

GROUP NUMBER 27

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Diabetes Risk Screening and Lifestyle Intervention Tracker

Problem Statement:

The primary objective of this application is to identify individuals who are at high risk of developing diabetes and volunteer them for the Insulin Injections and enrol them in lifestyle intervention programs. The application facilitates initial screenings and categorization of participants based on risk factors such as age, blood pressure, and medical history. It tracks participants' vital signs and health parameters through phased interventions. The effectiveness of the interventions is assessed through detailed weekly monitoring and visualised via performance graphs. Additionally, the application promptly identifies and addresses adverse events to ensure participant safety and assigns participants to go through personal coaching and nutritionist.

Solution and key functionalities:

1. **Volunteer Registration:**
Application registers individuals who want to participate in diabetes risk screening and intervention studies.
2. **Initial Tests:**
Participants undergo prescribed tests, such as fasting blood glucose, random plasma glucose test, oral glucose tolerance test, Glucose Urine Test, and A1c test, conducted by a central lab, which provides results.
3. **Eligibility Decision:**
Based on test results, healthcare professionals determine if the individual qualifies for an insulin injections and followed by lifestyle intervention program
4. **Participant Categorization:**
Eligible participants are categorised based on risk factors such as age, blood pressure, and medical history
5. **Phase-based Intervention:**
Participants enter a phased intervention program (e.g 4-week phases) involving measuring the vital signs for a total of 4 phases.
6. **Weekly Monitoring:**
Vital signs like blood glucose, blood pressure, weight, and physical activity are recorded weekly during each phase.
7. **Progress Tracking:**
Regular lab tests assess improvements in glucose control (e.g., HbA1c reduction) and overall health outcomes.

8. Performance Visualisation:

Graphs display intervention effectiveness:

Improvement in glucose levels across different phases for a participant.

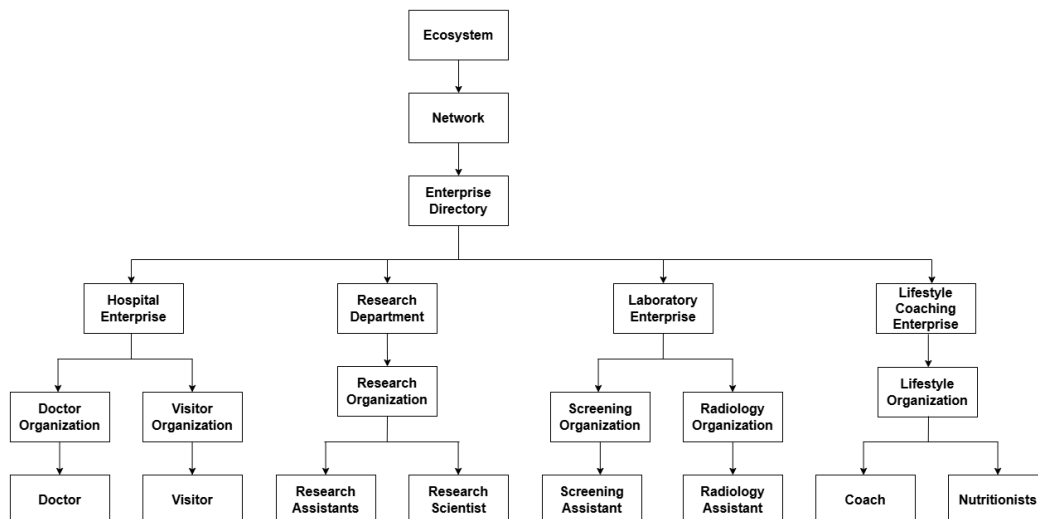
Adverse Events Handling:

Participants with adverse effects like hypoglycemia are flagged, intervention adjusted, and medical care provided immediately like coach and nutritionist.

Entities:

- System
- Network
- Enterprise – Hospital Enterprise, Laboratory Enterprise, Research Department Enterprise, Lifestyle Coaching Enterprise
Organization – Visitor Organization, Screening Organization, Doctor Organization, Research Assistant Organization, Research Scientist Organization, Radiology Organization, Coach Organization
- Roles – Doctor, Visitor, Research assistant, Research Scientist, Nutritionist, Screening Assistant, Radiology Assistant, Program Administrator, Coach

High-level component diagram:



Use Cases:

1. Mass Employee Health Screening:
 - Corporate healthcare department uses an app to screen 500 employees for diabetes risk.
 - Central Laboratory processes bulk tests and uploads results directly into the system.
 - Healthcare Facility assigns risk categories and intervention programs based on mass screening data.
2. Rural Health Camp Management:
 - Mobile healthcare units deploy apps for village diabetes screening camps.
 - Patient Organization coordinates with local healthcare centres for follow-up.
 - Central Laboratory processes samples collected from remote locations and updates the system.
3. University Research Study:
 - The Research Department tracks 1000 participants across different intervention methods.
 - Exercise Program Team and Lifestyle Coaching Unit input data from multiple university centres.
 - Doctor Organization analyses intervention effectiveness across demographic groups.
4. Hospital OPD Integration:
 - Hospital outpatient department uses an app for diabetes risk assessment.
 - The Screening Department processes regular patient flow from multiple departments.
 - Doctor Organization manages intervention programs for identified high-risk patients.
5. Insurance Program Implementation:
 - Health insurance companies use apps to track policyholder wellness programs.
 - Healthcare Facility provides intervention services for insured participants.
 - Central Laboratory coordinates with an insurance-approved diagnostic centre.

Approved Uday Kiran Dasari

Comments: You must satisfy all the deliverables in the end. Clearly define an organization and enterprise and list them properly at the end.