**Java Project**

In Rwanda there were 221,000 registered vehicles, and on average, 750 automobiles come into the country in Rwanda. Both left- and right-hand drive vehicles are allowed to come into the country and this causes congestion on the roads in urban areas like Kigali city. In 2019 there were 4,661 road accidents recorded in the country.

There are big companies like Tesla working on robotic cars (autonomous). These cars are self-driving and they have obstacle sensors, they can park themselves and other features. These cars have built in devices that come with the car. My Idea is of an external device that can be put into the cars that are already here and have the same features as of those that these companies are trying to create.

In Rwanda there are not many people that can afford these cars like the Teslas, so why not give them the same pleasure in a car that they can afford. This device will be able to help in instant braking, reducing the speed of the car if it’s going over the speed limit, alarm you of obstacles ahead or behind and different features that will be added in the future.

**Solution**

I will mostly be working on the software part of this device for now. OOP will be applied on the instant braking like if it senses something or someone ahead it will stop or go slow and that is a condition. So far, the other thing I can apply Java in is the decreasing of the speed if it is going over the speed limit and the increasing if it is on a highway alone. This Project is not about creating an autonomous car it is actually about turning a manual car or these automatic gear cars into self-driving cars.

If this device gets on the market it can generate a lot of money because it will help reduce road accidents and this will also help those learning to drive. The feature of this is to be able to create something like this for all kinds of automobiles.

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CODING PART **A**

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//===Author(s):         Phionah

//===Unit 11:           Final Project

//===Project Tittle:    Defender.

//===Description:       A user defined package that will be called while; car is in stop mode

// but another object comes towards it. Second, while it is moving and

// suddenly detects objects in certain range.

//===Source:           https://beginnersbook.com/2013/03/packages-in-java/

//===Book:              http://www.engineeringinspiration.co.uk/brakecalcs.html

//===Date:              31st Jan 2021.

package CarProtector;

import java.util.Scanner;

public class Protector {

//If car is not moving but detects object in A metres.

   public int defender(int a){

 Scanner in = new Scanner(System.in);

int d = in.nextInt();

  if (d<=a){// object is in 10 Meters

  //DigitalWrite(1,HIGH);

  System.out.println("Turn on Protective actuators");

  //DigitalWrite(2,HIGH);

  System.out.println("Turn on warning actuators");

  }

  else{

  System.out.println("stay in the normal state");

  }

return 0;

   }

   // If car is moving with speed S and detects object at distance D

   // Potential Energy of the car PE.

   public int defender(int s, int d, int PE){

  //Speed should not equal to 0km/h and distance < 100m

  if(s!=0 && d<200){

  int brake= (PE\*s/d);

  // Turn all the LEDs on and off for accident warning

  for (int Pin = 9; Pin < 14; Pin++) {

  System.out.println("Turn on emergence lights");

  //digitalWrite(Pin, HIGH);

  //delay(100);

  //digitalWrite(Pin, LOW);

  //delay(200);

}

//digitalWrite(4, HIGH);

System.out.println("Increase brake presure to "+brake+" Pascal");

}

return 0;

   }

}

//=================End===================================================

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CODING PART **B**

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//===Author(s):         Phionah

//===Unit 11:           Final Project

//===Project Tittle:    Defender.

//===Description:       A user defined package that will be called while; car is in stop mode

// but another object comes towards it. Second, while it is moving and

// suddenly detects objects in a certain range.

//===Source:            https://beginnersbook.com/2013/03/packages-in-java/

//===Book:              http://www.engineeringinspiration.co.uk/brakecalcs.html

//===Date:              31st Jan 2021.

import CarProtector.Protector;

public class ProtectorDemo{

   public static void main(String args[]){

Protector obj = new Protector();

//Obstacle should not be below 200cm towards a car.

//obj.defender(150);

// Car states can change

obj.defender(200,60,500);

   }

}

//======================End=================================================