Worksheet 4

COMP110: Principles of Computing

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Introduction

In this assignment, you will create three small C++ programs:

A. A console application implementing the word guessing game Hangman;

B. A console application implementing the 2-player strategy game Connect 4;

C. A graphical application which generates and displays the Mandelbrot fractal.

This worksheet tests your ability to translate various program notations (pseudocode, flowcharts, mathematics, narrative descriptions) into C++ code.

Submission instructions

todo

Marking

todo

Part A.
Hangman

1.

Do a thing

2.

The following algorithm takes the current partially revealed word, the secret word, and a guessed letter. It returns a new partially revealed word, in which the guessed letter has been filled in where it appears in the string.

procedure FillInLetter(partialWord, secretWord, letter)
    result ← empty string
    for $i = 0, 1, \ldots,$ secretWord.length $- 1$ **do**
        if secretWord[i] = letter **then**
            append letter to result
        else
            append partialWord[i] to result
        end if
    end for
    return result
end procedure

The following table gives some examples of possible input and output:

partialWord	secretWord	letter	result
`"B-----"`	`"BANANA"`	`'A'`	`"BA-A-A"`
`"B-----"`	`"BANANA"`	`'E'`	`"B-----"`
`"-----"`	`"APPLE"`	`'L'`	`"--L-"`
`"-----"`	`"APPLE"`	`'B'`	`"-----"`

Implement the FillInLetter() algorithm as a C++ function with the following signature:

```
std::string fillInLetter(std::string partialWord,
                         std::string secretWord,
                         char letter)
```

Part B.
Connect 4

1.

Do a thing

2.

Do another thing

Part C.
Mandelbrot