

Background:

You have been tasked with creating an application to manage an election for a country and the number of seats each political party will receive in the country's parliament.

Task Description:

Implement Political Party as a private type

Each Party stores the following data:

- Party Name -> of type Political_Party_N.
- Provincial Stronghold -> of type Province.
- Name of Party Leader
- Number of Votes received in the election
- Number of Parliamentary seats -> initialized to 0.

Use the following Enumerator for Political_Party_N (These are some of the political parties of South Africa):

type Political_Party_N is (IFP, EFF, MK, DA, ANC);

Use the following enumerator for the Province:

**type Province is (Northen_Cape, Free_State, North_West, Mpumalanga, Limpopo, Eastern_Cape, Western_Cape, KwaZulu_Natal, Gauteng);
for Province use (1,2,3,4,5,6,7,8,9);**

The top line refers to the Provinces of South Africa and the bottom line is the value associated with each province in order of least populated to most populated. This will be used when calculating the number of seats.

To get the defined value of an enumerator you can use:

EnumType'Enum_Rep(Enum)

Implement the following functions and procedures as an interface for the Party:

- Getters for all 5 attributes.
- Getter for the value of the Province.
- Setter for the Seats.
- Procedure to print all data of the Party in JSON format (Prints a String that looks like JSON).
- Procedure to create a New Political Party from the following parameters: name of political party, provincial stronghold of the party, name of the leader of the party and the number of votes received by the party in the last election.

If you want to implement any other functions or procedures, they must be private.

You may add extra attributes to the Party to keep track of extra data, but the 5 listed above are mandatory and the procedure to create a new Party should have the same parameter signature as listed above.

Implement the Election as generic and private:

The Election should store the following data:

- Name of the country
- List of the Parties as an array where both the Index and Elem are generic
- Total Number of Votes -> initialized to 0
- Total number of Seats -> initialized to 0

The Election Type should have a parameter passed to it which is the maximum number of parties allowed in the election which will limit the size of the Parties array.

Implement the following functions and procedures as an interface for the Election inside the generic package:

- Getters for the country name, total number of votes and total number of seats.
- Operation which receives an array of parties and adds it to the Election. Make sure to only add parties until the maximum number of parties is reached. If no more parties can be added, the operation should inform the user.
- Operation which prints all data of the election in JSON format (Create a string in the form of JSON).
- Procedure which creates a new Election with the name of the country.
- A generic operation which processes all votes:
 - Reads the votes of each party and adds it to the total number of votes of the election.
- A generic operation which sets the number of seats of each political party:
 - The calculation for the number of seats is as follows:
 - **Cast to Integer((Number of Votes of the party / Total number of votes in Election) * 450.0) + the Value of the Province**
 - Add the seats to the total number of Election.
 - Print the data of each party.
- A generic operation which searches for the party with the most amount of seats and then prints out the Name of the winning party, the name of the leader of the party and the number of seats of the party.

You may add extra attributes to the Election to keep track of extra data, but the 4 listed above are mandatory and the procedure to create a new Election should have the same parameter signature as listed above. Any extra procedures / functions added must be private.

Do extensive testing within the Main program to show all features working as intended as well as error checking where needed (Such as adding too many parties to the election).

Submit your program in a zip folder which contains all source files, the main test file and the project file.