Knowledge (11 marks)

1. Why would you want to store data in a file? (1)

You would want to store data in a file for long term scenarios. If you would want to store data in between each time you run a program, you could store it in a file since it will not slow your program, as it is memory dependent.

2. Compare/Contrast saving information in a text vs binary file. (3)
   a. Binary files take text data and serializes (conversion process) to binary data (unreadable) while text file is just written text data (readable).
   b. When reading binary files, it takes the binary data (unreadable) and deserialize (conversion process) to text data (readable) while the text file just reads the text data.
   c. Binary files generally read and write faster than text files
3. What library(es) are used to read from a text file? (list all discussed in class - at least 2) (2)
   a. java.util.Scanner
   b. java.io.File
4. What library(es) are used to write to a text file? (list all discussed in class - at least 2) (2)
   a. java.io.PrintWriter
   b. java.io.File
5. With modern encryption (like sha256), is it possible for a program or website to **retrieve** a forgotten password? (1)

It is not possible for a program or website to retrieve a forgotten password by decrypting it as modern encryption, such as sha256, is incapable of doing so.

6. Can binary files be viewed in readable form in a text editor. Explain your answer (2)

Binary files cannot be viewed in readable form in a text editor, however, it is possible to open the file and look at it. This is because opening a binary file in a text editor will give back ASCII characters which are parsed from the text editor.

Thinking (6 marks)

1. Explain how you **might** work with a list of books in a library in which you want to store many different pieces of information about each book item in a single file. (2 marks)

I would have an array and in that array have all the book information such as title, author, genre, etc and have a specific delimiter to separate these different pieces of information. I could then use Tokenizers and for loops to write it onto the file.

2. Describe **YOUR POSSIBLE solution** to deal with reading delimited text where the delimiter might appear as part of the fields themselves (so ',' separates text but could

also be in text that should be kept together. Example: I am one,,text,I'm the second,I'm the third (2 marks) (What tools in Java from Grade 11 ICS3U and up to NOW in ICS4U are at your disposal that may help? - External concepts, methods are NOT permitted. Build a solution with what you know). We're looking for a DESCRIPTIVE solution, not an actual program. It's TWO MARKS!

If I had no other option but to work with the delimited text, I would first see if there are any characters after the delimiter since in the language, English, commas are generally followed by a space. Therefore, if there is no space after the delimiter, it would be safe to assume that it was specifically used to delimit the text. Moreover, in scenarios where there are 2 commas, you could just remove the comma from the text. Obviously, the removal of the comma will be done before tokenizing the text to avoid any confusion errors. For instance, "the wind,,the sun, and the water". If ',' is the delimiter, "The wind" and "the sun, and the water" will be the only tokens. The comma after wind will be deleted, which leads to a comma without a space, causing it to act as a delimiter, and the comma after "sun" has a space so we could consider that not a delimiter.

3. In many cases, files are related to one another. For example a library patron's info might be stored in one file, and a list of borrowed books in another. How would you connect the information between the files? (You'll want to explore relational databases on the internet for this one - the most basic concepts) (2 marks)

Using the topic of relational databases, you could connect the information between the 2 files by giving each individual a unique identification number, and use that ID number as well in the other file. For instance, one column in each row in the patrons info file can contain the unique identification number while the other columns can have other information such as first name, last name, date of birth, address. On the borrowed books file, one column in each row can also contain the unique identification number, while other columns include the books signed out.