TCP1101Programming Fundamentals
Assignment 1
Trimester 1, 2017/2018

Title

One Line Stone-Age Tiled Editor

Deadline

Your program is to be submitted to MMLS under your respective lecture section by Friday 11th August 2017 (before 11:59 pm). Please follow instructions to be posted on MMLS by 10th August 2017.

Grouping

To be done individually

Objective

The objective of this assignment is to assess the skill of students in designing and implementing simple algorithms correctly and efficiently in C++.

Problem Descriptions

1. You are to write a program that can be used as an editor that has the following features:
   - [N]ew : to create a new file
   - [I]nsert : to insert one word at a time
   - [D]elete : to delete one word at a time
   - [O]verwrite : to overwrite one word at a time
   - [L]oad : to load a file (bonus feature for Assignment 1 but compulsory for Assignment 2 later)
   - [S]save : to save a file (bonus feature for Assignment 1 but compulsory for Assignment 2 later)

2. Initially, the player needs to create the initial screen and prompt user for an input (see below):

```
* ========================================

File name : NULL
```

```
[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==>
```

3. To create a new file, user should key in the letter 'N'. If 'N' is entered, the program will prompt the user to specify the name of the file. Once the filename has been specified, the program will show a new screen with some initial tile display (see below).

```
* ==========================================

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==> N
New file name ==> Text1.txt

----------------------- new screen ------------------------

File name : Text1.txt
|----+---+---+---+---+---+---+---+---|
|    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----+---+---+---+---+---+---+---+---|
| 00 |   |   |   |   |   |   |   |   |
|----+---+---+---+---+---+---+---+---|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==>
```

4. To insert text to the tiled editor, user should key in the letter 'I'. If 'I' is entered, the program will prompt the user to key in the word to be entered. For assignment 1, the program should be able to insert only one word when prompted (see below):

```
* ==========================================

File name : Text1.txt
|----+---+---+---+---+---+---+---+---|
|    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----+---+---+---+---+---+---+---+---|
| 00 |   |   |   |   |   |   |   |   |
|----+---+---+---+---+---+---+---+---|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==> I
Tile number ==> 1
Text ==> C++

----------------------- new screen ------------------------

File name : Text1.txt
|----+-----+---+---+-------------+----------+---+---+---|
|    |   1 |  2 | 3 |           4 |        5 | 6 | 7 | 8 |
|----+-----+---+---+-------------+----------+---+---+---|
| 00 | C++ |    |   |             |          |   |   |   |
|----+-----+---+---+-------------+----------+---+---+---|
```

```
[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==> I
Tile number ==> 2
Text ==> a

------------------------ new screen ------------------------

File name : Text1.txt
|----+-----+----+---+---------+---------+-------------+----------+---|
|    |   1 |  2 | 3 |       4 |       5 |           6 |        7 | 8 |
|----+-----+----+---+---------+---------+-------------+----------+---|
| 00 | C++ | a  |   |         |         |             |          |   |
|----+-----+----+---+---------+---------+-------------+----------+---|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==> I
Tile number ==> 2
Text ==> is

------------------------ new screen ------------------------

File name : Text1.txt
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|
|    | 1           | 2    | 3           | 4       | 5         | 6           | 7        | 8        |
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|
| 00 | C++         | is   | a           |         |           |             |          |          |
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==>
```

5. To delete text from the tiled editor, user should key in the letter 'D'. If 'D' is entered, the program will prompt the user to key in the tile number to indicate which word to be deleted. For assignment 1, the program should be able to delete only one word at a time from the existing text when prompted (see below):

```
* ==========================================

File name : Text1.txt
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|
|    | 1           | 2    | 3           | 4       | 5         | 6           | 7        | 8        |
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|
| 00 | C++         | is   | a           |         |           |             |          |          |
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==> D
From Tile Number ==> 2

------------------------ new screen ------------------------

File name : Text1.txt
```

```
|----+-----+----+-----+-----+---------+-------------+---+---|
|    |   1 |  2 |   3 |   4 |       5 |           6 | 7 | 8 |
|----+-----+----+-----+-----+---------+-------------+---+---|
| 00 | C++ | a  |     |     |         |             |   |   |
|----+-----+----+-----+-----+---------+-------------+---+---|


[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==>
```

6. To overwrite text from the tiled editor, user should key in the letter 'O'. If 'O' is entered, the program will prompt the user to key in the tile number to indicate which word to be overwrite. For assignment 1, the program should be able to overwrite only one word at a time from the existing text when prompted (see below):

```
* ========================================

File name : Text1.txt
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|
|    | 1           | 2    | 3           | 4       | 5         | 6           | 7        | 8        |
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|
| 00 | C++         | is   | a           | general | purpose   | programming | language |          |
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==> O
Tile number ==> 1
Text ==>"Java"

------------------------ new screen ------------------------

File name : Text1.txt
|----+---------+------+-------------+---------+-----------+-------------+----------+----------|
|    | 1       | 2    | 3           | 4       | 5         | 6           | 7        | 8        |
|----+---------+------+-------------+---------+-----------+-------------+----------+----------|
| 00 | "Java"  | is   | a           | general | purpose   | programming | language |          |
|----+---------+------+-------------+---------+-----------+-------------+----------+----------|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==>
```

7. (Bonus) To save text from the tiled editor, user should key in the letter 'S'. If 'S' is entered, the program will prompt the user to key in the filename. (see below):

```
* ========================================
* Save text to a file

File name : Text1.txt
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|
|    | 1           | 2    | 3           | 4       | 5         | 6           | 7        | 8        |
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|
```

```
| 00 | C++         | is   | a           | general | purpose   | programming | language |          |
|----+-------------+------+-------------+---------+-----------+-------------+----------+----------|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==> S
File name (enter=Text1.txt) ==>  Text2.txt
File saved.

------------------------ Text2.txt for reference ------------------------

C++ is a general purpose programming language
```

8. (Bonus) To load text from a file to the tiled editor, user should key in the letter 'L'. If 'L' is entered, the program will prompt the user to key in the filename. (see below):

```
* ==========================================

File name : ExistingText.txt
|----+-----+----+-----+-----+---------+-------------+---+---|
|    |   1 |  2 |   3 |   4 |       5 |           6 | 7 | 8 |
|----+-----+----+-----+-----+---------+-------------+---+---|
| 00 | C++ | is | for | the | serious | programmer. |   |   |
|----+-----+----+-----+-----+---------+-------------+---+---|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==> L
File name ==>  NewText.txt

------------------------ new screen ------------------------

File name : NewText.txt
|----+-------------+--------+-------------+------------+-------------+-------------+----------+----------|
|    | 1           | 2      | 3           | 4          | 5           | 6           | 7        | 8        |
|----+-------------+--------+-------------+------------+-------------+-------------+----------+----------|
| 00 | C++         | is     | a           | general    | purpose     | programming | language |          |
|----+-------------+--------+-------------+------------+-------------+-------------+----------+----------|

[N]ew, [I]nsert, [D]elete, [O]verwrite, [L]oad, [S]save
==>

------------------------ NewText.txt for reference ------------------------

C++ is a general purpose programming language
```

9. You need to do error checking wherever necessary to improve the robustness of your program. For example the 'out of range' check for insert, delete, overwrite and the 'file not found' for load (if you are implementing this for the bonus).

Deliverables

1. Source code with appropriate comments inserted inside the code.

Additional Info on Deliverables

1. Source codes have to be properly formatted and documented with comments.
2. DO NOT submit the .exe file
3. For ALL your .cpp files, insert the following information at the beginning of your code

```
/**********|**********|**********|
Program: YOUR_FILENAME.cpp
Course: TCP1101 Programming Fundamentals
Year: 2017/18 Trimester 1
Name: . . . . . .
ID: 1071001234
Email: abc123@yourmail.com
Phone: 018-1234567
**********|**********|**********/
```

Softcopy submission

1. Name your .cpp file following the following format:

   TUTORIALSECTION_ASSIGNMENTPART1_FULLNAME
   Example:
   TT01_A1_FRANK_CARRANO.cpp

2. It is your responsibility to check that you have uploaded the correct file. Please double check your submission. If you accidentally upload an empty file, you will get 0.

IMPORTANT NOTES

No mark will be given to both the code giver and the code receiver. The student that cheats in assignment using whatever means will be

awarded zero mark. Please be reminded of the followings:

- goto is not allowed
- code must be platform independent
- compilation without warning or error
- good coding format and style (indent statements, skip lines, braces, comments, consistent, etc)
- codeblocks mingw g++ compiler can run your code
- if any instruction not followed, no mark will be given
- Student should submit only two files in zip format which are cpp file and odt/doc file

Evaluation Marksheet

Criteria / Features	Marks allocation	
Initial Screen	Perfect = 2 Yes with some error / missing component = 1 No Implementation = 0	
Create New File with error checking	Perfect = 4 Yes with only a little error / missing component = 3 Yes with some error / missing component = 2 Yes but many error = / missing component = 1 No Implementation = 0	
Insert feature with error checking	Perfect = 4 Yes with only a little error / missing component = 3 Yes with some error / missing component = 2 Yes but many error = / missing component = 1 No Implementation = 0	
Delete feature with error checking	Perfect = 4 Yes with only a little error / missing component = 3 Yes with some error / missing component = 2 Yes but many error = / missing component = 1 No Implementation = 0	
Overwrite feature with error checking	Perfect = 4 Yes with only a little error / missing component = 3 Yes with some error / missing component = 2 Yes but many error = / missing component = 1 No Implementation = 0	

Save feature (bonus) with error checking	Perfect = 2 Yes with only a little error / missing component = 1.5 Yes with some error / missing component = 1 Yes but many error = / missing component = 0.5 No Implementation = 0	
Load feature (bonus) with error checking	Perfect = 2 Yes with only a little error / missing component = 1.5 Yes with some error / missing component = 1 Yes but many error = / missing component = 0.5 No Implementation = 0	
Source code documentation and comments	Very good documentation/comment = 2 Average documentation/comment = 1 Poor documentation = 0.5 No documentation = 0	