

INFO 216

IMPERATIVE PROGRAMMING II

We want to write a program to manage the student elections in the Faculty of Sciences. Two main groups of students are competing; group A and group B. Every class will elect one representative.

The data type `dataClass` is used to manage the election's data in each class. The `dataClass` type contains six fields; `className`: name of the class, example: `INFO2E` for "Second year informatics English", `nb`: number of students in this class, `nameA`: name of the candidate of group A, `nbA`: number of students who voted for him, `nameB`: name of the candidate of group B, and `nbB`: number of students who voted for him.

1. Define the data type `dataClass`.

Consider the following main program.

```
1 //All the necessary libraries are included here.
2 // The data type dataClass is defined here.
3 void main(){
4     int size;
5     dataClass* T[100];
6     for(int i=0;i<100;i++) T[i]=NULL;
7     printf("\nFor how many classes do you want to manage the elections (<=100)?");
8     scanf("%d", &size);
9     //create and fill an instance for each class.
10    for (int i=0;i<size;i++) create(T+i);
11    //announce winners and scores
12    announce(T);
13    //clean up the mess before you go
14    destroy(T); }
```

2. Write the function `create` with respect to the call at line 10. The function creates an instance of type `dataClass` dynamically in the heap and fills it. The created instance will be pointed by one element of `T`. The data to be filled must be given by the user through the keyboard (`className`, `nb`, `nameA`, `nbA`, `nameB`, and `nbB`).
3. Write the function `announce` with respect to the call at line 12. This function reads the class instances one by one, and based on the values in variables `nbA` and `nbB`, announces the winners' names and scores. Example: "... Class `INFO2E` (81 students) elected Chouchou Abou Adal from Group B with 43 votes vs. 34. ..."
4. Write the function `destroy` with respect to the call at line 14. This function must liberate all the memory space that was reserved by the function `create`.

The End