Project Development Phase

Code-Layout, Readability And Reusability

TEAM ID	NM2023TMID04400
PROJECT NAME	BIOMETRIC SECURITY SYSTEM FOR VOTING PLATFORM

ELECTIONS :

- An election is a formal decision-making process by which a population or society chooses an individual to hold a political office.
- Elections have been the usual mechanism by which modern representative democracy operates that predates to as early as the 17th Century.
- Elections are conducted both by public entities such as the government as well as private and business organizations, for example, choosing representatives for the Board of Directors of a company, professional club leadership and even, used in voluntary associations.

Types

- In most democratic political systems, there are several types or categories of elections that are held which corresponds to the different layers of public governance or geographical jurisdiction. Common types of election categories thus include

    - Presidential Elections
    - Parliamentary Elections
    - Governorship Elections
    - Local Government Elections

Considering our given domain, that is, within the university political sphere, there are also various types of elections that are conducted based on several criteria that help in delineating the staff of the university into categories such as Academic or Non – Academic, Senior Staff, Cooperative Union, to mention a little.

VOTING SYSTEMS

There are two (2) categories under which voting systems can be classified, namely:

- Traditional or Paper – Ballot Voting Systems
- Electronic Voting Systems

PAPER-BALLOT VOTING SYSTEMS

- The paper-based voting system can be described as the traditional means of voting that has been in used over the ages.
- It is also the default method of conducting elections in Nigeria as well as other countries around the world.
- It operates by issuing paper ballots to eligible voters who present themselves at the polling unit on the day of the election.
- The voter is authenticated by searching for and ticking his or her name on the voters register for that particular polling unit.
- Indelible ink is used to mark an authenticated voter by dropping the ink on the voter's left thumb fingernail.
- After the close of polls or voting for the election, the election ballot box for the polling unit is opened by the polling officer, the ballots are counted by the various election judges such as election agents and election officials and the total vote results are reported and entered onto the election results sheet which is also required to be signed by all election judges as well as observers present thus giving authenticity to the declared results.

Challenges of Paper-based Voting Systems

LOW RELIABILITY:

- It is easily breached at times due to the multiple avenues that exists for the voters to make error.
- Paper ballots constitute a single point of failure if lost or damaged, as ballots or choices cannot be copied without loss of fidelity.
- It also depends a lot of human judgment to ascertain “Voter intent” and not neglecting the fact that paper is essentially an analogue medium.

POOR SECURITY:

- It can be seen that no checksum or encryption is possible as data must be presented in clear text.
- Paper ballot can thus be manipulated by hand even by the least of technical personnel and cases of Ballot Box stuffing during and after elections are often rampant.
- Voters are often at the mercy of political thugs and security personnel.

HIGH COSTS:

- There are often high cost incurred during the printing of various election materials, purchase of paper-handling equipment as well as the cost needed to store and transport the materials.

VOTER INTIMIDATION:

- There has been cases of harassment of voters during elections, voter coercion and issues of ballot counting discrepancies.

QUEUEING:

- In cases of high voter turnout, there is usually a high probability that queues would be formed by voters often subject to the unpredictable weather conditions such as rains or scorching sun.

ELECTRONIC VOTING SYSTEMS

- The Council of Europe recommendations defined electronic voting (e-Voting) as “the use of electronic means in at least the casting of the vote” (Krimmer, et al., 2007).
- Electronic voting is a term encompassing several different types of voting, embracing both electronic means of casting a vote and electronic means of counting votes.
- Electronic voting systems are complex distributed systems, whose components range from general-purpose PCs to optical scanners and touch-screen devices, each running some combination of commercial off-the-shelf components, proprietary firmware, or full-fledged operating systems.

Up to now there are so many properties have been proposed to make the e-Voting secure process, among them some are the below given must be satisfied.

1.Eligibility:

- Only eligible voters are permitted to cast their ballots.

2. Privacy:

- There is no association between voter's identification and a marked ballot.

3. Uniqueness:

- No voter can cast his ballot more than once.

4. Completeness:

- No one can forge a valid ballot and a voter's ballot cannot be altered, the valid ballots are counted correctly.

5. Fairness:

- No one can falsity the result of voting.

6. Verifiability:

- Voters can verify that their ballots are counted correctly.

7. Uncoerciability:

- No voter can prove what he voted to others to prevent bribery.

8. Efficiency:

- The computations can be performed within a reasonable amount of time.

9. Mobility:

- The voter can vote anytime and anywhere through internet.