CS 150: Problem Solving and Programming I
Lab#11

Task 1:

The history teacher at your school needs help in grading a True/False test. The students' IDs and test answers are stored in a file. The first entry in the file contains answers to the test in the form:
TFFTFFTTTTFFTFTFTFTT

Every other entry in the file is the student ID, followed by a blank, followed by the student's responses. For example, the entry:

ABC54301 TFTFTFTT TFTFTFFTTFT

indicates that the student ID is ABC54301 and the answer to question 1 is True, the answer to question 2 is False, and so on. This student did not answer question 9. The exam has 20 questions, and the class has 4 students. Each correct answer is awarded two points, each wrong answer gets one point deducted, and no answer gets zero points.

Write an algorithm and a C++ program that uses **dynamic arrays** and processes the test data. The output should be the student's ID, followed by the answers, followed by the test score, followed by the test grade.

Assume the following grade scale:

90%–100%, A;

80%–89.99%, B;

70%–79.99%, C;

60%–69.99%, D;

and 0%–59.99%, F.

Sample output:

```
Processing Data
Key: TTFTFTTTFTFTFFTTFTTF

Student ID      Student Answers          Score      Grade
ABC54102        T FTFTFTTTFTTFTTF TF     27         D
DEF56278        TTFTFTTTFTFTFFTTFTTF     40         A
ABC42366        TTFTFTTTFTFTFFTTF        34         B
ABC42586        TTTTFTTT TFTFFFTF        26         D


Process returned 0 (0x0)   execution time : 0.078 s
Press any key to continue.
```

Task 2:

Write an algorithm and a C++ program that allows the user to enter the last names of five candidates in a local election and the number of votes received by each candidate. The program should then use **dynamic arrays** to hold the data and output each candidate's name, the number of votes received, and the percentage of the total votes received by the candidate. Your program should also output the winner of the election.

Sample output:

```
Enter candidate's name and the votes received by the candidate.
Johnson 5000
Miller 4000
Duffy 6000
Robinson 2500
Ashtony 1800
Candidate    Votes Received   % of Total Votes
Johnson          5000             25.91
Miller           4000             20.73
Duffy            6000             31.09
Robinson         2500             12.95
Ashtony          1800              9.33
Total            19300
The Winner of the Election is Duffy.

Process returned 0 (0x0)   execution time : 67.813 s
Press any key to continue.
```

Submission instructions:

- Must submit typed algorithm in separate file. Handwritten reports are not accepted.
- You must submit your source code solutions in the form of files with the .cpp extension.
- Must submit on BlackBoard.
- There is no limit to how many times you can resubmit the files as long as it is before the end of the Lab section. **We will grade the last attempt only.**
- Send the source code to yourself by email.
- These algorithms and the programs should be completed in the Lab class and submitted on Blackboard at the end of the Lab period. **Late submission will not be permitted**. There are no 'make-ups' for the Labs.