**Algoritmos y Programación 1**

**Tarea Integradora 2 -  Unidad 2**

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**Ingeniería de sistemas**

**Segundo semestre**

**ANALYSIS**

University Icesi, Dagma, CVC, Corpocuencas and the Majority of Santiago of Cali ask us, the students of systems and telematics engineering to create an informatically solution to store the information of the wetlands in Cali within the species that live in it. This solution will be based in a program. This program has to be able to create a wetland, knowing that there are 80 in Cali and everyone of them has different characteristics like names, the ubication zone, if is public or private, the size, a photo, if is protected or not and depending on the ubication zone could be a township or a neighborhood. Each one of them must have an Ambiental plan.

Besides, the program must be able to register a new species in a wetland. Every species has different characteristics too, like if it belongs to flora or fauna, the name, and the scientific name, if its migratory, ant the specific type of the species.

The program must register different events that can be performed in the wetlands, and of course these evets have different characteristics to be store. The characteristics are the date, how will be the owner, the cost, and a description.

The program always must show the wetland with less species of flora, show the wetland with the most species of fauna, and show the information of every wetland and every species in it.

The user of the program can also search a specie and the program must show the wetland that the specie live in.

**Functional Requirements**

* **The system must be able to create a new wetland.**
* **The system must be able to register a new species in a wetland.**
* **The system must be able to register a new event in a wetland.**
* **The system must be able to show the wetland with the least amount of flora species and the wetland with the most amount of fauna species of all wetlands.**
* **The system must be able to show all the information of all the wetlands and all the species that live in it.**
* **The system must be able to search a specie name and based in that name show the wetlands that include it.**

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| Name or identifier | • The system must be able to create a new wetland | | |
| Summary | The system must register the information of a wetland when a new one will be created. All this information that makes up a wetland is: the name, the ubication zone (rural or urban), state type (public or private), size in km2, a photo url, if is protected or not and if it’s a township or a neighborhood the name depending on the ubication zone. | | |
| Inputs | Input name | Datatype | Selection or repetition condition |
| name | String | Every time that anyone wants to create a new wetland. |
| locationType | String |
| stateType | String |
| size | double |
| urlPhoto | String |
| isProtected | String |
| locationName | String |
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| General activities necessary to obtain the results | * Every input must be filled with the corrects datatypes to proceed. * The wetland name must be different from the others. | | |
| Result or postcondition | * The information will be saved and registered in the system. * Il will appear a confirmation message in the screen to indicate that everything goes right. * If there is a problem will also appear a message to indicate that something is wrong with the information. | | |
| Outputs | Outputs  name | Datatype | Selection or repetition condition |
| confirmationMessage | String | Every time that the wetland is registered correctly. |

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| Name or identifier | • The system must be able to register a new species in a wetland. | | |
| Summary | The system must be able to register a specie in any wetland the user wants. Every specie has many characteristics that makes them different from each other. The characteristics are: the type of the specie (if belong to fauna o flora), the normal name, the scientific name, if the specie if migratory or not, and the environment type that it could be in the case of flora; terrestrial or aquatic and for the fauna; bird, mammal or aquatic. Once the specie is registered, the system has to have the option to put this specie in a wetland with the name of the specie and the name of the wetland. | | |
| Inputs | Input name | Datatype | Selection or repetition condition |
| speciesType | String | Every time that anyone wants to register a new specie. |
| name | String |
| scientificName | String |
| isMigratory | String |
| enviromentType | String |
| wetlandName | String | Every time that anyone wants to add specie. |
| General activities necessary to obtain the results | * Every input must be filled with the corrects datatypes to proceed. * It must be a wetland inicializated. * The specie name must be different from the others. | | |
| Result or postcondition | * The information will be saved and registered in the system. * Il will appear a confirmation message in the screen to indicate that everything goes right. * If there is a problem will also appear a message to indicate that something is wrong with the information. | | |
| Outputs | Outputs  name | Datatype | Selection or repetition condition |
| confirmationMessage | String | Every time that the specie is registered correctly. |

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| Name or identifier | • The system must be able to register a new event in a wetland. | | |
| Summary | The system must be able to assign an event to any wetland saved before and check some specifications to register it. These specifications are; the event type (maintenance, school visits, improvement activities and celebrations), the date of the event, who will be the duty manager, the cost and a description. Then the system must ask the name of the wetland to put in there. | | |
| Inputs | Input name | Datatype | Selection or repetition condition |
| eventType | String/int | Every time that anyone wants to register a new event in a wetland. |
| Date | Date |
| eventOrganizer | String |
| description | String |
| cost | double |
| wetlandName | String |
| General activities necessary to obtain the results | * Every input must be filled with the corrects datatypes to proceed. * It can not two events in one wetland. | | |
| Result or postcondition | * The information will be saved and registered in the system. * Il will appear a confirmation message in the screen to indicate that everything goes right. * If there is a problem will also appear a message to indicate that something is wrong with the information. | | |
| Outputs | Outputs  name | Datatype | Selection or repetition condition |
| confirmationMessage | String | Every time that the specie is registered correctly. |

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| Name or identifier | •The system must be able to show the wetland with the least amount of flora species and the wetland with the most amount of fauna species of all wetlands. | | |
| Summary | The system must be able to search in its database to find the wetland with the least amount of flora species and the wetland with the most amount of fauna species. All of these must be optimized with one instruction and the actualized database. | | |
| Inputs | Input name | Datatype | Selection or repetition condition |
| none | none | none |
| General activities necessary to obtain the results | * The system must have at least one wetland and this wetland must have at least one specie of flora and fauna. * The system will count how many species of flora y fauna are. | | |
| Result or postcondition | * Show the two wetlands with the specifications of flora and fauna. * If there is no flora o fauna in at least two of these wetlands it will show notification message. | | |
| Outputs | Outputs  name | Datatype | Selection or repetition condition |
| maximumFauna | Wetland | Everytime that the user wants to search this information. |
| minimumFlora | Wetland |

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| Name or identifier | • The system must be able to show all the information of all the wetlands and all the species that live in it. | | |
| Summary | The system must be able to show you all the information of all the wetlands and species livings in every one of them. This function must work with one instruction. | | |
| Inputs | Input name | Datatype | Selection or repetition condition |
| none | none | none |
| General activities necessary to obtain the results | It must be al least one wetland in the database. | | |
| Result or postcondition | Show all the wetlands and species in it with each characteristic.  i | | |
| Outputs | Outputs  name | Datatype | Selection or repetition condition |
| wetland[] | Wetland | Every time that anyone wants to look up for all the information. |
| counterFauna | Int | Every time that there are no wetlands registered |
| counterFlora | Int |  |

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| Name or identifier | • The system must be able to search a specie name and based in that name show the wetlands that include it. | | |
| Summary | The system must be able to search for every wetland that contain a specific specie and show them. This specie will be digited by the user. | | |
| Inputs | Input name | Datatype | Selection or repetition condition |
| wetlandName | String | Every time that the user wants to search a specie in a wetland. |
| General activities necessary to obtain the results | It must be at least one wetland and one specie in the wetland. | | |
| Result or postcondition | Show all the wetlands that have the specie.  If there are no wetlands or species in the wetlands or the specie is not register in any wetland the system will show a notification message. | | |
| Outputs | Outputs  name | Datatype | Selection or repetition condition |
| Wetland[i] | Wetland | Every time that the system finds the specie in a wetland |