**I had pushed the Code to git below is the URL link**

[**https://github.com/R-NandaKumar/Java-Fsd**](https://github.com/R-NandaKumar/Java-Fsd)

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**Source Code**

import java.util.\*;

import java.text.DecimalFormat;

class Property {

int id;

double builtUpArea;

double baseValue;

int age;

char city;

double propertyTax;

Property(int id, double builtUpArea, double baseValue, int age, char city) {

this.id = id;

this.builtUpArea = builtUpArea;

this.baseValue = baseValue;

this.age = age;

this.city = city;

}

}

class Vehicle {

String regNo;

String brand;

int velocity;

int capacity;

String type;

double purchaseCost;

double vehicleTax;

Vehicle(String regNo, String brand, int velocity, int capacity, String type, double purchaseCost) {

this.regNo = regNo;

this.brand = brand;

this.velocity = velocity;

this.capacity = capacity;

this.type = type;

this.purchaseCost = purchaseCost;

}

}

public class TaxCalculator {

static DecimalFormat df = new DecimalFormat("0.00");

static List<Property> properties = new ArrayList<>();

static List<Vehicle> vehicles = new ArrayList<>();

static int propertyIdCounter = 1;

static int vehicleIdCounter = 1;

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

while (true) {

System.out.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

System.out.println("\t\tPLEASE LOGIN TO CONTINUE -");

System.out.print("\t\tUSERNAME - ");

String username = scanner.nextLine();

System.out.print("\t\tPASSWORD - ");

String password = scanner.nextLine();

System.out.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

if (!username.equals("admin") || !password.equals("admin123"))

{

System.out.println("Invalid credentials. Try again.");

continue;

}

try

{

while (true)

{

final String AN = "\u001B[0m";

final String A = "\u001B[32m";

System.out.println(A +"\n1 PROPERTY TAX"+ AN);

System.out.println(A +"2 VEHICLE TAX"+ AN);

System.out.println(A +"3 TOTAL"+ AN);

System.out.println(A +"4 EXIT"+ AN);

System.out.print(A +"Select an option: "+ AN);

int option = scanner.nextInt();

scanner.nextLine(); // Consume newline character

switch (option) {

case 1:

propertyTaxMenu(scanner);

break;

case 2:

vehicleTaxMenu(scanner);

break;

case 3:

displayTotal();

break;

case 4:

System.out.println("Exiting the program.");

System.exit(0);

default:

System.out.println("Invalid option. Please try again.");

}}}

catch(Exception e)

{

System.out.println("Please enter vaid crediantials");

}

}}

static void propertyTaxMenu(Scanner scanner) {

try {

while (true) {

final String AN = "\u001B[0m";

final String A = "\u001B[34m";

System.out.println(A +"\n1 ADD PROPERTY DETAILS"+ AN);

System.out.println(A +"2 CALCULATE PROPERTY TAX"+ AN);

System.out.println(A +"3 DISPLAY ALL PROPERTIES"+ AN);

System.out.println(A +"4 BACK TO MAIN MENU"+ AN);

System.out.print(A +"Select an option: "+ AN);

int option = scanner.nextInt();

scanner.nextLine(); // Consume newline character

switch (option) {

case 1:

addPropertyDetails(scanner);

break;

case 2:

calculatePropertyTax(scanner);

break;

case 3:

displayAllProperties();

break;

case 4:

return;

default:

System.out.println("Invalid option. Please try again.");

}

}}

catch(Exception e)

{

System.out.println("Please enter valid crendiatials");

}

}

static void addPropertyDetails(Scanner scanner) {

final String AN = "\u001B[0m";

final String A = "\u001B[35m";

System.out.println(A +"\nENTER THE PROPERTY DETAILS -"+ AN);

System.out.print(A +"ENTER THE BASE VALUE OF LAND - "+ AN);

double baseValue = scanner.nextDouble();

System.out.print(A +"ENTER THE BUILT-UP AREA OF LAND - "+ AN);

double builtUpArea = scanner.nextDouble();

System.out.print(A +"ENTER THE AGE OF LAND IN YEARS - "+ AN);

int age = scanner.nextInt();

scanner.nextLine(); // Consume newline character

System.out.print(A +"IS THE LAND LOCATED IN CITY?(Y: YES, N: NO) - "+ AN);

char city = scanner.nextLine().charAt(0);

if (baseValue > 0 &&age > 0 )

{

Property property = new Property(propertyIdCounter++, builtUpArea, baseValue, age, city);

properties.add(property);

System.out.println("Property details added successfully.");

}

else

{

System.err.println("Error Please follow the BELOW criteria");

System.out.println("o The base value of the land must be input in non-zero and positive number format.\r\n"

+ "o Property located in the main city: The user must provide a single character input for the property location. Here, Y means Yes, N means No, and both inputs are\r\n"

+ "case-insensitive i.e., Y and y have equal meanings. Other alphabets will be treated as invalid.\r\n"

+ "o The age of construction is strictly a non-zero positive number.\r\n"

+ "");

propertyTaxMenu( scanner);

}

}

static void calculatePropertyTax(Scanner scanner) {

System.out.println("\nCalculating property tax...");

for (Property property : properties) {

double ageFactor = property.age ;

if (property.city == 'Y') {

double d=0.5 \* property.builtUpArea;

property.propertyTax = (property.builtUpArea \* ageFactor \* property.baseValue) +d;

} else {

property.propertyTax = property.builtUpArea \* ageFactor \* property.baseValue;

}

}

System.out.println("Property tax calculation completed.");

}

static void displayAllProperties()

{

System.out.println("====================================================================================================================");

System.out.println("\nID\tBUILT-UP AREA\tBASE PRICE\tAGE(YEARS)\tIN CITY\tPROPERTY TAX");

System.out.println("====================================================================================================================");

for (Property property : properties) {

System.out.println(property.id + "\t" + df.format(property.builtUpArea) + "\t\t\t" + df.format(property.baseValue) + "\t\t\t" +

property.age + "\t\t\t" + property.city + "\t\t\t" + property.propertyTax);

}

System.out.println("====================================================================================================================");

}

static void vehicleTaxMenu(Scanner scanner) {

try {

while (true) {

final String AN = "\u001B[0m";

final String A = "\u001B[34m";

System.out.println(A +"\n1 ADD VEHICLE DETAILS"+ AN);

System.out.println(A +"2 CALCULATE VEHICLE TAX"+ AN);

System.out.println(A +"3 DISPLAY ALL VEHICLES"+ AN);

System.out.println(A +"4 BACK TO MAIN MENU"+ AN);

System.out.print(A +"Select an option: "+ AN);

int option = scanner.nextInt();

scanner.nextLine(); // Consume newline character

switch (option) {

case 1:

addVehicleDetails(scanner);

break;

case 2:

calculateVehicleTax(scanner);

break;

case 3:

displayAllVehicles();

break;

case 4:

return;

default:

System.out.println("Invalid option. Please try again.");

}

}}

catch(Exception e )

{

System.out.println("Please enter a valid creditails:");

}

}

static void addVehicleDetails(Scanner scanner) {

final String AN = "\u001B[0m";

final String A = "\u001B[35m";

System.out.print(A +"\nENTER THE VEHICLE DETAILS -"+ AN);

System.out.print(A +"ENTER THE VEHICLE REGISTRATION NUMBER - "+ AN);

String regNo = scanner.nextLine();

System.out.print(A +"ENTER BRAND OF THE VEHICLE - ");

String brand = scanner.nextLine();

System.out.print(A +"ENTER THE MAXIMUM VELOCITY OF THE VEHICLE(KMPH) - "+ AN);

int velocity = scanner.nextInt();

System.out.print(A +"ENTER CAPACITY (NUMBER OF SEATS) OF THE VEHICLE - "+ AN);

int capacity = scanner.nextInt();

scanner.nextLine(); // Consume newline character

System.out.println(A +"CHOOSE THE TYPE OF THE VEHICLE -"+ AN);

System.out.println(A +"1. PETROL DRIVEN"+ AN);

System.out.println(A +"2. DIESEL DRIVEN"+ AN);

System.out.println(A +"3. CNG/LPG DRIVEN"+ AN);

System.out.print(A +"Choose the option: "+ AN);

int typeOption = scanner.nextInt();

scanner.nextLine(); // Consume newline character

String type = "";

try {

switch (typeOption) {

case 1:

type = "PETROL";

break;

case 2:

type = "DIESEL";

break;

case 3:

type = "CNG/LPG";

break;

default:

System.err.println("Invalid vehicle type. Defaulting to PETROL.");

type = "PETROL";

}

System.out.print(A +"ENTER THE PURCHASE COST OF THE VEHICLE - "+ AN);

double purchaseCost = scanner.nextDouble();

if (regNo.matches("[1-9][0-9]{0,3}") &&purchaseCost > 0 && purchaseCost >= 50000 && purchaseCost <= 1000000 && velocity > 0 && velocity >= 120 && velocity <= 300 &&capacity > 0 && capacity >= 2 && capacity <= 50)

{

Vehicle vehicle = new Vehicle(regNo, brand, velocity, capacity, type, purchaseCost);

vehicles.add(vehicle);

System.err.println("Vehicle details added successfully.");}

else

{

System.err.println("Error Please follow the BELOW criteria");

System.out.println("o Registration number: A 4-digit unique registration number in non-zero positive numeric format should be given. A preceding zero also must be considered as a valid part of the registration number. For example, registration number 0010 must be considered valid, while 0000 is considered invalid.\r\n"

+ "o Brand: The brand of the vehicle must be a text input.\r\n"

+ "o Purchase cost: The purchase cost must be a non-zero positive numeric value, and it can be between INR 50000 and INR 1000000.\r\n"

+ "o Maximum velocity: It has a non-zero positive numeric input with a range between 120kmph and 300kmph.\r\n"

+ "o Capacity (number of seats): It has a non-zero positive number input between 2 to 50.\r\n"

+ "o Type of vehicle: It must be given as a numeric input, based on the user’s choice between 1 and 3.\r\n"

+ "");

vehicleTaxMenu( scanner);

}

}catch(Exception e)

{

System.out.println("Please enter a valid Credentials");

}

}

static void calculateVehicleTax(Scanner scanner) {

System.out.println("\nCalculating vehicle tax...");

for (Vehicle vehicle : vehicles) {

double taxRate = 0.0;

switch (vehicle.type) {

case "PETROL":

taxRate = 0.10;

break;

case "DIESEL":

taxRate = 0.11;

break;

case "CNG/LPG":

taxRate = 0.12;

break;

}

vehicle.vehicleTax = vehicle.velocity + vehicle.capacity + (taxRate \* vehicle.purchaseCost);

}

System.err.println("Vehicle tax calculation completed.");

}

static void displayAllVehicles() {

System.out.println("================================================================================================================================================");

System.out.println("\nREGISTRATION NO.\t\tBRAND\t\tMAX. VELOCITY\t\tNO. OF SEATS\tVEHICLE TYPE\t\tPURCHASE COST\t\tVEHICLE TAX");

System.out.println("================================================================================================================================================");

for (Vehicle vehicle : vehicles) {

System.out.println(vehicle.regNo + "\t\t\t\t\t" + vehicle.brand + "\t\t\t\t\t" + vehicle.velocity + "\t\t\t\t" +

vehicle.capacity + "\t\t\t\t" + vehicle.type + "\t\t\t\t" + df.format(vehicle.purchaseCost) +

"\t\t\t\t\t" + df.format(vehicle.vehicleTax));

}

System.out.println("================================================================================================================================================");

}

static void displayTotal() {

double propertyTotal = 0.0;

double vehicleTotal = 0.0;

for (Property property : properties)

{

propertyTotal += property.propertyTax;

System.out.println(propertyTotal);

}

for (Vehicle vehicle : vehicles) {

vehicleTotal += vehicle.vehicleTax;

}

System.out.println("============================================================================================================================================");

System.out.println("\nPROPERTY TAX TOTAL:\t\tVEHICLE TAX TOTAL:\t\tGRAND TOTAL:");

System.out.println("=====================================================================================================================================================");

System.out.println( df.format(propertyTotal)+ "/-\t\t\t\t\t\t\t" + df.format(vehicleTotal)+"/-\t\t\t\t" + df.format(propertyTotal + vehicleTotal)+ "/-\t\t\t\t" );

System.out.println("===================================================================================================================================================");

}

}

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