Assignment 4

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

- Final: a reserved keyword in Java, used on Class, method, and variable

  • [class] A final class can't be inherited
  • [method] A final method can't be overridden
  • [variable] A final variable value can't be re-referenced.

- Finally:

  • used in java exception handling, normally placed after the catch block
  • 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 and unchecked exception

4. What is error in java?

- a subclass of Throwable that tells that something serious problem is existing and a reasonable Java application should not try to catch that error.

5. Exception is object, true or false?

- False, it is a Class

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.

- try (Scanner scanner = new Scanner(new File("test.txt")))

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	LinkedList	Vector
Underlying implementation uses an array which is a continuous memory.	Underlying implementation uses nodes which are not continuous memory	continuous memory.
Fast access but slow on modification (insert/delete)	Slow on access but fast on modification (insert/delete).	Slow because of synchronization
Thread safe	Thread safe	Not Thread safe

11. What's the difference between hashTable and hashMap?

Not thread-safe	Thread-safe
Allows NULL key (but only allows 1)	No NULL key is allowed
Better performance	Lower performance

12. What is static import?

- we can access the static members of a class directly without class name or any object

13. What is static block?

- a set of instructions that is run only once when a class is loaded into memory

14. Explain the keywords: default(java 1.8), break, continue, synchronized, strictfp, transient, volatile, instanceOf

- default: If you didn't assign any access modifier to variables, methods, constructors and, classes, by default, it is considered as default access modifier.

- Break: terminates the loop immediately, and the control of the program moves to the next statement following the loop

- Continue: breaks one iteration (in the loop), if a specified condition occurs, and continues with the next iteration in the loop

- Synchronized: allowing only one thread to execute at any given time

- Strictfp: restricting floating-point calculations and ensuring the same result on every platform while performing operations in the floating-point variable

- Transient: When we mark any variable as *transient,* then that variable is not serialized.

- Volatile: Volatile keyword is used to modify the value of a variable by different threads. It is also used to make classes thread safe. It means that multiple threads can use a method and instance of the classes at the same time without any problem.

- instanceOf: used to test whether the object is an instance of the specified type

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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