

Calculadora Agrologística: Back

Calculadora

```
package com.cultivodatos.model;

public class Calculadora {

    private int cultivo;
    private double cantidad;
    private int umedida;
    private int idVeh;
    private Integer idDes;
    private double lat;
    private double lng;
    private int ejes;

    private int utipo;
    private Integer id_i;
    private Integer source_i;
    private Integer target_i;

    public int getCultivo() {
        return cultivo;
    }
    public void setCultivo(int cultivo) {
        this.cultivo = cultivo;
    }
    public double getCantidad() {
        return cantidad;
    }
    public void setCantidad(double cantidad) {
        this.cantidad = cantidad;
    }
    public int getUmedida() {
        return umedida;
    }
    public void setUmedida(int umedida) {
        this.umedida = umedida;
    }
    public int getIdVeh() {
        return idVeh;
    }
    public void setIdVeh(int idVeh) {
        this.idVeh = idVeh;
    }
    public Integer getIdDes() {
        return idDes;
    }
    public void setIdDes(Integer idDes) {
        this.idDes = idDes;
    }
    public double getLat() {
```

```

        return lat;
    }
    public void setLat(double lat) {
        this.lat = lat;
    }
    public double getLng() {
        return lng;
    }
    public void setLng(double lng) {
        this.lng = lng;
    }
    public int getEjes() {
        return ejes;
    }
    public void setEjes(int ejes) {
        this.ejes = ejes;
    }
    public int getUtipo() {
        return utipo;
    }
    public void setUtipo(int utipo) {
        this.utipo = utipo;
    }
    public Integer getId_i() {
        return id_i;
    }
    public void setId_i(Integer id_i) {
        this.id_i = id_i;
    }
    public Integer getSource_i() {
        return source_i;
    }
    public void setSource_i(Integer source_i) {
        this.source_i = source_i;
    }
    public Integer getTarget_i() {
        return target_i;
    }
    public void setTarget_i(Integer target_i) {
        this.target_i = target_i;
    }
}

```

Categoria Vehículo

```
package com.cultivodatos.model;
```

```
import javax.persistence.Entity; import javax.persistence.Id; import javax.persistence.NamedStoredProcedureQueries;
import javax.persistence.NamedStoredProcedureQuery; import javax.persistence.Table;
```

```
import lombok.Data;
```

```
@Entity @Table(name = "tipo_vehiculo") @Data @NamedStoredProcedureQueries({ @NamedStoredProce-
dureQuery(name = "_lstCatVehiculos", procedureName = "_spGetCatVehiculos", resultClasses = Categori-
```

```

aVehiculo.class ) }) public class CategoriaVehiculo {
@Id
private Integer id_tipo;

private String categoria;

public String getCategoria() {
    return categoria;
}

public void setCategoria(String categoria) {
    this.categoria = categoria;
}

public Integer getId_tipo() {
    return id_tipo;
}

public void setId_tipo(Integer id_tipo) {
    this.id_tipo = id_tipo;
}
}

```

CategoriaVeehiculoDAO

```

package com.cultivodatos.model;

import java.util.List;

import org.springframework.data.repository.CrudRepository;

public interface CategoriaVehiculoDAO extends CrudRepository, CategoriaVehiculoDAOCustom{ public List
findAll(); }

```

Categoría VehículoDAOImpl

```

package com.cultivodatos.model;

import java.util.List;

import javax.persistence.EntityManager; import javax.persistence.PersistenceContext; import javax.persistence.StoredProcedure

public class CategoriaVehiculoDAOImpl implements CategoriaVehiculoDAOCustom{

@PersistenceContext
private EntityManager em;

@Override
public List<CategoriaVehiculo> getCatVehiculos() {
    StoredProcedureQuery _sp = em.createNamedStoredProcedureQuery("_lstCatVehiculos");
    return _sp.getResultList();
}
}

```

Cultivo

```
package com.cultivodatos.model;

import javax.persistence.Entity; import javax.persistence.Id; import javax.persistence.Table;

@Entity @Table(name = "cultivos") public class Cultivo {

    @Id
    private Integer clave;

    private String cultivo;
    private Integer activo;
    public Integer getClave() {
        return clave;
    }
    public void setClave(Integer clave) {
        this.clave = clave;
    }
    public String getCultivo() {
        return cultivo;
    }
    public void setCultivo(String cultivo) {
        this.cultivo = cultivo;
    }
    public Integer getActivo() {
        return activo;
    }
    public void setActivo(Integer activo) {
        this.activo = activo;
    }
}
```

Cultivo DAO

```
package com.cultivodatos.model;

import java.util.List;

import org.springframework.data.repository.CrudRepository;

public interface CultivoDAO extends CrudRepository{ public List findAll(); }
```

Destino

```
package com.cultivodatos.model;

import java.util.Date;

import javax.persistence.Entity; import javax.persistence.Id; import javax.persistence.Table; import
javax.persistence.Transient;

@Entity @Table(name = "destinos") public class Destino {
```

```

@Id
private Integer clave;

private String destino;
private Double lat;
private Double lng;
private Integer id_f;
private Integer source_f;
private Integer target_f;

@Transient
private Double venta;
@Transient
private Double pUnitario;
@Transient
private Date fPrecio;

public Integer getClave() {
    return clave;
}
public void setClave(Integer clave) {
    this.clave = clave;
}
public String getDestino() {
    return destino;
}
public void setDestino(String destino) {
    this.destino = destino;
}
public Double getLat() {
    return lat;
}
public void setLat(Double lat) {
    this.lat = lat;
}
public Double getLng() {
    return lng;
}
public void setLng(Double lng) {
    this.lng = lng;
}
public Integer getId_f() {
    return id_f;
}
public void setId_f(Integer id_f) {
    this.id_f = id_f;
}
public Integer getSource_f() {
    return source_f;
}
public void setSource_f(Integer source_f) {
    this.source_f = source_f;
}
public Integer getTarget_f() {

```

```

        return target_f;
    }
    public void setTarget_f(Integer target_f) {
        this.target_f = target_f;
    }
    public Double getpUnitario() {
        return pUnitario;
    }
    public void setpUnitario(Double pUnitario) {
        this.pUnitario = pUnitario;
    }
    public Date getfPrecio() {
        return fPrecio;
    }
    public void setfPrecio(Date fPrecio) {
        this.fPrecio = fPrecio;
    }
    public Double getVenta() {
        return venta;
    }
    public void setVenta(Double venta) {
        this.venta = venta;
    }
}

```

DestinoDao

```

package com.cultivodatos.model;
import java.util.List;
import javax.transaction.Transactional; import org.springframework.data.repository.CrudRepository;
@Transactional public interface DestinoDAO extends CrudRepository {
    public List<Destino> findAll();
}

```

Ejes

```

package com.cultivodatos.model;
import javax.persistence.Entity; import javax.persistence.Id; import javax.persistence.Table;
@Entity @Table(name = "ejes") public class Ejes {
    @Id
    private Integer clave;

    private String eje;

    public Integer getClave() {
        return clave;
    }
    public void setClave(Integer clave) {

```

```

        this.clave = clave;
    }
    public String getEje() {
        return eje;
    }
    public void setEje(String eje) {
        this.eje = eje;
    }
}

```

EjesDAO

```

package com.cultivodatos.model;
import java.util.List;
import org.springframework.data.repository.CrudRepository;
public interface EjesDAO extends CrudRepository{ public List findAll(); }

```

GeoJson

```

package com.cultivodatos.model;
public class GeoJson {
    private String type;
    private String coordinates;
    public String getType() {
        return type;
    }
    public void setType(String type) {
        this.type = type;
    }
    public String getCoordinates() {
        return coordinates;
    }
    public void setCoordinates(String coordinates) {
        this.coordinates = coordinates;
    }
}

```

PrecioCultivo

```

package com.cultivodatos.model;
import java.io.Serializable; import java.util.Objects;
public class PrecioCultivo implements Serializable{
    private static final long serialVersionUID = 1L;

    private Integer cve_cultivo;
    private Integer cve_destino;

```

```

public Integer getCve_cultivo() {
    return cve_cultivo;
}
public void setCve_cultivo(Integer cve_cultivo) {
    this.cve_cultivo = cve_cultivo;
}
public Integer getCve_destino() {
    return cve_destino;
}
public void setCve_destino(Integer cve_destino) {
    this.cve_destino = cve_destino;
}
}

```

Precios

```

package com.cultivodatos.model;

import java.io.Serializable; import java.util.Date;

import javax.persistence.Entity; import javax.persistence.Id; import javax.persistence.IdClass; import
javax.persistence.NamedStoredProcedureQueries; import javax.persistence.NamedStoredProcedureQuery;
import javax.persistence.StoredProcedureParameter; import javax.persistence.ParameterMode; import
javax.persistence.Table;

import lombok.Data;

@Entity @Table(name = "precios_cultivos") @IdClass(value=PrecioCultivo.class) @Data @NamedStoredPro-
cedureQueries({ @NamedStoredProcedureQuery(name = "_lstPreciosCultivo", procedureName = "_spGet-
PreciosCultivo", parameters = { @StoredProcedureParameter( name ="cveCultivo", type = Integer.class,
mode = ParameterMode.IN) }, resultClasses = Precios.class ) })

public class Precios implements Serializable {

private static final long serialVersionUID = 1L;

@Id
private Integer cve_cultivo;

@Id
private Integer cve_destino;


private Float precio;
private Float min_precio;
private Float max_precio;
private Date fecha_act;

public Integer getCve_cultivo() {
    return cve_cultivo;
}
public void setCve_cultivo(Integer cve_cultivo) {
    this.cve_cultivo = cve_cultivo;
}
public Integer getCve_destino() {

```



```

        return cve_destino;
    }
    public void setCve_destino(Integer cve_destino) {
        this.cve_destino = cve_destino;
    }
    public Float getPrecio() {
        return precio;
    }
    public void setPrecio(Float precio) {
        this.precio = precio;
    }
    public Float getMin_precio() {
        return min_precio;
    }
    public void setMin_precio(Float min_precio) {
        this.min_precio = min_precio;
    }
    public Float getMax_precio() {
        return max_precio;
    }
    public void setMax_precio(Float max_precio) {
        this.max_precio = max_precio;
    }
    public Date getFecha_act() {
        return fecha_act;
    }
    public void setFecha_act(Date fecha_act) {
        this.fecha_act = fecha_act;
    }
}

```

Precios Impl

om.cultivodatos.model;

import java.util.ArrayList; import java.util.Date; import java.util.List;

import javax.persistence.EntityManager; import javax.persistence.ParameterMode; import javax.persistence.PersistenceContext
import javax.persistence.StoredProcedureQuery;

public class PreciosDAOImpl implements PreciosDAOCustom {

@PersistenceContext

private EntityManager em;

@Override

```

public List<Precios> getPreciosCultivo(int cveCultivo) {
    StoredProcedureQuery _sp = em.createStoredProcedureQuery("_spGetPreciosCultivo");
    _sp.registerStoredProcedureParameter(0,Integer.class, ParameterMode.IN);
    _sp.setParameter(0, cveCultivo);

```

```

    Object [] results = _sp.getResultList().toArray();
    List<Precios> precios = new ArrayList<Precios>();

```

```

    for(Object res : results) {

```

```

        Precios precio = new Precios();
        Object[] tmp = (Object[])res;
        precio.setCve_cultivo((int)tmp[0]);
        precio.setCve_destino((int)tmp[1]);
        precio.setPrecio((float)tmp[2]);
        precio.setMin_precio((float)tmp[3]);
        precio.setMax_precio((float)tmp[4]);
        precio.setFecha_act((Date)tmp[5]);
        precios.add(precio);
    }

    return precios;
}
}

```

Vehículo

```

package com.cultivodatos.model;

import java.io.Serializable;

import javax.persistence.Entity; import javax.persistence.Id; import javax.persistence.NamedStoredProcedureQueries;
import javax.persistence.NamedStoredProcedureQuery; import javax.persistence.Table; import lombok.Data;

@Entity @Table(name = "vehiculos") @Data @NamedStoredProcedureQueries({ @NamedStoredProcedure-
Query(name = "__lstVehiculos", procedureName = "_spGetVehiculos", resultClasses = Vehiculo.class )
})

public class Vehiculo implements Serializable {

    private static final long serialVersionUID = 1L;

    @Id
    private Integer clave;

    private String vehiculo;
    private int activo;
    private int id_tveh;
    public Integer getClave() {
        return clave;
    }
    public void setClave(Integer clave) {
        this.clave = clave;
    }
    public String getVehiculo() {
        return vehiculo;
    }
    public void setVehiculo(String vehiculo) {
        this.vehiculo = vehiculo;
    }
    public int getActivo() {
        return activo;
    }
    public void setActivo(int activo) {
        this.activo = activo;
    }
}

```

```

}
public int getId_tveh() {
    return id_tveh;
}
public void setId_tveh(int id_tveh) {
    this.id_tveh = id_tveh;
}
}

```

Vehiculo dao imp

```

package com.cultivodatos.model;

import java.util.List;

import javax.persistence.EntityManager; import javax.persistence.PersistenceContext; import javax.persistence.StoredProcedure;

public class VehiculoDAOImpl implements VehiculoDAOCustom {

    @PersistenceContext
    private EntityManager em;

    @Override
    public List<Vehiculo> getVehiculos() {
        StoredProcedureQuery _sp = em.createNamedStoredProcedureQuery("_lstVehiculos");
        return _sp.getResultList();
    }
}

```

Ruta Control

```

package com.cultivodatos.controllers;

import java.io.InputStreamReader; import java.util.List; import java.util.Map; import java.util.TreeMap;

import org.apache.http.HttpResponse; import org.apache.http.client.methods.HttpGet; import
org.apache.http.impl.client.DefaultHttpClient; import org.apache.http.params.BasicHttpParams; im-
port org.apache.http.params.HttpConnectionParams; import org.apache.http.params.HttpParams; import
org.springframework.beans.factory.annotation.Autowired; import org.springframework.beans.factory.annotation.Value;
import org.springframework.web.bind.annotation.RequestBody; import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod; import org.springframework.web.bind.annotation.RestController;

import com.cultivodatos.model.Calculadora; import com.cultivodatos.model.CategoriaVehiculo; im-
port com.cultivodatos.model.CategoriaVehiculoDAO; import com.cultivodatos.model.Cultivo; import
com.cultivodatos.model.CultivoDAO; import com.cultivodatos.model.Destino; import com.cultivodatos.model.DestinoDAO;
import com.cultivodatos.model.Ejes; import com.cultivodatos.model.EjesDAO; import com.cultivodatos.model.Precios;
import com.cultivodatos.model.PreciosDAO; import com.cultivodatos.model.Ruta; import com.cultivodatos.model.Vehiculo;
import com.cultivodatos.model.VehiculoDAO; import com.fasterxml.jackson.core.type.TypeReference; import
com.fasterxml.jackson.databind.ObjectMapper;

@RestController public class RutaCtrl {

    @Autowired
    private DestinoDAO destinoDao;

    @Autowired

```

```

private CultivoDAO cultivoDao;

@Autowired
private CategoriaVehiculoDAO catVehDao;

@Autowired
private VehiculoDAO vehiculoDao;

@Autowired
private EjesDAO ejesDao;

@Autowired
private PreciosDAO preciosDao;

@Value("${apisakbe.config.token}")
private String aSakbeToken;

@Value("${apisakbe.config.url_base_ruta}")
private String aSakbeUrlBaseRuta;

@Value("${apisakbe.config.url_base_ruta_pin}")
private String aSakbeUrlBaseRutaPin;

@Value("${apisakbe.config.num_max}")
private int aSakbeNumMax;

@RequestMapping(value={"ruta"}, method = RequestMethod.POST)
public TreeMap<Double, List<Ruta>> getRuta(@RequestBody Calculadora calculadora) {

    TreeMap<Double, Destino> sDestinos = new TreeMap<Double, Destino>();
    TreeMap<Double, List<Ruta>> sRutas = new TreeMap<Double, List<Ruta>>();

    System.out.println(aSakbeToken);
    System.out.println(aSakbeUrlBaseRuta);

    List<Destino> destinos = destinoDao.findAll();
    for(Destino destino: destinos) {
        sDestinos.put(distance( destino.getLat().doubleValue(),
                                destino.getLng().doubleValue(),
                                calculadora.getLat(),
                                calculadora.getLng(), 'K'),
                        destino);
    }

    List<Precios> lstPrecios = preciosDao.getPreciosCultivo(new Integer(calculadora.getCultivo()));

    TreeMap<Double, Destino> pDestinos = new TreeMap<Double, Destino>();
    for(Precios precio: lstPrecios) {
        for(Map.Entry<Double, Destino> sDes : sDestinos.entrySet()) {
            Destino des = sDes.getValue();

```

```

        if(des.getClave().intValue() == precio.getCve_destino().intValue()) {
            try {
                double venta = calculadora.getUmedida() == 1 ? precio.getPrecio().floatValue() * cal
                    : precio.getPrecio().floatValue() * 1000 * calculadora.getCantidad();

                des.setpUnitario(precio.getPrecio().doubleValue());
                des.setfPrecio(precio.getFecha_act());
                des.setVenta(venta);

                pDestinos.put(venta * (-1), des);
            } catch (Exception ex) {
                ex.printStackTrace();
            }
        }
    }
}

int idx=0;
for(Map.Entry<Double, Destino> entry : sDestinos.entrySet()) {

    if(idx >= 12) { //aSakbeNumMax) {
        //System.out.println("num max peticiones");
        break;
    }

    Destino destino = entry.getValue();
    Double venta = destino.getVenta();

    System.out.println("destino=> " + destino.getDestino());
    try {
        List<Ruta> ruta = getRutaDestino(calculadora, destino, aSakbeUrlBaseRuta, aSakbeUrlBaseRuta);
        ruta.get(0).setDestino(destino.getDestino());
        ruta.get(0).setLat(destino.getLat().floatValue());
        ruta.get(0).setLng(destino.getLng().floatValue());
        ruta.get(0).setVenta(venta);
        ruta.get(0).setpUnitario(destino.getpUnitario());
        ruta.get(0).setfPrecio(destino.getfPrecio());

        double cCombustible = (ruta.get(0).getLong_km().floatValue() / 3) * 19.6;
        ruta.get(0).setpCombustible(cCombustible);

        double costo = ruta.get(0).getCosto_caseta().doubleValue() + cCombustible;
        sRutas.put(costo- venta , ruta);
        idx++;

    } catch (Exception e) {
        e.printStackTrace();
    }

}

return sRutas;

```

```
}
```

```
private static List<Ruta> getRutaDestino(Calculadora calculadora, Destino destino, String aSakbeUrlBase)
```

```
String urlRuta = calculadora.getUtipo() == 1 ? aSakbeUrlBaseRuta: aSakbeUrlBaseRutaPin;
urlRuta= urlRuta.replaceAll("PARAM_key", aSakbeToken);

if(calculadora.getUtipo() == 1) {
    urlRuta= urlRuta.replaceAll("PARAM_dest_i", String.valueOf(calculadora.getIdDes()));
} else {
    urlRuta= urlRuta.replaceAll("PARAM_id_i", String.valueOf(calculadora.getId_i()));
    urlRuta= urlRuta.replaceAll("PARAM_source_i", String.valueOf(calculadora.getSource_i()));
    urlRuta= urlRuta.replaceAll("PARAM_target_i", String.valueOf(calculadora.getTarget_i()));
}
```

```
urlRuta= urlRuta.replaceAll("PARAM_id_f", String.valueOf(destino.getId_f()));
urlRuta= urlRuta.replaceAll("PARAM_source_f", String.valueOf(destino.getSource_f()));
urlRuta= urlRuta.replaceAll("PARAM_target_f", String.valueOf(destino.getTarget_f()));
urlRuta= urlRuta.replaceAll("PARAM_veh", String.valueOf(calculadora.getIdVeh()));
urlRuta= urlRuta.replaceAll("PARAM_ejes", String.valueOf(calculadora.getEjes()));
```

```
//System.out.println(urlRuta);
```

```
final HttpParams httpParams = new BasicHttpParams();
HttpConnectionParams.setConnectionTimeout(httpParams, 30000);
```

```
DefaultHttpClient httpClient = new DefaultHttpClient(httpParams);
HttpGet getRequest = new HttpGet(urlRuta);
getRequest.addHeader("accept", "application/json");
HttpResponse response = httpClient.execute(getRequest);
if (response.getStatusLine().getStatusCode() != 200) {
    throw new RuntimeException("Error al recuperar los calculos del destino <"
        + destino.getDestino() + ">: Código : " + response.getStatusLine().getStatusCode());
}
```

```
ObjectMapper mapper = new ObjectMapper();
TypeReference<List<Ruta>> typeReference = new TypeReference<List<Ruta>>(){};
List<Ruta> ruta = mapper.readValue(new InputStreamReader((response.getEntity().getContent())), typeReference);
httpClient.getConnectionManager().shutdown();
return ruta;
}
```

```
private static double distance(double lat1, double lon1, double lat2, double lon2, char unit) {
    double theta = lon1 - lon2;
    double dist = Math.sin(deg2rad(lat1)) * Math.sin(deg2rad(lat2)) + Math.cos(deg2rad(lat1)) * Math.cos(deg2rad(lat2)) * Math.cos(deg2rad(theta));
    dist = Math.acos(dist);
    dist = rad2deg(dist);
    dist = dist * 60 * 1.1515;
    if (unit == 'K') {
        dist = dist * 1.609344;
    } else if (unit == 'N') {

```

```

        dist = dist * 0.8684;
    }
    return (dist);
}

private static double deg2rad(double deg) {
    return (deg * Math.PI / 180.0);
}

private static double rad2deg(double rad) {
    return (rad * 180.0 / Math.PI);
}

@RequestMapping(value={"cultivos"}, method = RequestMethod.POST)
private List<Cultivo> getCultivos() {
    return cultivoDao.findAll();
}

@RequestMapping(value={"catVehiculos"}, method = RequestMethod.POST)
private List<CategoriaVehiculo> getCVehiculos() {
    return catVehDao.getCatVehiculos();
}

@RequestMapping(value={"vehiculos"}, method = RequestMethod.POST)
private List<Vehiculo> getVehiculos() {
    return vehiculoDao.getVehiculos();
}

@RequestMapping(value={"ejes"}, method = RequestMethod.POST)
private List<Ejes> getEjes() {
    return ejesDao.findAll();
}

@RequestMapping(value={"precios"}, method = RequestMethod.GET)
private List<Precios> getPreciosCultivo() {
    return preciosDao.getPreciosCultivo(9076);
}
}

```

Inicio Control

```

package com.cultivodatos.controllers;

import org.springframework.stereotype.Controller; import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod; import org.springframework.web.servlet.ModelAndView;

@Controller public class InicioCtrl {

    @RequestMapping(value={"/", "/inicio"}, method = RequestMethod.GET)
    public ModelAndView inicio() {
        ModelAndView mv = new ModelAndView("Inicio");
        return mv;
    }
}

```

```

@RequestMapping(value={"encabezado"}, method = RequestMethod.GET)
public ModelAndView encabezado() {
    ModelAndView mv = new ModelAndView("encabezado");
    return mv;
}

@RequestMapping(value={"piepagina"}, method = RequestMethod.GET)
public ModelAndView piepagina() {
    ModelAndView mv = new ModelAndView("piepagina");
    return mv;
}

@RequestMapping(value={"calculadora"}, method = RequestMethod.GET)
public ModelAndView calculadora() {
    ModelAndView mv = new ModelAndView("calculadora");
    return mv;
}

@RequestMapping(value={"cultivo"}, method = RequestMethod.GET)
public ModelAndView cultivo() {
    ModelAndView mv = new ModelAndView("cultivo");
    return mv;
}

@RequestMapping(value={"vehiculo"}, method = RequestMethod.GET)
public ModelAndView vehiculo() {
    ModelAndView mv = new ModelAndView("vehiculo");
    return mv;
}

@RequestMapping(value={"ubicacion"}, method = RequestMethod.GET)
public ModelAndView ubicacion() {
    ModelAndView mv = new ModelAndView("ubicacion");
    return mv;
}
}

```