REQUIREMENTS ANALYSIS (FUNCTIONAL ,OPERATIONAL,TECHNICAL)/FLOW CHARTS

DATE	04 NOVEMBER 2023
TEAM ID	NM2023TMIDO2213
PROJECT NAME	BIOMETRIC SECURITY SYSTEM FOR VOTING PLATFORM
MAXIMUM MARK	4 MARKS

Functional Requirements:

1. **User Registration:**
   - Functionality for voters to enroll their biometric data (e.g., fingerprint, facial scan) and personal information into the system.
2. **Biometric Authentication:**
   - Ability to verify the identity of a voter using their registered biometric data during the voting process.
3. **Vote Casting:**
   - A secure interface for voters to cast their votes once authenticated.
4. **Security and Encryption:**
   - Implementation of robust security measures, including data encryption and protection against spoofing.
5. **Audit Trail:**
   - A mechanism to record all actions within the system for auditing and transparency.

Operational Requirements:

1. **Accessibility:**
   - The system should be accessible to all eligible voters, including those with disabilities.
2. **Scalability:**

- The ability to handle a large number of users during elections without performance degradation.
3. **Data Privacy and Compliance:**
   - Compliance with data privacy laws and regulations, with a focus on secure data storage and protection.
4. **Redundancy:**
   - Implementation of backup authentication methods (e.g., PIN) to ensure continuity in case of biometric system failure.

Technical Requirements:

1. **Biometric Data Storage:**
   - Secure storage of biometric data in a database.
2. **Biometric Matching:**
   - The system should be able to perform biometric matching with low false acceptance and rejection rates.
3. **Encryption Mechanisms:**
   - Implementation of strong encryption for data in transit and at rest.
4. **User Interface:**
   - Design and development of user-friendly interfaces for voter registration, authentication, and voting.
5. **Monitoring and Alerting:**
   - Continuous monitoring for security threats, with alerting mechanisms in case of breaches or anomalies.
6. **Integration with Election Systems:**
   - Integration with the broader election management system to ensure accurate vote counting and result dissemination.

FLOW CHART:

```
                    ┌─────────────┐
                    │    start    │
                    └──────┬──────┘
                           │
   ┌──────────────►        ▼
   │              ┌───────────────────┐
   │              │   register voter  │
   │              └─────────┬─────────┘
   │                        │
 No│                        ▼
   │                    ╱──────╲
   │          ◄────────╱   is   ╲
   │                   ╲ voter  ╱
   │                    ╲registered?╱
   │                      ╲────╱
   │                        │ Yes
   │                        ▼
   │              ┌───────────────────┐
   ├──────────►   │    voter login    │
   │              └─────────┬─────────┘
┌──┴───────────┐           │
│ show error   │           ▼
│  message     │       ╱────────╲
└──────┬───────┘      ╱username,  ╲
       │         No  ╱ password    ╲
┌──────┴───────┐ ◄──╲  correct?   ╱
│register error│     ╲───────────╱
│     log      │          │ Yes
└──────────────┘          ▼
               ┌────────────────────────┐
               │  VOTE Local Government │
               └───────────┬────────────┘
                           ▼
               ┌────────────────────────┐
               │     VOTE Governor      │
               └───────────┬────────────┘
                           ▼
                       ╱────────╲
                      ╱  VOTE    ╲      No    ┌──────────────┐
                      ╲successsfull?╲─────────►              │
                       ╲──────────╱                          ▼
                           │ Yes              ┌──────────────────────┐
                           ▼                  │   display system     │
               ┌────────────────────┐        │   errror message     │
               │   save to database │        └──────────┬───────────┘
               └──────────┬─────────┘                   ▼
                          ▼                   ┌──────────────────────┐
               ┌────────────────────┐         │    redirect to       │
               │  update votecount  │         │   voter's profile    │
               └──────────┬─────────┘         └──────────┬───────────┘
                          ▼                              │
               ┌────────────────────┐                   │
               │ show confirmation  │                   │
               └──────────┬─────────┘                   │
                          ▼                              │
                    ┌─────────────┐ ◄───────────────────┘
                    │     end     │
                    └─────────────┘
```