

Mountain Lion Detection

System Software Test

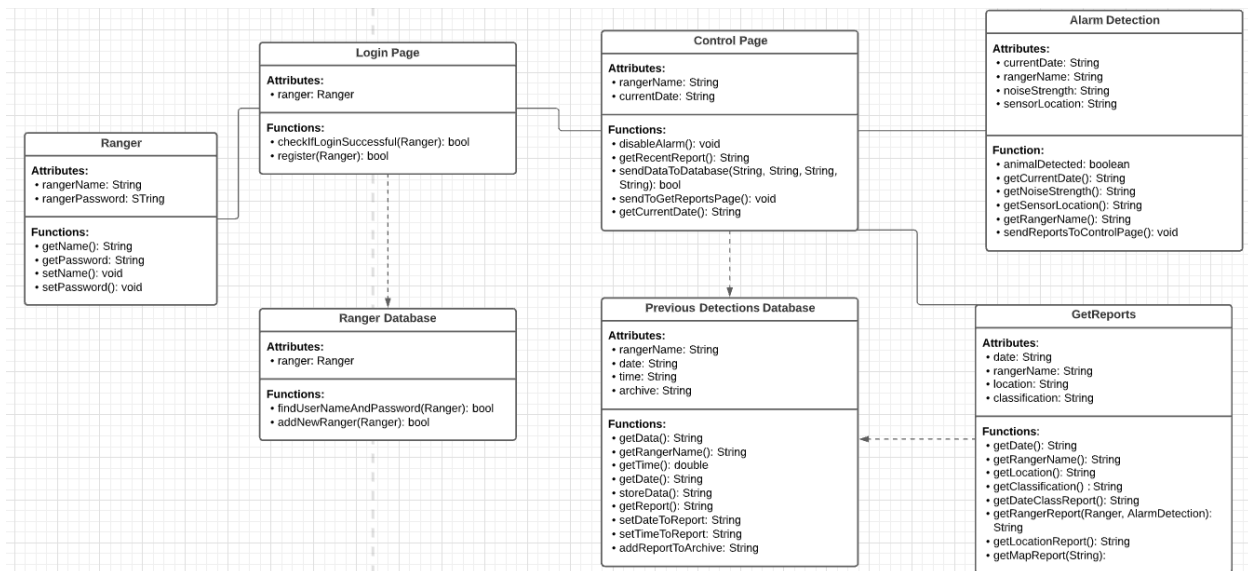
Plan

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Software Design Specification:

The System has Four pages and two databases. The login page is to see if the ranger using the system is existing or new and checks the ranger database to confirm that. The Alarm Detection page collects information from the Sensors if an Animal/Mountain Lion is detected. Information such as the sensor's location that detected the animal and the strength of the noise detected. The Alarm Detection class also keeps track of the date and time the animal was detected and the name of the Ranger responsible for the area of the sensor. All this information then gets sent as a report to the Control Page. The operator of the Control page can disable the alarm, send the data to the Database and look up previous reports from the report's page. The database retrieves and saves the reports for documentation and future reference. The Get Reports page is where all the reports would be stored and archived to help predict and manage future incidents.



Login Page:

- **Attributes:**

- **currRanger** = ranger object containing information of current user

- **Functions:**

- **checkIfLoginSuccessful(ranger)** = sends information to database and returns bool whether it was successful or not.
- **register(ranger)** = registers new ranger and takes in name and password as arguments and returns bool whether it was successful or not.

Ranger Class:

- **Attributes:**

- **rangerName** = holds the current user's name
- **rangerPassword** = holds the current user's password

- **Functions:**

- **getName()** = returns name
- **getPassword()** = returns the password
- **setName()** = set the name to a new one if needed
- **setPassword()** = set the password to a new one if needed

Ranger Database:

- **Attributes:**

- **rangerName** = holds the current user's name
- **rangerPassword** = holds current user's password

- **Functions:**

- **findUsernameAndPassword(string, string)** = looks through the database for matching pair to get logged in. Returns bool whether successful or not.
- **addNewRanger(string, string)** = stores new rangers name and password into database and returns whether it was successfully done.

Control Page:

- **Attributes:**

- **rangerName** = this is the name of the ranger who is currently using system
- **currentDate** = holds the current date

- **Functions:**

- **disableAlarm** = this function allows the ranger to turn off the alarm after a detection was made
- **getRecentReport()** = gets the most recent report that was sent from AlarmDetection and prints it to screen
- **sendDataToDatabase()**: after information has been sent from alarm detection the control page allows you to send the information to the database. It takes in 4 String arguments that are for: date, location, strength, and name of the ranger reporting. It returns a bool depending on if information was stored successfully
- **getCurrentDate()** = gets the current date and sets our currentDate attribute to it
- **sendToGetReportsPage()** = this function sends you to the getReportsPage where you will be able to access previous reports and pull up information about them.

Alarm Detection:

- **Attributes:**

- **CurrentDate()** = Keeps track of the current date the animal was detected and we

can format it to include month, year, day & time of the incident.

- **NoiseStrength()** = This gets from the sensor the strength of the noise of the detected animal.
- **SensorLocation()** = Gets the number of the sensor to report on the location of the incident.
- **RangerName()** = Gets the assigned Ranger's name which would be based on the location of the sensor or the shifts.

- **Functions:**

- **animalDetected** = This function monitors the sensors to ensure that the alarm gets activated when an animal is detected.
- **getCurrentDate()** = This function keeps track of the date and time.
- **getSensorLocation(String)** = This function distinguishes between the sensors to report where the animal was detected and what ranger reported it.
- **getNoiseStrength()** = This function gets the strength of the Noise detected to keep track of how close the animal is to the sensor.
- **getRangerName()** = This function links the sensor's location to the assigned ranger for that location.
- **sendReportsToControlPage()** = This function sends a report of all the findings from above to the Control Page for the Operator to make the next move.

Detections Database

- **Attributes:**

- **rangerName** = this supplies the name of the ranger using the detection system
- **Date** = the date an alert was sent to the database

- **Time** = the time an alert was sent to the database
- **Archive** = stores all past reports in one area for easy access
- **Database Functions:**
 - **getRangerName()** = retrieves the name of the latest ranger using the detection system
 - **getData()** = retrieves the data (detection details) from the alert system and control center
 - **getDate()** = retrieves the date of occurrence for report
 - **getTime()** = retrieves the time of occurrence for report
 - **storeData()** = stores data from all reports into the archive for future access
 - **getReport()** = retrieves all reports from the control page to store for future reference
 - **setDateToReport()** = saves the date from each report so that it can be accessed chronologically
 - **setTimeToReport()** = saves the time from each report so that it can be organized by details
 - **addReportToArchive()** = saves the recent report into the archive

Get Reports:

- **Attributes:**
 - **Date** = date of detection
 - **rangerName** = name of responding ranger
 - **Location** = location of sensor that detection activity

- **Classification** = classification (definite, suspected, or false) of alert determined by rangers
- **Functions:**
 - **getDate()** = gets detection date of alert in order of most recent to oldest
 - **getRangerName()** = gets the name of the ranger that classified the alert by alphabetical order
 - **getLocation()** = gets the sensor location of detection
 - **getClassification()** = gets the classification of alert in order of definite, suspected, and false
 - **getDateClassReport()** = gets report based on date and classification of alert and print to screen
 - **getRangerReportBySensor(ranger, alarmDetection)** = gets report of location based on which ranger reported it.
 - **getLocationReport()** = gets report by sensor location and print to screen
 - **getMapReport(String)** = gets geographical report of detection locations within park and display

Verification Test Plan:

- **Unit Test:**

1)

Focuses on testing the date and time method. We want to get the local time of the incident detected. The format of the output must make sense.

```
date.getCurrentDate()  
bool curDateTime(Date, Time){
```

```

        if(Date,Time){
            return true;
        }
        else {
            return false;
        }
    }
}

```

An example of **expected** good input and output format for the date and time would be:

Input : Date,Time **output:** Wed Nov 3 23:43:07 2021.

An example of a bad input and output would be:

Input: day **output:** null/crash

2)

Focuses on testing the animal detection method after receiving the noise strength from the sensors. This will verify if the animal is a mountain lion. If the animal is indeed a mountain lion then the system will proceed to the next step.

```

noiseStrength.getAnimalDetected()
bool (animal){
    if (animal == "Mountain Lion"){
        return true;
    }
    else {
        return false;
    }
}

```

An expected input and output would be:

Input: animal = "Mountain Lion" **output:** true.

A bad input and output would be:

Input: animal = 21 **output:** false.

- **Integration Test:**

name.setNewRanger() = test the register method in login page and ranger database page.

Checks if the entered name and password matches name and password in the ranger database.

```
bool register(ranger){  
    if(name, password){  
        return true;  
    }  
    else{  
        return false;  
    }  
}
```

Good Input = (Bob, password1), Output = true

Bad Input = ("12", " "), Output = false

- **System Test:** We are testing 3 parts of the system. They are the getReportsPage, Ranger, and the AlarmDetection. We are trying to get the locations of sensors based on which ranger reported it. We use getRangerReportBySensor in getReportsPage which has inputs Ranger and AlarmDetection. We will use rangerName from Ranger and getSensorLocation(String) from AlarmDetection. We expect our output to give us the sensor locations that the ranger reported on.

// Pseudo code to visualize what the method's specification asks for

```
String getRangerReportBySensor(Ranger, AlarmDetection){  
    String rangerName = Ranger.rangerName;  
    return AlarmDetection.getSensorLocation(rangerName);  
}
```

1. **Good Input:** rangerName = "Anthony" / **Expected Output:** Location of sensor that Anthony reported on
2. **Bad Input:** rangerName = "12" / **Expected Output:** There is no name that is 12 so would return null.