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[面试经验] Indeed/确实面经--Karat面试

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indeed

kuailezhish 2020-9-17 18:33:50 | 只看该作者 | 试试Job多多

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2020(7-9月) 码农类General 硕士 全职@Indeed - 内推 - 技术电面 | Pass | 在职跳槽

本帖最后由 kuailezhish 于 2020-9-18 09:37 编辑

前两天刚参加完Indeed Karat的电面，确实问的大多数都是地里面经的题目，楼主也来分享一下面试准备的题，希望能够帮助到大家，以及楼主新人很多帖子看不了，请大家大米支持下哈！

流程：

- * Self-Introduction (~ 1 min)
- * Q & A (~ 10 min) (choose 2 fields, about 3 problems in every field)
- * Coding (2 ~ 3 problems) with time and space complexity analysis

Q & A 环节：（楼主投的是后端工程师，给的这些领域，地里有小伙伴说可能还有其他的类型？）

1. Web application
Building user interfaces for web services and sites
2. Production issues
Diagnosing problems with production services
3. System internals
How computers manage and allocate resources like CPU and memory
4. OOP
Best practices for building classes and systems of classes
5. Testing
Validating code and related concerns

五选二，楼主之前准备的是System internals和OOP，总体上就是根据自己的准备知识，尽量说就可以了。

贴一下楼主尽可能整理的问题和答案（不一定很准确，大家参考着自己习惯的知识上靠吧），希望能够帮助大家：

System Internals:

- 1 Graph(CPU usage, RAM usage), 大概就是随着time, CPU资源消耗不变, increase; How to detect; What could cause that; How to resolve? maybe memory leak, try to find
- 2 Memory Leak, how to solve?

Memory Leak: some objects are referenced, but not used

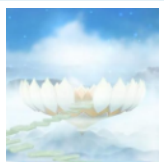
Symptoms of a Memory leak: Works fast at first, but slows over time; OutOfMemoryError after runing; There are occasionally crashes in the applications.

Why

1. Memory Leak Through static Fields
2. Through Unclosed Resources
3. Improper equals() and hashCode() Implementations

Handle:

1. Enable Profiling: Java profilers are tools that monitor and diagnose the



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关闭

memory leaks through the application.

2. Verbose Garbage Collection: enable verbose garbage collection to track detailed trace of GC

3. use tools like Eclipse to show warnings and errors whenever it encounters obvious cases of memory leaks

4. use benchmarks to measure and analyze the Java code's performance after changed code.

5. Code Reviews

3 Connection Pool Timeout

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This value indicates the number of seconds that a connection request waits when there are no connections available in the free pool and no new connections can be created.

Handle: Check connection pool configurations and logs about connection use/idle messages; also check code for correct usage and relasing.

4 Thread Exhaustion

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Thread exhaustion arise when you generate more tasks than your ThreadPool can handle.

Handle: Use Asynchronous code (including async/await) with fewer threads to avoid blocking threads.

5 How do you know if you can handle 1k requests per second (now it's 1 request per second)

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load test with mocked production data

6 操作系统中进程和线程的区别。

Both processes and threads are independent sequences of execution. The typical difference is that threads (of the same process) run in a shared memory space, while processes run in separate memory spaces.

Each process provides the resources needed to execute a program. Each process is started with a single thread, often called the primary thread, but can create additional threads from any of its threads.

A thread is an entity within a process that can be scheduled for execution.

7 What is garbage collection

Once an object is no longer referenced and therefore is not reachable by the application code, the garbage collector removes it and reclaims the unused memory.

8 stack vs heap

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Heap memory is used by all the parts of the application whereas stack memory is used only by one thread of execution. When an object is created, it's mostly stored in the Heap space and stack memory contains the reference to it.

9 How to communicate between threads? How to communicate between processes?

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Thread communicate via shared memory. The information is exchanged over objects by locking and notification.
The communication of the different processes with each other on the same machine use the IPC (inter process communication). IPC have different mechanism PIPE, FIFO, message queue, semaphore, shared memory etc.

10 What is the difference between garbage collection and 传统的内存管理方法?

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Explain Garbage collection, then
Garbage collection can automatically handle the deletion of unused objects or some objects that are inaccessible to free up memory resources.
In traditional forms of memory management, programmers need to do this by themselves.

11 给一个场景不太适合使用garbage collection模型去管理内存

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Online services which need low latency and keep communication with users(no "stop the world" time interval)

Object-oriented design:

1. 简单描述下composition 跟inheritance 以及他们的区别。

Inheritance is an "is-a" relationship. Composition is a "has-a" relationship. Composition and Inheritance both provide code reusability by relating class. Inheritance derives one class from another one class, composition can have an instance of another class as a field.

2.What is dependency injection(DI)? 对管理软件有什么好处?

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Dependency Injection is a technique where an object receives other objects that it depends on.

DI is a **design pattern** used to implement IoC. By DI, the responsibility of creating objects is shifted from our application code to the Spring container; this phenomenon is called Inversion of Control (IoC). The

injection can be constructor injection(recommended) or setter injection or field injection.

Advantages: Dependency injection makes testing easier and DI is an approach to implement loose coupling among the classes in an application.

Disadvantages: Code is difficult to trace and read in Dependency Injection, it increases complexity in the linkages between classes.

3.Polymorphism

The word polymorphism means having many forms. It describes the concept that different classes can be used with the same interface.

Advantages: It helps the programmer to reuse the codes

Disadvantages: Polymorphism reduces the readability of the program and runtime polymorphism can lead to the performance issue as machine needs to decide which method or variable to invoke

4.what is the most important object oriented programming principle for complex system

Four basic concept:

Abstraction: shows only the necessary details to the client of an object

Encapsulation: process of enclosing one or more items within a physical or logical package

Inheritance: allows us to define a class in terms of another class

Polymorphism: an instance of something in various forms

The five principles are as follows:

* S – Single Responsibility Principle (SRP): "A class should have one, and only one, reason to change."

* O – Open Closed Principle (OCP): "You should be able to extend a classes behavior, without modifying."

* L – Liskov Substitution Principle (LSP): "Derived classes must be substitutable for their base classes."

* I – Interface Segregation Principle (ISP): "Clients should not be forced to depend upon interfaces that they don't use."

* D – Dependency Inversion Principle (DIP): "Depend on abstraction, not on concretions."

5.如果向Collection framework里面加入一个新的class. 你打算加上哪些文档?

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跟一般API文档相比, 看重的是细节, 比如是否修改原数据, 返回数据是否有序, 接受input的范围, 是不是线程safe, 时间空间效率等等

6.公司实现了一个数据结构, 你觉得documentation里头要写啥比较好, 随便讲

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```
@author (只出现在类和接口的文档中)
@version (只出现在类和接口的文档中)
@param (只出现在方法或构造器的文档中)
@return (只出现在方法中)
@exception (从java1.2之后也可以使用@thrown替代)
@see
@since
@serial (也可以使用@serialField或@serialData替代)
@deprecated
more examples
```

7.undo/redo , which data structure is good for this?
stack

8.What is the main difference between overloading and overriding?
Overloading is static Binding, whereas Overriding is dynamic Binding.
Overloading is nothing but the same method with different arguments, and it may or may not return the equal value in the same class itself.
Overriding is the same method names with the same arguments and return types associated with the class and its child class.

9. What is Static Binding and Dynamic Binding?
Binding is nothing but the association of a name with the class. Static Binding is a binding in which name can be associated with the class during compilation time, and it is also called as early Binding.
Dynamic Binding is a binding in which name can be associated with the class during execution time, and it is also called as Late Binding.

10.When would you use composition and inheritance over the other, what are some of the tradeoffs?

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Does TypeB want to expose the complete interface (all public methods no less) of TypeA such that TypeB can be used where TypeA is expected?
Indicates Inheritance. "is-a" relationship

Does TypeB want only some/part of the behavior exposed by TypeA?
Indicates need for Composition. "has-a" relationship

编程题：

楼主主面的是Calculator，大家可以参考地里的面经资料寻找答案，或者自己练一下

1) 给一个String只有数字，+和-，比如43+2-2，返回计算结果

2) 第一题的follow up，这次加了括号，比如(33-3)+((8-3)-(3-88))，返回计算结果 (LT 224)

3) 第二题的follow up，这次String里会有variable，比如 (apple-4)+orange-(banana+3)，然后给一个map，{{banana: 4}, {apple : 9}}，不是所有的variable都有值，这个例子就会返回5+orange-7。

最后祝大家面试顺利哈！



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