***Electoral System***

**Assessment Brief**

The local council are holding an election to elect new councillors. They want the process to be computerised and have asked you to produce a system which can be rolled out to all the polling stations in Belfast.

The electoral office requires an easy-to-use program that any voter coming in to place their votes, will be able to use intuitively. The system will maintain a tally for each candidate on the computerised polling card. This voting system will use “proportional representation” i.e., each vote cast will be based on a process of first place (1), second place (2), etc. The system will also record a gender tally to supply the council with market research data.

The council want the system to provide a short synopsis of each candidate’s details and party before the voter assigns a numerical vote to that candidate.

A council official may at any time review the voting statistics. At the beginning of the day the system will generate a text file for the polling station, which will be used to contain a summary of the day’s voting figures and gender stats.

Along with the voting booth functionality, the electoral office also wants the program to gather vote count files from other polling stations and collate all the data into a single repository. This repository can then be used to generate statistical information, including the number of votes each candidate receives, the overall winner of the election and the breakdown of male-to-female voters turning up to cast votes.

The program should be menu driven. It should also be robust enough to prevent any tampering of data or submission of incorrect information – validation must be thorough.

**System Specification**

The following list shows all five candidates in the election, it is important that these be recorded in alphabetical party order as shown:

Black Party – Joan Jet

Blue Party – Bert Navy

Green Party – Luke Lime

Red Party – Rose Burgundy

Yellow Party – Egbert Yoke

The system should read from and write to a file with the name of the polling station e.g. Belfast\_SouthEast.txt

The information in the file will be 7 lines long, with the first 5 lines corresponding to the candidates above and the last 2 lines for male and female tallies respectively.

Each time someone enters the polling booth, the data they input will be used to update the polling station text file.

Menu driven system:

The program should be menu driven, providing options for the electoral staff to setup the system either as a polling booth or as a means of analysing results data. This menu system should be both robust and user friendly. The following is an example of a proposed main menu:

Electoral System

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1. Setup polling station votes file

2. Enter polling booth

3. Collate data from other polling stations

4. Review statistics

5. Exit

Enter menu option:

Setup votes file option:

Creation of a votes file with the name of the polling station e.g. BelfastSouthEast.txt

If this menu option is skipped, then none of the other menu options are available, apart from exit.

Polling Booth option:

Within the polling booth section of the program, the user is greeted with an option to select their gender, either male or female.

After which each candidate is presented in turn and the user can enter a vote against that specific person… the valid options are 0, 1, 2, 3, 4 or 5. Note a <CR> will be treated as a 0 (zero).

No two or more candidates can have the same vote, unless it is zero. Each candidate must have a unique vote apart from zero.

Only valid numeric values or a <CR> will be accepted. Any invalid character will cause the system to request another input for that candidate. Also, as there are only 5 possible candidates, any value below zero or above 5 will be treated as an invalid character.

After all five candidates have been voted on, the user will be informed if their vote has been successful. If there are any issues with the vote values, the user will be notified, and the system will repeat the input of the five candidates again. If everything is fine, the system will proceed to the next voter, asking the gender question again.

Storage of votes and gender:

a vote of 1 will add a 1 to the running total of a candidate

a vote of 2 will add a 0.5 to the running total of a candidate

a vote of 3 will add a 0.33 to the running total of a candidate

a vote of 4 will add a 0.25 to the running total of a candidate

a vote of 5 will add a 0.2 to the running total of a candidate

If the voter identifies as male then a 1 is added to the male count, otherwise a 1 is added to the female count.

To exit from the polling booth and return to the main menu, this will only be available to electoral staff entering a secret password at the gender question stage.

Collating data option:

The electoral official will be able to load vote files from other polling stations (including the polling station the system is running on), to create an overall vote file called totalVotes.txt.

This activity can be repeated multiple times, until all known vote files are loaded.

Each time a votes file is selected, all the votes from that file are added to the corresponding votes in the totalVotes file.

Stats review option:

An electoral official can access the totalVotes.txt file at any time and get an analysis of the data i.e. a list of candidates against their votes count. A break down of the percentage of votes each candidate has gained. An identification of the overall candidate winner. Also, a percentage breakdown of male to female split.