

Workshop on Software Development for Crime Reporting in Nigeria

@

University of Ilorin, Nigeria.

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By Semiu Amao



About Semiu



He is a Multidiscipline researcher with passion for innovation



He is a member of Intel Software Innovator



Academically, he had:

Liverpool, England

B. Engr. (Elect/Elect) from University of Ado-Ekiti, Nigeria

OND (Computer Science) from Offa



He had many professional Certification which include:

Microsoft – Azure DevOps Expert, Azure Developer Associate

Cisco – CCNA, CCIE Collaboration (Written), Business Value Analyst

ISO 9001:2015



Currently working in Vodacom Nigeria as a Network Engineering Specialist



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The owner of “bigsemite” brand

Digital Crime Reporting



WHAT PROBLEM ARE WE SOLVING?



HOW WILL THE RESULT LOOK LIKE?



WHAT TOOLS AND METHODS ARE WE USING?



Current Problem

Expected Result



Tools

Cloud for storage of information [Google Cloud]

Frontend App for saving the data to cloud [JavaScript/CSS/HTML]

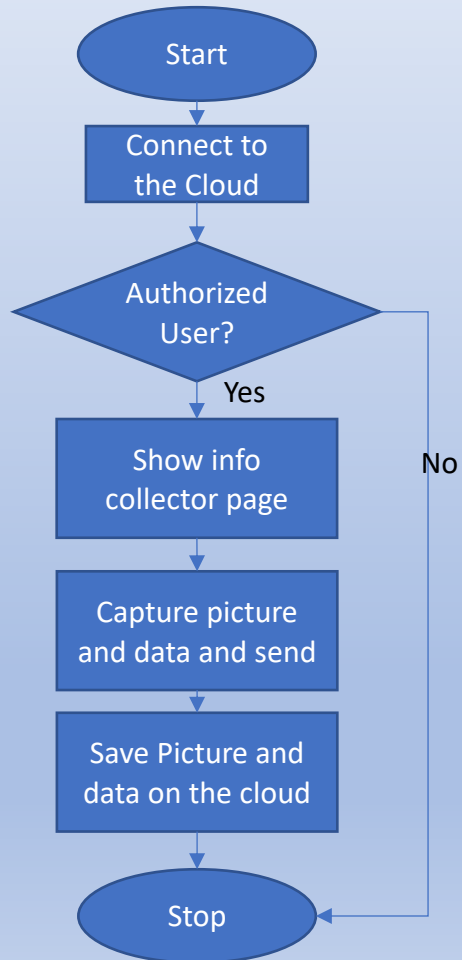
Backend App for retrieving & manipulating data [JavaScript]

Intel AI Technology (Intel UP2 AI Vision){Android Phone, Apple Phone}

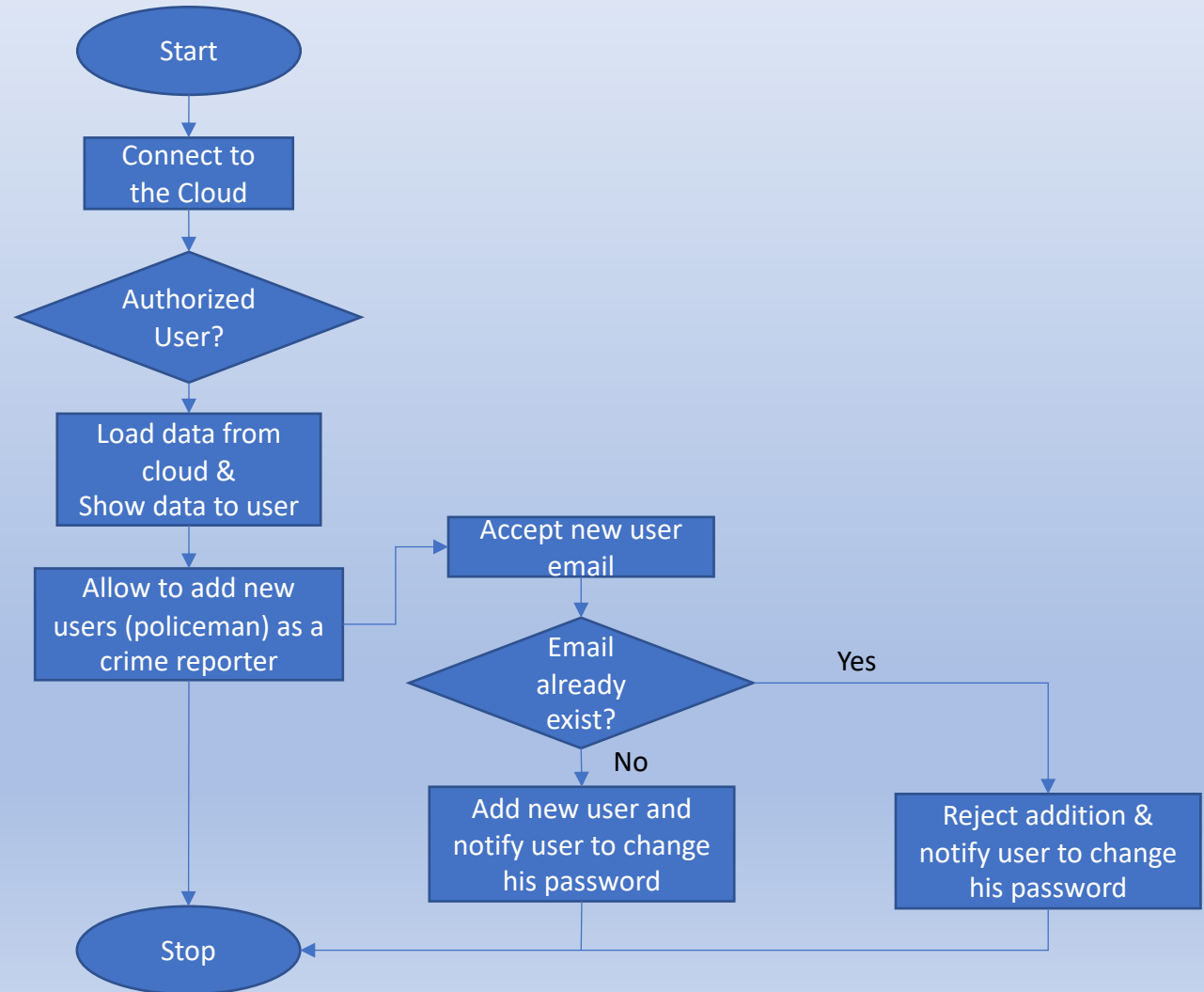
Native Application for the Device (C++, Python) {Java, Swift}

Methods / Algorithm

- Reporting



- Retrieving



Reporting

Coding – Connecting with Google Cloud

- Required API: <https://www.gstatic.com/firebasejs/7.2.0/firebase.js>
- Usage inside html:

```
admin > <> index.html > html > head
2 <html>
3 <head>
4 <title>Crime Admin</title>
5 <meta name="viewport" content="initial-scale=1.0, user-scalable=no"/>
6 <script src="https://www.gstatic.com/firebasejs/7.2.0/firebase.js"></script>
7
```

- Connection using JavaScript:

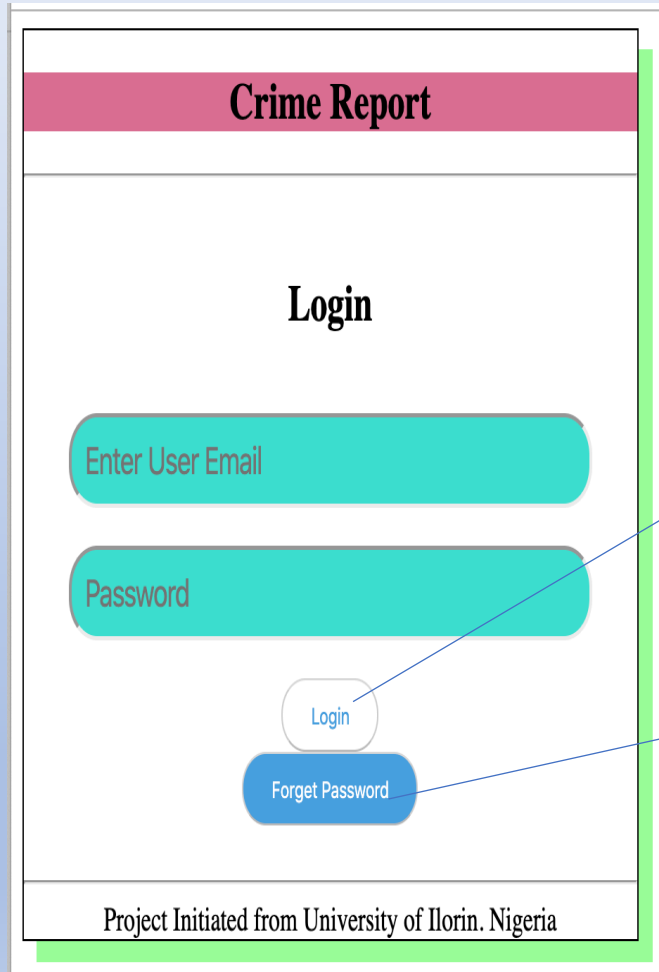
```
var config = {
  apiKey: "API-KEY",
  authDomain: "offencekeeper.firebaseio.com",
  databaseURL: "https://offencekeeper.firebaseio.com",
  projectId: "offencekeeper",
  storageBucket: "offencekeeper.appspot.com",
  messagingSenderId: "MSG-ID",
  appId: "APP_ID",
  measurementId: "Measure-ID"
};
var fb = firebase.initializeApp(config);
firebase.analytics();
```

Further study

Ref: <https://firebase.google.com/docs/web/setup/?authuser=0>

Reporting Coding - User Authorization

User Interface



The user interface is titled "Crime Report" and features a "Login" section. It includes two input fields: "Enter User Email" and "Password". Below these fields are two buttons: "Login" and "Forget Password". The footer text reads "Project Initiated from University of Ilorin, Nigeria".

```
function login1(){
    eml = username.value;
    passwd = pswd.value;
    msgl.style.display ="block";

    firebase.auth().signInWithEmailAndPassword(eml,passwd).then(function(user){
        report.style.display="block";
        logger.style.display = "none";
    }).catch(function(error){
        alert (error.message);
        msgl.style.display ="none";
    });
};
```

```
//forget password
function forget(){
    eml = username.value;
    var aut = firebase.auth();
    msgl.style.display ="block";
    aut.sendPasswordResetEmail(eml).then(function(){
        msgl.style.color ="blue";
        msgl.innerHTML = "Check Your Email for Password reset";
    }).catch(function(error){
        alert (error.message);
    });
};
```


Further study

Ref: <https://firebase.google.com/docs/auth/web/start?authuser=0>

Reporting Coding – Data Collection Page

Crime Report

Click this button to add Picture as Evidence



Vehicle Plate Number

Crime Location

Crime Detail here:

Driver Name

Driver License ID

Submit

Clear

Project Initiated from University of Ilorin, Nigeria

html

```
<input type="file" id="photo" accept="image/*" onchange="showImg(this)" hidden></input>
Click this button to add Picture as Evidence<br/>
<button onclick="takePhoto()"></button>
```

JS

```
//trigger the hidden file input
function takePhoto(){
    photo.click();
}

//take picture from file input
function showImg(foto){
    globalPic = foto.files[0];
    any
    pic.src =window.URL.createObjectURL(globalPic);
}
```

```
function saveCrime(){
    //Take values from screen
    carN = carNumber.value;
    crimeloc = crimeLocation.value;
    detail = crime.value;
    drvName = driverName.value;
    drvLic = driverLic.value;
    //get today's date and time
    dt = new Date();
    dt = dt.toISOString();

    //Vehicle number is compulsory
    if (carN != ""){
        //check if there's any picture taken and save it first
        if (globalPic != null){
            savePicture();
        }
    }else{
        alert ("Vehicle Number is missing");
    }
}
```

```
//firstly save picture into the storage bucket and get the url
function savePicture(){
    var stor = firebase.storage();
    var storeRef = stor.ref();

    var storeImage = storeRef.child('offender/' + globalPic.name).put(globalPic);

    storeImage.on('state_changed', function(snapshot){
        clr.style.display="block";
    },
    function(error){
        clr.innerHTML = error.code;
        clr.style.display="block";
    },
    function(){
        storeImage.snapshot.ref.getDownloadURL().then(function(downloadURL){
            pic.src = downloadURL;
            //var picPath = downloadURL;
            var s = '\u2713';
            clr.innerHTML+= " Submitted. Thanks";

            //store other data
            submitData(downloadURL);
        });
    });
}
```

```
//save all the data and the url of the picture
function submitData(p){
    var myDB = firebase.firestore();
    myDB.collection("CRIMES").add({
        VEHICLE: carN,
        LOCATION: crimeloc,
        OFFENSE: detail,
        DRIVER: drvName,
        DRIVER_ID: drvLic,
        OFFENSE_DATE: dt,
        EVIDENCE: p,
        STATUS: "Awaiting Penalty"
    }).then(function(){
        alert("Save successfully!");
        //clear the screen content
        clearCrime();
    });
}
```

```
function clearCrime(){
    //clear the screen content
    carNumber.value = "";
    crimeLocation.value="";
    crime.value="";
    driverName.value="";
    driverLic.value="";
    pic.src="photo.png";
    clr.innerHTML = "Uploading...";
    clr.style.display = "none";
}
```

Further study

Ref1: <https://firebase.google.com/docs/firestore/quickstart?authuser=0>

Ref2: <https://firebase.google.com/docs/storage/web/start?authuser=0>

Database (Backend)

The screenshot shows the Firebase Database console for the project 'offencekeeper'. The left sidebar contains navigation options: Project Overview, Develop (Authentication, Database, Storage, Hosting, Functions, ML Kit), Quality (Crashlytics, Performance, Test Lab, App Distribution), and Extensions. The main area displays the 'Database' section for 'Cloud Firestore'. The breadcrumb path is 'offencekeeper > CRIMES > gr2u8na17BxdN...'. The 'Data' tab is active, showing a collection named 'CRIMES' with a 'Registered' document. A document with ID 'gr2u8na17BxdNck70UwX' is selected, showing its fields: DRIVER, DRIVER_ID, EVIDENCE, LOCATION, OFFENSE, OFFENSE_DATE, STATUS, and VEHICLE.

Collection	Document ID	Fields
CRIMES	Registered	
CRIMES	gr2u8na17BxdNck70UwX	DRIVER: "Omolola " DRIVER_ID: "2121312121" EVIDENCE: "https://firebasestorage.googleapis.com/v0/b/offencekeeper.ap...alt=media&token=64eb3127-c240-4a83-b925-9cb7387e8f3e" LOCATION: "Ikeja" OFFENSE: "Beating traffic light" OFFENSE_DATE: "2019-11-26T21:43:58.548Z" STATUS: "Awaiting Penalty" VEHICLE: "IKJ 000 XZ"

Avoid popularity if you would have peace

-Abraham Lincoln

Retrieving Coding – Connecting to Google Cloud

- Required API: <https://www.gstatic.com/firebasejs/7.2.0/firebase.js>
- Usage inside html:

```
admin > <> index.html > html > head
2 <html>
3   <head>
4     <title>Crime Admin</title>
5     <meta name="viewport" content="initial-scale=1.0, user-scalable=no"/>
6     <script src="https://www.gstatic.com/firebasejs/7.2.0/firebase.js"></script>
7
```

- Connection using JavaScript:

```
var config = {
  apiKey: "API-KEY",
  authDomain: "offencekeeper.firebaseio.com",
  databaseURL: "https://offencekeeper.firebaseio.com",
  projectId: "offencekeeper",
  storageBucket: "offencekeeper.appspot.com",
  messagingSenderId: "MSG-ID",
  appId: "APP_ID",
  measurementId: "Measure-ID"
};
var fb = firebase.initializeApp(config);
firebase.analytics();
```

Further study

Ref: <https://firebase.google.com/docs/web/setup/?authuser=0>

Retrieving Coding - User Authorization

Reported Offenses

[?](#)

Email address

Password

Login

Reset Password



```
function goin(){  
  
  firebase.auth().onAuthStateChanged(function(user){  
    if (user){  
      pg1.style.display = "none";  
      mainPage.style.display ="block";  
      loadingFB();  
    }else{  
      //alert("Not login!");  
    }  
  });  
}
```



Reported Offenses

[Click here to Create New Users](#)

The Following Crimes have reported

Date	Person	Vehicle	Offense	Location	Status	Evidence	
2019-11-26T17:48:46.552Z	Muti	11111	OverLoading	Laara	Awaiting Penalty		Update
2019-11-26T17:48:46.552Z	Muti	11111	OverLoading	Laara	Awaiting Penalty		Update
2019-11-26T08:54:27.951Z	Semiu Amao	KJA526FU	Parking on the runway	Ikoyi	Awaiting Penalty		Update
2019-12-10T07:09:33.352Z		Eky239ef	Rough driving	Ikoyi	Awaiting Penalty		Update
2019-11-26T17:48:46.552Z	Muti	11111	OverLoading	Laara	Awaiting Penalty		Update
2019-11-26T21:43:58.548Z	Omolola	IKJ 000 XZ	Beating traffic light	Ikeja	Awaiting Penalty		Update
2019-12-22T20:22:21.806Z	Kid	ABJ666AA	Over speeding	Kuje	Awaiting Penalty		Update

Did User Login recently?
If yes, don't ask for login again..

Retrieving Coding - User Authorization

Reported Offenses

Email address

Password

Login

Reset Password

```
function tryLogin1(){
  eml = uname1.value;
  pswd = passwd1.value;
  msg1.style.display = "block";

  firebase.auth().signInWithEmailAndPassword(eml, pswd).then(function(user){

    pg1.style.display = "none";
    mainPage.style.display = "block";
    loadingFB();


  }).catch(function(error){
    alert (error.message);
    msg1.style.display = "none";
  });
}
```

```
function forgetpass1(){
  eml = uname1.value;
  var aut = firebase.auth();
  msg1.style.display = "block";
  aut.sendPasswordResetEmail(eml).then(function(){
    msg1.style.color = "blue";
    msg1.innerHTML = "Check Your Email for Password reset";
    //window.open("login.html", "_self");
  }).catch(function(error){
    alert (error.message);
  });
}
```

Retrieving Coding – Loading Data

Reported Offenses							
Click here to Create New Users							
The Following Crimes have reported							
Date	Person	Vehicle	Offense	Location	Status	Evidence	.
2019-11-26T17:48:46.552Z	Mutiu	11111	OverLoading	Laara	Awaiting Penalty		Update
2019-11-26T17:48:46.552Z	Mutiu	11111	OverLoading	Laara	Awaiting Penalty		Update
2019-11-26T08:54:27.951Z	Semiu Amao	KJA526FU	Parking on the runway	Ikoyi	Awaiting Penalty		Update
2019-12-10T07:09:33.352Z		Eky239ef	Rough driving	Ikoyi	Awaiting Penalty		Update
2019-11-26T17:48:46.552Z	Mutiu	11111	OverLoading	Laara	Awaiting Penalty		Update
2019-11-26T21:43:58.548Z	Omolola	IKJ 000 XZ	Beating traffic light	Ikeja	Awaiting Penalty		Update
2019-12-22T20:22:21.806Z	Kid	ABJ866AA	Over speeding	Kuje	Awaiting Penalty		Update

Create New User




Member of Admin group

```
function loadingFB(){
  setTimeout(function(){
    tr.style.display = "none";
  },2000);
  //alert("nothing");
  var db = firebase.firestore();
  var bte= db.collection("CRIMES").onSnapshot(function(doc){
    doc.forEach(function(va){
      var v1 = va.data().VEHICLE;
      var l1 = va.data().LOCATION;
      var f1 = va.data().OFFENSE;
      var pers = va.data().DRIVER;
      var ed = va.data().OFFENSE_DATE;
      var pc = va.data().EVIDENCE;
      var stat = va.data().STATUS;
      //alert(v1);
      insertDB(ed,v1,l1,f1,pers,pc,stat);
    });
  });
}

function insertDB(a,b,c,d,e,f,g){
  var dat = "<tr><td>" + a + "</td><td>" + e + "</td><td>" + b + "</td><td>" + d + "</td><td>" + c;
  dat += "</td><td>" + g + "</td><td><a href='"+ f + "'><img width='64px' src='"+ f;
  dat += "'/></a></td><td><button onclick='removeDB(\""+ a + "\",\""+ b + "\")'>Update</button></td></tr>";
  tResult1.innerHTML += dat;
}
```


Retrieving Coding – Adding New User

Create New User

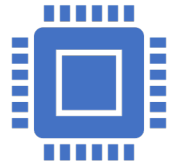


Official Email address

Member of Admin group

Add User

```
function newUser(){
  eml = sname.value;
  pswd = "offencekeeper";
  mk = document.getElementById("makeAdmin");
  test = eml.toLowerCase();
  var aut = firebase.auth();
  msgs.style.display ="block";
  firebase.auth().createUserWithEmailAndPassword(eml, pswd).then(function(user1){
    //check if this is an Admin
    if (mk.checked == true){
      var user = firebase.auth().currentUser;
      alert(user.email);
      user.updateProfile({
        displayName: "admin"
      }).then(function(){
        alert("Make Admin Successfully!");
      }).catch(function(error){
        alert ("There is issue "+ error);
      });
    }
    aut.sendPasswordResetEmail(eml).then(function(){
      msgs.innerHTML = "User Created Successfully. An Email has been sent to the user " + eml + " for confirmation!"
      sname.value = "";
    }).catch(function(error){
      msgs.innerHTML = error.message;
    });
  }).catch(function(error){
    alert(error.message);
  });
};
```



What Next...

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- Feedbacks, comments, questions etc - <https://semuamao.com/2018/07/08/covenant/>
- Participate in Project - <https://devmesh.intel.com/projects/crime-reporter-in-nigeria>