

**York University**  
**Lassonde School of Engineering**  
Dept. of Electrical Engineering and Computer Science  
EECS 2031  
Software Tools  
Winter 2016

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<b>EECS2031</b>	<b>Lab Test</b>	<b>Software Tools</b>
Thursday, Feb. 4 <sup>th</sup> , 2016		6:00– 8:00pm

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Question 1 (8 points)

Write a program that reads from the standard input a special string. This special string is terminated by ZZ (the two characters 'Z' and 'Z'). The string might contain any number of characters up to 50 except new line and the NULL character. The program counts the length of the string, note that 'Z' 'Z' are not part of the string, and displays it on the standard output as a single integer followed by a new line character.

For example if the string is

ABNHFGTyiuV56            45ZZ (2 tabs between 6 and 4)

The output should be

18

~~Submit as LT1A1 string.c~~ **submit 2031 LT1A1 LT1A1.c**

Question 2 (6 points)

Write a program that accepts the following file from the standard input. The file contains the voting results of an election by precinct.

Results of a fictional election:

Candidate Precinct	A	B	C	D
1	312	520	425	612
2	470	312	456	123
3	753	159	852	456
4	147	258	369	759
5	951	856	751	125

The program should calculate the winner (max number of votes) and displays it as

**Candidate A is the winner** followed by a newline

Of course the winner might be A, B, C, or D.

The actual file used for testing is in the same format. The number of precincts may vary (max 20), and of course the number of votes may vary.

~~Submit as LT1A2 election.c~~ submit 2031 LT1A2 LT1A2.c

Question 3 (8 points)

Redo the last problem to find the election's winner with one changes

- If the candidate with the maximum number of votes did not achieve more than 50%, then a runoff is declared between the top two candidates.

The result should be displayed as

**Candidate A is the winner** followed by a new line, where A is the name of the winning candidate.

Or

**Runoff between candidates A and B** followed by a new line

~~Submit as LT1A3 election1.c~~ submit 2031 LT1A3 LT1A3.c