ISEL
INSTITUTO SUPERIOR DE ENGENHARIA DE LISBOA

Intelligent Personalized Care

Presented by Group 23:

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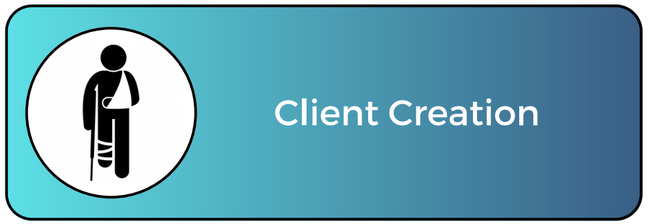
Motivation

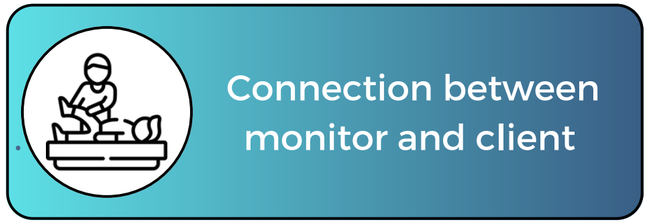
- 20% of the world's population lives with a painful musculoskeletal condition
- Prevent sedentary lifestyle
- Promote physical agility and recovery

Solution

- Android application development to promote physical exercise and rehabilitation
- Provide personalized and effective remote care through AI
- Physiotherapists monitor the patient's progress

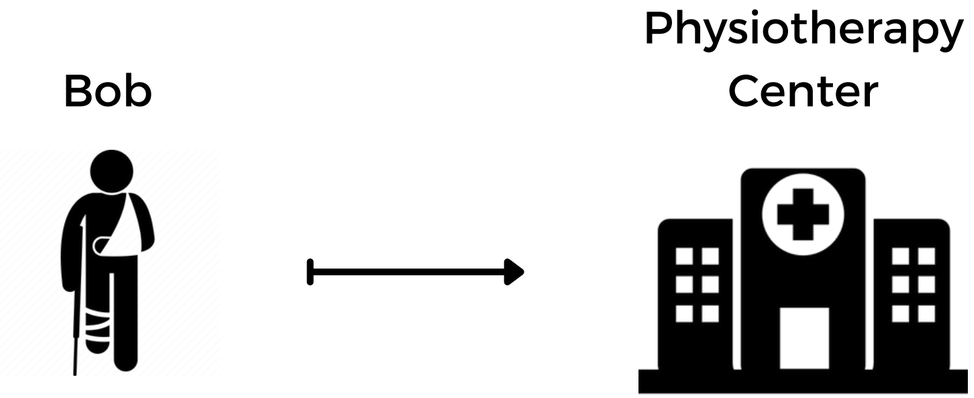
Functionalities Implemented



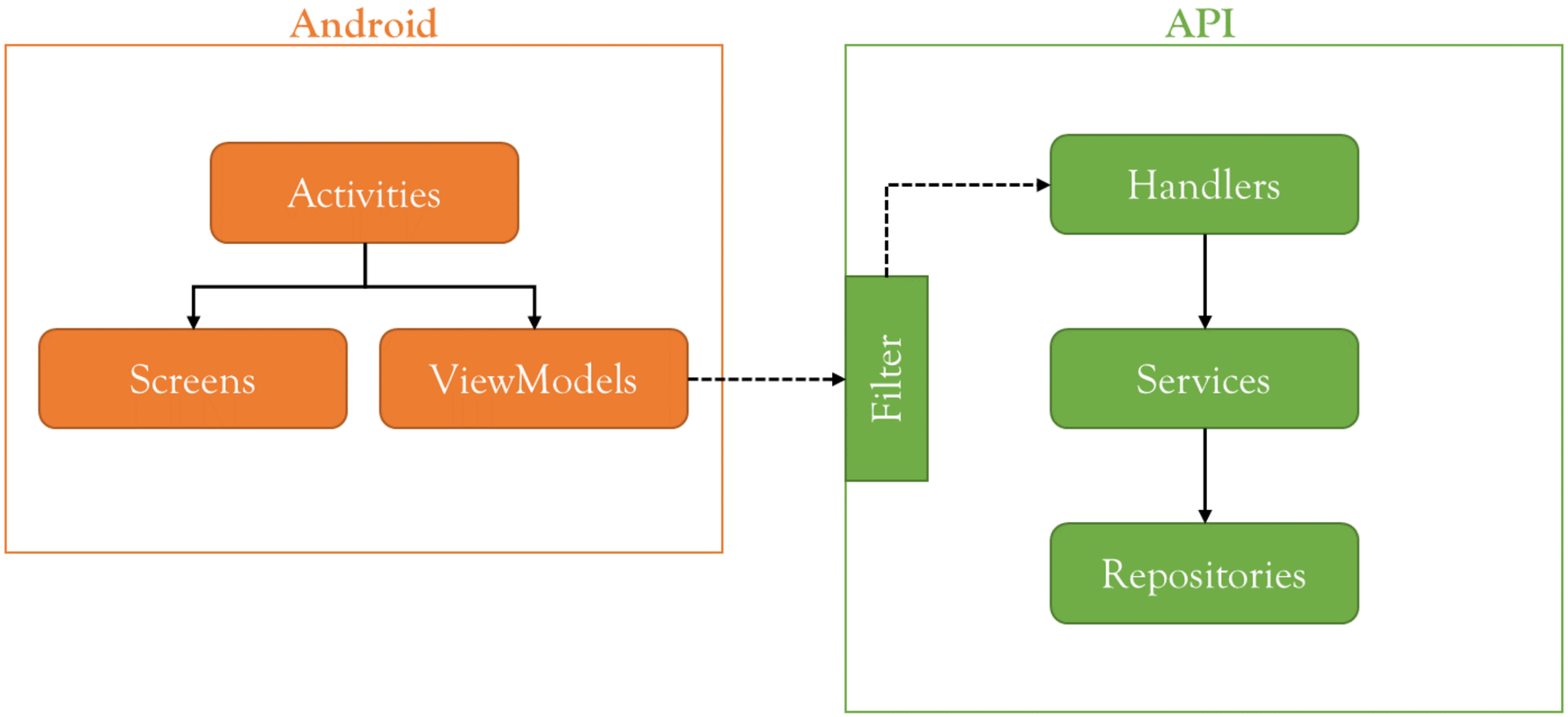


Usage Stories

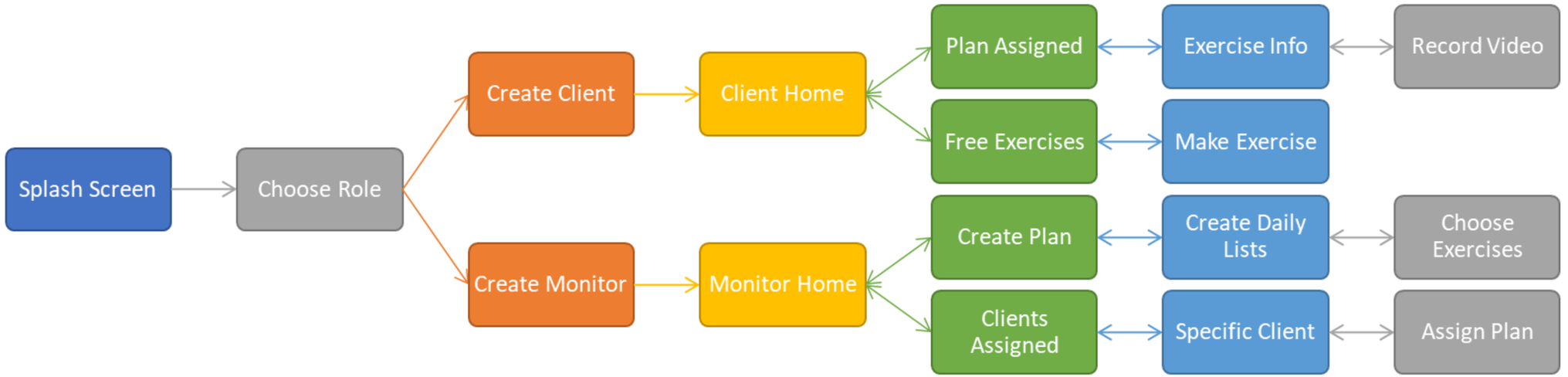
Bob has recently had an operation and the doctor says he needs physical therapy. He contacts a physiotherapy center and after meeting with the physiotherapist they agree to use our application to continue the physiotherapy work at home, **not replacing physical physiotherapy**.



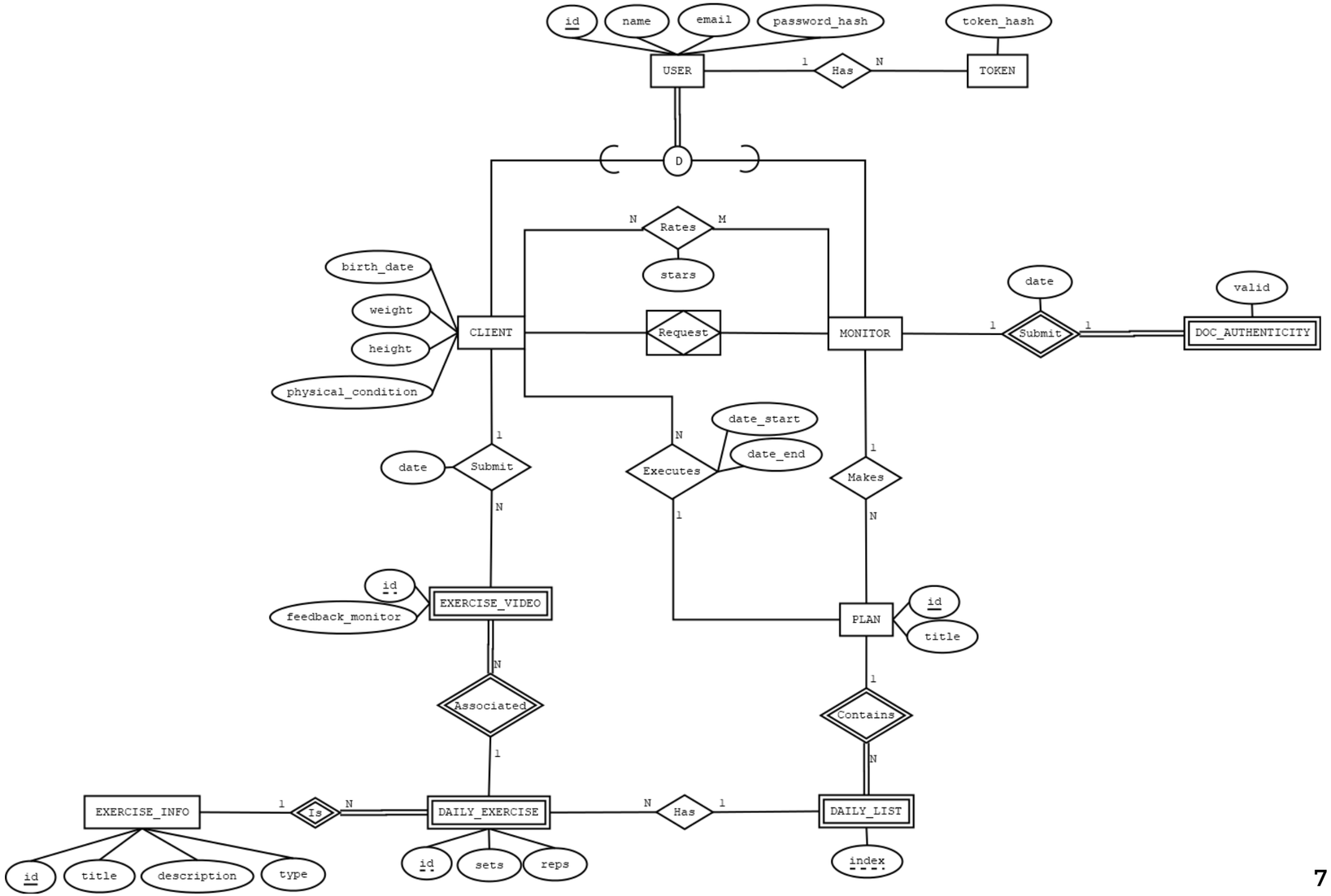
Architecture



Initial App Navigation



Data Model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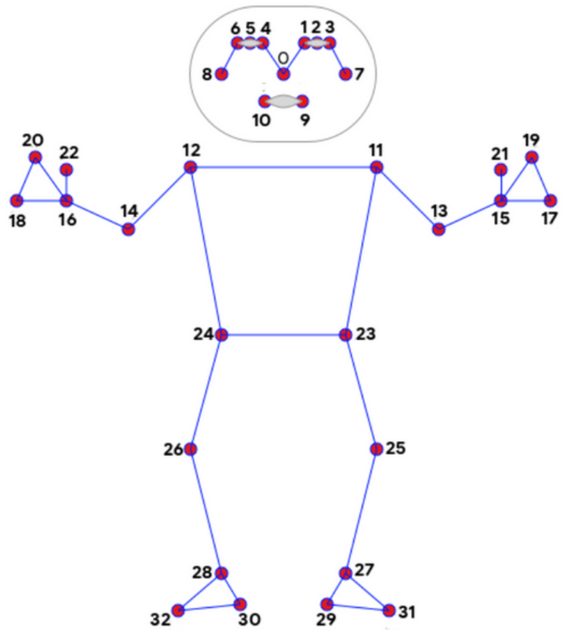
Technologies

Technical Apects ML Kit

- Pose detection algorithm with 33 points on the human body
- Each point has coordinates (x, y, z) to be able to detect the point in space, and to be able to have a live feedback to the user
- Verification of angles for better classification of the specific pose and verification of the exercise itself



Landmarks

0. Nose
1. Left_eye_inner
2. Left_eye
3. Left_eye_outer
4. Right_eye_inner
5. Right_eye
6. Right_eye_outer
7. Left_ear
8. Right_ear
9. Left_mouth
10. Right_mouth
11. Left_shoulder
12. Right_shoulder
13. Left_elbow
14. Right_elbow
15. Left_wrist
16. Right_wrist
17. Left_pinky
18. Right_pinky
19. Left_index
20. Right_index
21. Left_thumb
22. Right_thumb
23. Left_hip
24. Right_hip
25. Left_knee
26. Right_knee
27. Left_ankle
28. Right_ankle
29. Left_heel
30. Right_heel
31. Left_foot_index
32. Right_foot_index


DEMO

We still need to do...

- Monitor makes a daily exercise plan for a specific client
- The client records a video performing the exercises, and will receive live feedback on these exercises from the AI and in the future from the monitor after viewing the video
- Record video executing the exercises with ML Kit Pose Detection
- Apply the ML Kit Pose Detection to two more exercises

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