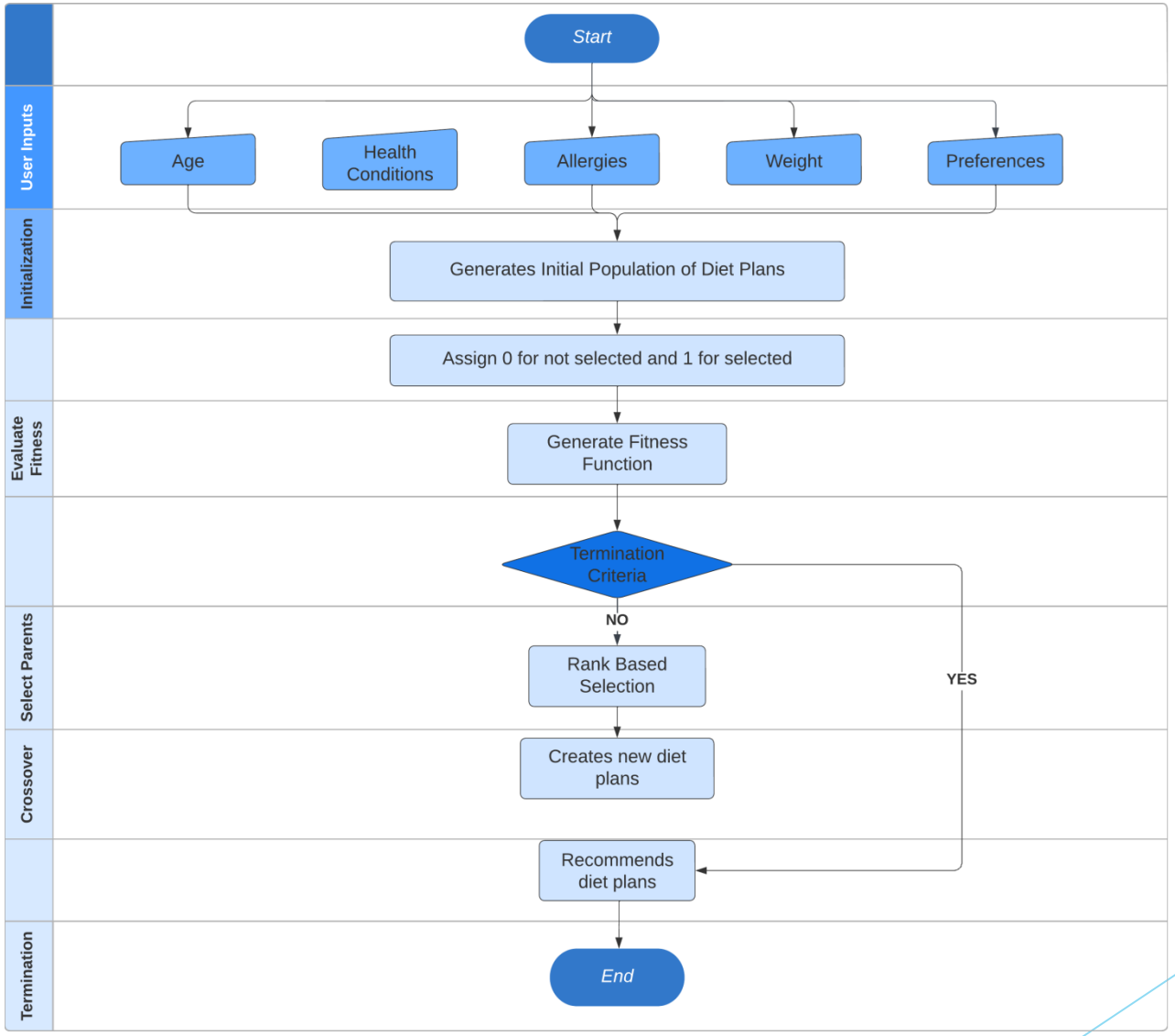


Fig 3. Working of Diet Recommendation Engine

Block Diagram 3: AI Trainer

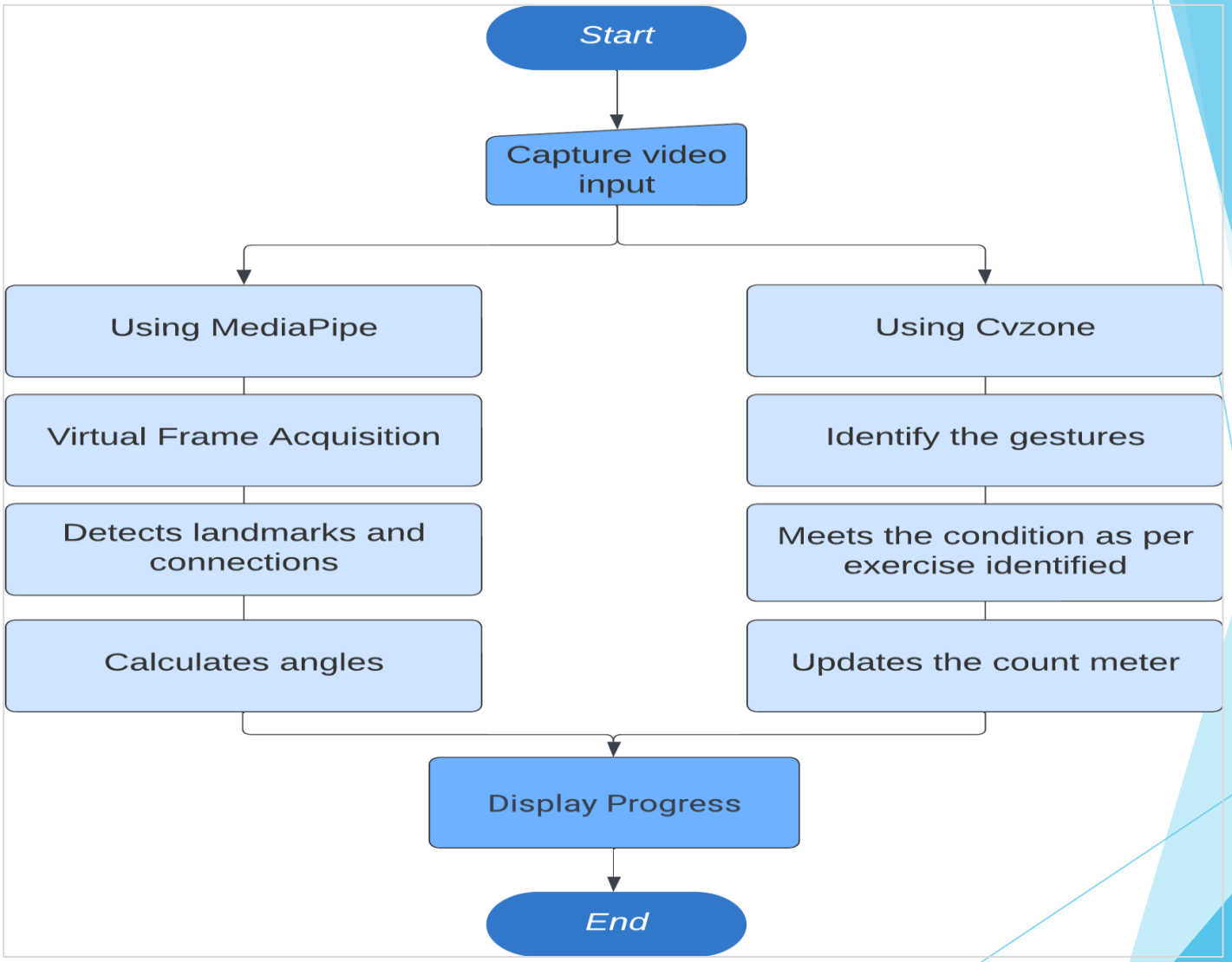


Fig 4. Working of AI Trainer

Block Diagram 4: Generating BMI

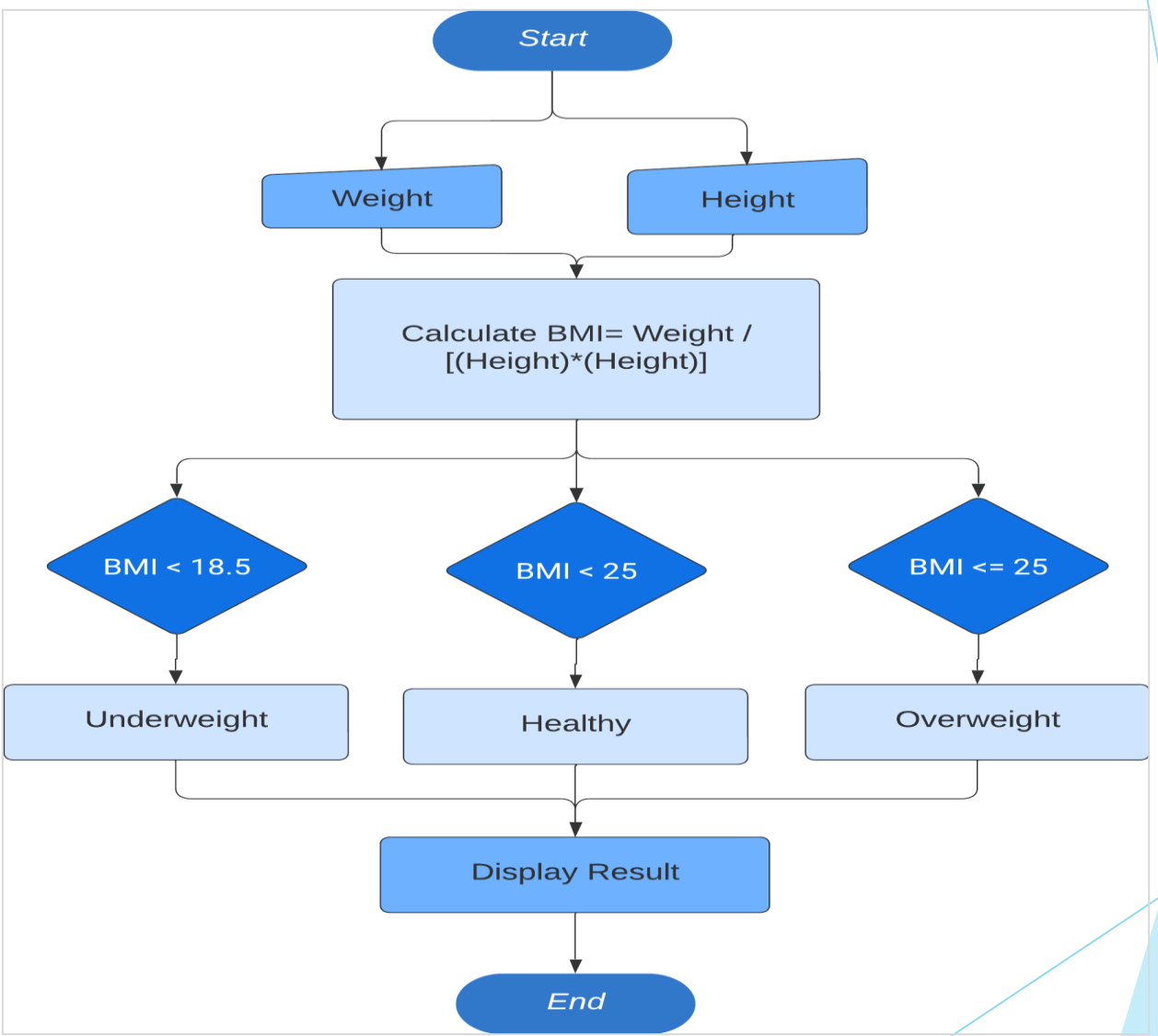


Fig 5. Working of BMI Calculator

Thank You!