



# Task 10 - Lab Report

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**Spike:** Task\_10

**Title:** File Input / Output

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## Goals & Deliverables

**Aim:** Understand the process behind extracting data from text, binary and JSON files.

### Deliverables:

- Functional code meeting Lab 10 requirements
- Lab Report
- Git commit history

## Technology, Tools and Resources

### Tech and Tools



The project was scripted in C++ 17 using Visual Studio Community 2022.

UML's and charts are made with [www.Lucidchart.com](http://www.Lucidchart.com)

Source control is handled using Git.

### Resources

- fstream open modes  
<https://cplusplus.com/reference/fstream/fstream>
- Read from text files  
<https://www.youtube.com/watch?v=ASVgecY7ZbI&t=796s>

# Tasks Undertaken

## Q & A

### Part A:

1. There are different file modes, what are they?
  - a. An fstream object can open a file for reading and writing in both text and binary. Additionally, there are member constants allowing for truncation and manipulating the output and read positions.

mode	Flags describing the requested input/output mode for the file. This is an object of the bitmask member type <code>openmode</code> that consists of a combination of the following member constants:	
member constant	stands for	access
in	input	File open for reading; the <a href="#">internal stream buffer</a> supports input operations.
out	output	File open for writing; the <a href="#">internal stream buffer</a> supports output operations.
binary	binary	Operations are performed in binary mode rather than text.
ate	at end	The <b>output position</b> starts at the end of the file.
app	append	All output operations happen at the end of the file, appending to its existing contents.
trunc	truncate	Any contents that existed in the file before it is open are discarded.

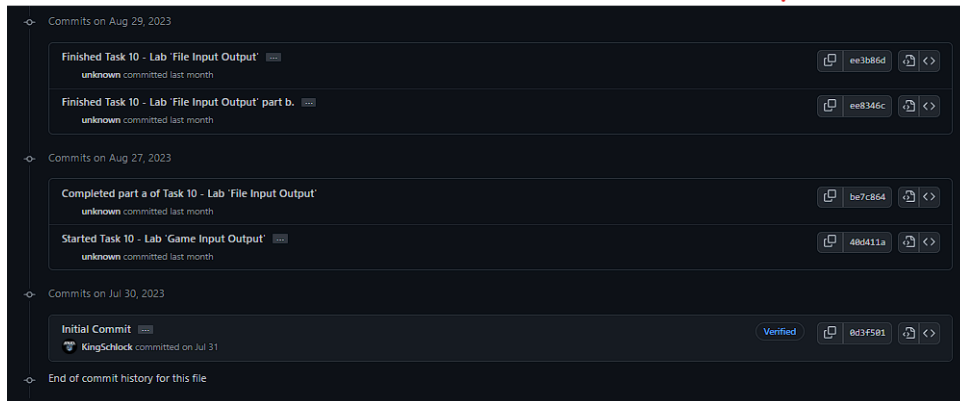
These flags can be combined with the bitwise OR operator (`|`).

2. What happens if you don't close the file? Is it something we need to worry about?
  - a. An fstream file is a RAII object and will close automatically when it falls out of scope. Therefore, unless comparing against the fail bit the `file.close()` method is essentially just good practice.
3. How many bytes are in the file? Is the expected based on the size of the variable types?
  - a. Each line of the input.txt file contains 16, 17 and 21 characters respectively. Each character equates to a byte of data therefore we have 54 bytes of data in the file. Ask for elaboration on the last part of the question before submitting.



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## Git Commit History



## What was Learned?



After this task, I have the ability to read and process data from multiple filetypes, make basic use of a JSON library to interact with JSON files and load the extracted data into objects before instantiation. The most obvious application of file reading process in regard to the unit is the reading / writing of save data to a file to maintain the gameplay state after the user quits.