Assignment 4

1. What's the difference between final, finally? What is finalize()?

Final

Final variable: A final variable value can't be re-referenced.

Final method: A final method can't be overridden

Final class: A final class can't be inherited

Finalize

Perform cleanup before objects are being destroyed

Finally

a. It is used in java exception handling. This is followed either by try block (or) catch block.
b. It will always be executed no matter if the exception is handled or not.

2. What's the difference between throw and throws?

The throws keyword is used to declare which exceptions can be thrown from a method, while the throw keyword is used to explicitly throw an exception within a method or block of code.

3. What are the two types of exceptions?

Checked exception
Unchecked exception

4. What is error in java?

An error defines a reasonable issue that is topping the execution of the program.

5. Exception is object, true or false?

True

6. Can a finally block exist with a try block but without a catch?

Yes

7. From java 1.7, give an example of the try-resource feature.

```
static String readFirstLineFromFileWithFinallyBlock(String path)
                                                    throws IOException {
    BufferedReader br = new BufferedReader(new FileReader(path));
    try {
        return br.readLine();
    } finally {
        br.close();
    }
}
```

8. What will happen to the Exception object after exception handling?
The Exception object will be garbage collected in the next garbage collection.

9. Can we use String as a condition in switch(str){} clause?
Yes

10. What's the difference between ArrayList, LinkedList and vector?
ArrayList: dynamic array structure, not thread-safe.
LinkedList: store the sequence of nodes, every node has link to connect to other nodes.
Vector: Same as arrayList but thread-safe.

11. What's the difference between hashTable and hashMap?
HashMap: Non-Synchronized, Not Thread Safe. Allows one null key and multiple null values. Iterator is used to iterate the values. HashMap is fast.

HashTable: Synchronized, Thread Safe. Doesn't allow anything that is null. Enumerator is used to iterate the values.
Hashtable is slow.

12. What is static import?
The static import construct allows unqualified access to static members without inheriting from the type containing the static members

13. What is static block?
Can be used for static initialization of a class. This code inside the static block is executed only once: the first time the class is loaded into memory.

14. Explain the keywords:
default(java 1.8): The default keyword specifies some code to run if there is no case match

break: When Java reaches a break keyword, it breaks out of the switch block or while loop.

continue: The continue statement breaks one iteration (in the loop), if a specified condition occurs, and continues with the next iteration in the loop.

synchronized: Methods can only be accessed by one thread at a time

strictfp: It is used in java for restricting floating-point calculations and ensuring the same result on every platform while performing operations in the floating-point variable.

transient: Attributes and methods are skipped when serializing the object containing them

volatile: The value of an attribute is not cached thread-locally, and is always read from the "main memory"

instanceOf: The instanceof keyword checks whether an object is an instance of a specific class or an interface.

15. Create a program including two threads – thread read and thread write.

Input file ->Thread read -> Calculate -> buffered area
Buffered area -> Thread write -> output file
Detailed description is in assignment4.txt file.
Sample input.txt file.
Attached files are input.txt and a more detailed description file.