**CHAPTER ONE – INTRODUCTION**

* 1. **BACKGROUND OF STUDY**

Abraham Lincoln, the 16th president of the United States of America, defined democracy as the government of the people, by the people and for the people. Basically, it is a form of government where by people in a community, state or country have equal right and opportunity to govern or be a member of the government. The rules are to be selected by the ruled. The term “people” generally does not mean all categories of men are allowed to participate in the affairs of the government. In Nigeria and US for instance, only citizens who are 18 years and above are eligible to participate [1].

Elections make a rudimentary contribution to effectively practice direct democracy. Elections are very paramount to democracy because they essentially express citizens’ participation in the democratic process. During elections, people vote for the candidates they believe are the best fit for the positions which in turn can impact the entire society. Voting is among our fundamental domestic responsibilities and important civic responsibilities. Without free and open elections, democracy would not exist [1].

An electoral system or a voting system defines the rules by which the choices or preferences of voters are collected, tallied, aggregated and collectively interpreted to obtain the results of an election [2]. There are several types of electoral systems practiced in different countries in the world. A voter can be allowed to vote for one candidate or predefined list of preferred candidates. Consequently, collation may involve basic count of the number of votes or a more complex procedure of multiple rounds of counting where by single or multiple winners are being declared winner. In a **first-past-the-post (FPTP)** system, each voter can vote for one candidate and the single candidate with the highest percentage of votes win. It is also known as **simple plurality**. This is used in Nigeria, India, and Canada amongst other countries [3]. In an **approval voting system**, people are allowed to vote for more than one candidate and the candidate with the highest number of votes win. This is used by the Institute for Operations Research and the American Statistical Association. Other forms of electoral system used in the world include **two-round system (TRS), contingent vote system and exhaustive ballot system** [3].

There are different ways in which people vote around the world. Electronic voting also known as e-voting is a type of voting in which votes are cast and counted by electronic voting machines located at polling booths or by devices connected to the internet. Estonia is the only country in the world where people have voted online in the national elections in 2005 [4]. This is known as **Internet voting or remote e-voting**. Brazil in 2002 was the first country in the world where elections were fully conducted electronically by electronic voting machines. It turned out successful surprisingly [5]. Some states in the United States of America also use electronic voting systems to conduct their elections [7]. Somalia, an African country was the first in the world to use iris scanner technology as biometric to conduct their elections in 2017[6]. Other countries such as Nigeria use the manual system which is the good old paper ballot system where collation is done by simply counting the number of votes.

* 1. **STATEMENT OF THE PROBLEM**

Elections should reflect the will of the people but that has not been the situation in Nigeria and other countries where the manual ballot system are used. For instance, the elections conducted in Nigeria is full of irregularities which are associated with the system such as multiple voting by a single person, voting by non-eligible voters such as under aged in addition to improper conduct such as stealing ballot boxes and slow collation of results[8]. Many papers have proposed the use of online or internet voting systems such as [9, 10]. The security issues accompanied with this type of voting system such as being susceptible to hacking was addressed by [11]. On account of this, internet voting can undermine the confidence of citizens in the whole electoral process if not meticulously planned.

These issues lead to the challenge of finding secure and credible voting systems that can be used to conduct free and fair elections.

* 1. **AIM/OBJECTIVES OF THE STUDY**

The aim of this project is to design and construct a real time fingerprint based electronic voting system using arduino to reduce rigging of elections and make collation of results faster.

The objectives include:

* Construction of the electronic voting system with arduino.
* Development and setting up of the API/server that interacts with the database
* Development of an android mobile application where live results can be viewed in real time
  1. **SIGNIFICANCE OF THE STUDY**

In a society where misconduct in elections is the order of the day, there is a dire need of a credible and reliable voting system to ensure correctness, coherence, consistency, security and transparency of an election process.

Time is the only nontangible thing that flies. Time is life and life is time which is why it’s called lifetime. There’s also a pressing need for a system that can reduce time and in general cost of the entire election process.

* 1. **SCOPE OF THE STUDY**

This project work focuses on designing a real time finger print based electronic voting system for a localized area or an institution. First-past-the-post or simple plurality electoral system is also used whereby voters can vote for only one candidate. The project is also limited to 500 registered voters per polling unit.

* 1. **REPORT OUTLINE**

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