

CMPE150.03 PROJECT#2

Deadline: November 15th, 2002, 17:00

1 Project Description

In this project you will write a program which will simulate the elections to Parliament in a country with 3 states (1, 2 and 3). 5 parties (A, B, C, D and E) attend the elections. 50 candidates are selected in each state. In order a candidate to be selected from a state, his/her party should with get 10% or more (local election threshold) of the votes in that state and 5% or more (global election threshold) of the total valid votes.

The program will first take the casted valid votes. A vote is composed of the state name, the first choice, the second choice and the third choice. For example, "1ABC" is a valid vote and it gives 5 points to A party, 3 points to B party and 1 point to C party in state 1, while the vote "3C**" gives 5 points to C party in state 3. The program will calculate the total points for each party in each state.

After the points are calculated, members of Parliament (50 for each state) are distributed over parties according to the local and global thresholds. Points of parties below threshold are discarded. For example, if $P(A) = 100$, $P(B) = 50$, $P(C) = 30$, $P(D) = 10$, $P(E) = 10$ in state 1 and C party is below global threshold, then since D and E parties are below local threshold:

$$S(A) = \frac{P(A)}{P(A) + P(B)} * 50 = \frac{100}{100 + 50} * 50 = 33 \quad (1)$$

$$S(B) = \frac{P(B)}{P(A) + P(B)} * 50 = \frac{50}{100 + 50} * 50 = 17 \quad (2)$$

After calculating this for each state, the program will display the results of each state and the overall result as bar graphs. For example, the results above can be displayed as:

State 1:

A: ***** 50% (33 Parliamentarians)

B: ***** 25% (17 Parliamentarians)

C: *** 15%

D: * 5%

E: * 5%

2 Sample Input

```
>>1CBA
>>1AB*
>>2A**
>>2BAC
>>1A**
>>3CAZ (invalid vote)
>>? (end of inputs)
```

3 Grading

You should only use the topics covered in the class. Function usage is mandatory (programs with no functions will get very low grades). Intelligently designed functions can get bonus.

4 Material to Submit

You will submit the printout of the source listing of your program and you will submit the source code and the executables (.c and .exe) in a diskette. The last thing to submit is to mail your source code file (.c) to onuro@boun.edu.tr with the name yournumber.c (e.g. 97022425.c or 2001002425.c). The subject of the e-mail should be "cmpe150 project2". Deadline is November 15th, 2002, 17:00. Please note that the time of my receiving of your mails is important. If you send your mail and I do not take it on time I am not responsible for this delay. Also do not send mails more than once.