<https://www.1point3acres.com/bbs/thread-536645-1-1.html>

Square 三番总部面data infra 组onsite，面试体验挺有意思的，分享一下～  
第一轮，pair programming, 问了construct binary tree by preorder and inorder array.  题目不是重点，就感觉面试体验挺有意思的。面试不是在单独的会议室，而是在open office里的一块专门用来面试的区域。面试者和面试官公用一台电脑，所有面试者都挨着坐，有种在网吧打游戏的既视感。coding允许用IDE，上网google，一切工作可用的方法都行。程序如果编译有bug，面试官不是让你自己fix，而是他自己就fix了～（一般公司面试官发现你的bug都是会心一笑，然后让你自己fix，很多连tips都不给）。真的就有点和面试官pair programming一起解决问题的感觉，体验还是很好的～这当然要看面试官，面我的面试官都很nice～  
  
第二轮，给一个函数(只有+-，没有乘除)，让你写程序实现。要求extensible，不能hardcode. 例如,  
f(x) = 4x, if x < -2,  
      = 2x + 1, if -2 <= x < 3,  
      = x - 6, if x >= 3,  
我的做法是，把函数封装在class里.

Followup:.   
在给一个：  
g(x) = -3x, if x < -1,  
       = 2x + 4, if -1 <= x < 4,  
       = 10, x >= 4  
implement f(x) + g(x).   
例如，  
f(x) + g(x) = 4x - 3x = x, if x < -2  
= 2x + 1 -3x = -x + 1, if -2 <=  x < -1  
= 2x + 1 + 2x + 4 = 4x + 5, if -1 <= x < 3  
= x - 6 + 2x + 4 = x - 2, if 3 <= x < 4,-

= 10, if x >= 4,  
要求用OOP, ie  
Function fx();  
Function gx();  
Function func = fx.add(gx());  
int res = func.getResult();  
本质就是merge interval， 代码就不写了  
  
Followup 2: 如何optimize? 我回答的是把range，funcs 都abstract 成class/object，而不是用vector{0,1} 来代替；可以把range和func 合并成一个class；还有用self-balance tree to search instead of linearing scan;   
  
第三轮，lunch，和manager聊，manager挺nice的，整体感觉square用的tech比较old school  
第四轮，behavior question，聊项目经历  
第五轮，system design，设计一个hotel [booking](http://www.awin1.com/awclick.php?mid=6776&id=423189) system。三个需求：1）search hotels by location, available room #, room size, etc. 2）实时显示available rooms 3) book rooms  
第六轮，behavior question，和Data Infra组员聊项目经历  
第七轮，team match & Q&A，了解se[att](http://redirect.viglink.com/?key=a1aa544c3b328def412653f9fc432107&u=https%3A%2F%2Fwww.att.com%2Fshop%2Fwireless%2Fdevices%2Fcellphones.html)le组情况和选组

<https://www.1point3acres.com/bbs/thread-535384-1-1.html>

Part 1:  
Given inputs as key: value, print histogram bar graph. The key with maximum value will be a bar of 20 length, print other bars proportionally.   
  
A: 34.7  
B: 53.5  
C: 103.0  
  
A: #######  
B: ##########  
C: ####################  
  
Part 2:  
Given a list of (x, y) positions, print 20x20 grid. The one with maximum x, y value will be at the top right. Positions of the other points should be proportional.   
  
A: (x1, y1)  
B: (x2, y2)  
C: (x3, y3)   
  
大概是下面这个意思, 只画了五个点。假如C的x, y最大，C就是右上角那个，其他点按比例放。  
.  .  .  .  X  
.  .  .  .  .  
.  . X  .  .  
X .  .  .  .  
.  .  .  .  .  
  
Part 3:  
Interpolate the spaces between points in the grid, connect them with approximate lines by adding 'o' to the graph.   
. . . . . X  
.  .  .  . o.  
.  .  .  .o .  
. . X .  .  
. o . . .  
X .  .  .  .  
.  .  .  .  .

<https://www.1point3acres.com/bbs/thread-535184-1-1.html>

有一个class叫Song, 里面的key是一个int（0到11） 。value是歌名。现在给你一个playlist, 判断这个playlist是不是valid的。Follow的rule是他们的key是adjacent或者是它本身。但是这个adjacent是针对一个环。  
比如 0, 1, 2, 3是valid的。10，11，0，1也是valid的。 1， 0 ，0， 11是valid的。但是10，1，2不是valid的。

follow up:

现在给你一个valid的playlist和一首歌， 返回所有可以插入这首歌还能保证playlist是valid的位置

<https://www.1point3acres.com/bbs/thread-528959-1-1.html>

实现一个connectFour game， <https://en.wikipedia.org/wiki/Connect_Four>。基本就是一个class，然后两个player可以相互play，同时提供一些api，譬如print/check之类

<https://www.1point3acres.com/bbs/thread-527133-1-1.html>

a. Parsing: Given a string like "Chris,Tom,Anne\nJerry,Tim,Daphne"   
Print out the string like  
Chris is the child of Tom and Anne  
Jerry is the child of Tim and Daphne  
  
b. Find out the child  
  
Same function, describeRelationship(name1, name2)  
  
Output either  
"child"  
"unknown"  
  
c. Find out the parent  
  
Same function, describeRelationship(name1, name2)  
  
Output either  
"child"  
"unknown"  
"parent"  
  
d. Find out ancestor  
Output  
"child"  
"unknown"  
"parent"  
“ancestor”  
  
e. Find out offspring  
Output  
"child"  
"unknown"  
"parent"  
“ancestor”  
"offspring"

<https://www.1point3acres.com/bbs/thread-526112-1-1.html>

电面2轮, 第一轮写程序按7段数码管格式打印出数字, 例如7就要输出 -- --  
                                                                                                     |  
                                                                                                     |  
  
面试官会跟你confirm每个数字该怎样显示.   
第一问给一个数字, 打印出来;  
第二给多个digit, 例如123, 要求打印格式正确的显示.  
第三问, 给一个string, 要求输出这段sting是什么数字.  
  
第二轮, construct binary tree with inorder and preorder traversal.  
  
他家不常见[刷题](http://www.1point3acres.com/bbs/forum-84-1.html" \t "_blank)网原题, 都是面试者自己想的问题, 一般有3到5个不等的follow up, 所以和面试官的交流非常重要, 要问清楚他的expectation是什么, 不要自己做太多假设.

<https://www.1point3acres.com/bbs/thread-525809-1-1.html>

names: "Bella", "Tiger", "Smokey", "Kitty", "Socks"  
weights (grams): 4133, 4275, 4335, 4469, 4192  
heights (mm): 237, 245, 233, 245, 234  
  
1. Return the names of all cats whose weight is < 4200g  
  
2. Model a query  
  
   Pick one: HEIGHT or WEIGHT  
   Pick one: <, >, =  
   Pick a value  
   Return the names of all cats matching the query criteria above  
  
   Example 1: WEIGHT < 4200  
   Example 2: HEIGHT > 234  
   You can assume the query has been parsed into whatever data structure you want, but you need to define the data structure.  
  
  
3. Model AND/OR queries  
  
  Example:  
  
   WEIGHT < 4200 AND HEIGHT > 234  
  
   This eventually arbitrarily nests:  
  
   (WEIGHT < 4200 AND HEIGHT > 234) OR (HEIGHT < 235)  
  
   But you can start with a single AND/OR.  
  
   You can assume the query has been parsed into whatever data structure you want, but you need to define the data structure.

<https://www.1point3acres.com/bbs/thread-524237-1-1.html>

round one  
Given：  
COMMISSIONS  
[  
{  
  salesperson: String,  
  recipient: String,  
  ratio: Double  
}  
]  
Sales

[  
{  
  salesperson: String,  
  amount: Double  
}  
]  
比如commission1:{salesperson: A, recipient: B, ratio: 10%}, sales1: {A 1000}, 就是 A有 1000 刀，给 B1000 中的 10%，所以 A 最后剩900刀，B100 刀。  
Input 有 List<Commission>和 List<Sales>，最后求每个人得到多少钱  
Round 1.5  
给我分到了同一个面试官出了同样的题，告诉面试官之后又重新安排了一轮  
Round 2  
具体题目记不清大致就是有拓扑做一个图的题，最后有个小 bug 没 de 出来就挂了  
  
整体感觉方块的面试体系还没有特别成熟，居然会碰到同一个人同一个题。祝大家好运吧。

<https://www.1point3acres.com/bbs/thread-523645-1-1.html>

// The 2-player game of Drawdown is played with a board made up of N groups of stones. . From 1point 3acres bbs// At the start of each game a board and a list of moves are provided. Each move is a list of N integers, which represent the number of stones the move adds/removes from the board at each index. All moves result in a net reduction of stones on the board.   
// Moves can be re-used, but a move can no longer be performed if doing so would reduce the number of stones in any group below 0. After no more moves can be completed, player 1 wins if there are more stones at the first index than at the last index. Otherwise, player 2 wins.   
// Example: Let's say the game begins with a board of [6, 4, 2, 4] and these are the available moves provided:   
// 1. [-2, -2, 1, 0]   
// 2. [-4, -4, 0 ,0]   
// 3. [0, 0, -2, -2]   
// Player One: 3, Player Two: 2   
// move 1, move 1, move 3, move 3   
// Initial board: [6, 4, 2, 4]   
// Player 1 decides to perform move 1. New board: [4, 2, 3, 4]   
// Player 2 can perform move 1 or move 3. They decide to perform move 1.  New board: [2, 0, 4, 4] . 1point3acres  
// Player 1 has to perform move 3.  New board: [2, 0, 2, 2]   
// Player 2 has to perform move 3. New board: [2, 0, 0, 0]   
// The game is now over and player 1 is the winner.  
求两个玩家各有多少种走法可以赢

<https://www.1point3acres.com/bbs/thread-521654-1-1.html>

给2个dict。里面有3种类型。  
key是string。 value可以是int， dict，list。可以nested。  
对比2个dict然后print 不同。  
比如key相同 value不同。  
或者类型不同直接print  
recursion写的。有些地方比较麻烦。

<https://www.1point3acres.com/bbs/thread-521588-1-1.html>

第一轮 Encode Number  
  
a, b, c ... z可以用1, 2, 3 ... 26表示。输入数字，输出其可能代表的所有字母组合。  
例如，输入123，输出是abc (1，2，3)，lc (12, 3)， aw (1, 23)。  
  
第二轮 Dependency management tool  
Dependency management tool  
Client/Server tool that allows engineers to share code/libraries with each other.  
  
Part1:  
Implement a server.  
? upload(String name, int version, String payload)-

? download(String name, int version).

e.g.  
server.upload("Guava", 1, "guava\_v1\_payload");  
server.upload("Guava", 2, "guava\_v2\_payload");  
server.upload("Apache", 1, "apache\_v1\_payload");  
server.download("Apache", 1);  
--> "apache\_v1\_payload"  
---------------------  
Part 2.1  
    A1  
   / \  
  B1  C1  
   \ /  
    D1  
  
upload("A", 1, ".......", "hey I depend on B1 and C1");  
upload("B", 1, ".......", "hey I depend on D1");  
upload("D", 1, ".......", "hey I depend on nothing");  
  
Part 2.2  
Implement a client class  
void download(String name, int version)  
- Download the library associated with the specified name/version  
- Download each of the dependencies, exactly once.  
- Print the payloads of all downloaded libraries to the console

<https://www.1point3acres.com/bbs/thread-519586-1-1.html>

报个新鲜Square面经，socket programming, 实现一个function，Router A给Router B发一个字符串。  
Codepad上写，Message，Router类自己实现，自己设计test case自己跑。题很开放，没有写死的要求，自己define。  
  
Router A ---------> Router B  
          "helloWorld"

<https://www.1point3acres.com/bbs/thread-519256-1-1.html>

店面: 给一组数, 一个 target, 第一问: 能否找到一些数加起来等于 target , 第二问: 把所有可能的组合都列出来, 不能重复

Onsite:

1: 岛屿问题 第一问:几个岛屿 第二问:最大岛屿  
2: 一个组合, 里面是[A, B], [B, A], [C, D], [D, E], [E, C] 这样的一对对, 让找所有能环起来的组合:  ([A, B], [B, A] 能环起来,  [C, D], [D, E], [E, C] 也能环起来)  
3: past project deep dive  
4: 设计酒店预订系统  
5: 设计 cache, 各种 policy(LRU, LFU...)

<https://www.1point3acres.com/bbs/thread-517265-1-1.html>

construct binary tree from preorder and inorder traversal. 接着说怎么测试，面试官的意思是，再写一个preorder, inorder traversal把binary tree再traverse一遍，跟先前的两个preorder&inorder array比较一下。全部写完，最后留了时间问一些Square问题。

<https://www.1point3acres.com/bbs/thread-515859-1-1.html>

第一次出题是spread sheet editor，功能是模仿excel的function功能，比如单元格$1的值是1, $2的值是2, $3的值是 "$1\*$2"， 各自输出合适的值  
String eval(string input){  
if input contains function:  
    calculate input  
if input is a value  
    return input  
}  
  
第二次，出题是DFS搜索字符矩阵，输出edge，例如AB, BC, AD  
A--B---C  
|     |   
|     |  
D   E---F  
|  
|  
G

<https://www.1point3acres.com/bbs/thread-515407-1-1.html>

// The 2-player game of Drawdown is played with a board made up of N groups of stones.   
// At the start of each game a board and a list of moves are provided. Each move is a list of N integers, which represent the number of stones the move adds/removes from the board at each index. All moves result in a net reduction of stones on the board.   
// Moves can be re-used, but a move can no longer be performed if doing so would reduce the number of stones in any group below 0. After no more moves can be completed, player 1 wins if there are more stones at the first index than at the last index. Otherwise, player 2 wins.   
// Example: Let's say the game begins with a board of [6, 4, 2, 4] and these are the available moves provided:   
// 1. [-2, -2, 1, 0]   
// 2. [-4, -4, 0 ,0]   
// 3. [0, 0, -2, -2]   
// Player One: 3, Player Two: 2   
// move 1, move 1, move 3, move 3   
// Initial board: [6, 4, 2, 4]

// Player 1 decides to perform move 1. New board: [4, 2, 3, 4]   
// Player 2 can perform move 1 or move 3. They decide to perform move 1.  New board: [2, 0, 4, 4]   
// Player 1 has to perform move 3.  New board: [2, 0, 2, 2]   
// Player 2 has to perform move 3. New board: [2, 0, 0, 0]   
// The game is now over and player 1 is the winner.

public static void main(String[] args) {

int[] board = new int[]{6, 4, 2, 4};

int[][] moves = new int[][]{{-2, -2, 1, 0}, {-4, -4, 0 ,0}, {0, 0, -2, -2}};

stoneGame(board, moves);

System.out.println("player 1: "+ ans[0] + " player 2: "+ ans[1]);

}

static int[] ans = new int[]{0,0};

public static int[] stoneGame(int[] board, int[][] moves){

if(board.length!=moves[0].length){ // in case of any invalid input

return ans;

}

helper(board, moves);

return ans;

}

public static void helper(int[] board, int[][] moves){

// base case, if the board cannot perfom any move

int falseCount = 0;

for(int[] move: moves){

if(!check(board, move)){

falseCount++;

}else{

int[] newBoard = doMove(board, move);

debug(newBoard);

helper(newBoard, moves);

}

}

if(falseCount==moves.length){

if(board[0] > board[board.length-1]){

ans[0]++; // 0 means player 1

return;

}else{

ans[1]++;

return; // 1 means player 2

}

}

}

public static int[] doMove(int[] board, int[] move){

int[] ret = board.clone();

if(board.length!=move.length){

return null;

}

for(int i = 0 ; i < ret.length; i++){

ret[i] += move[i];

}

return ret;

}

public static boolean check(int[] board, int[] move){

for(int i = 0 ; i < board.length; i++){

if(board[i]+move[i]<0){

return false;

}

}

return true;

}

public static void debug(int[] board){

for(int i : board){

System.out.print(i+ " ");

}

System.out.println();

}

<https://www.1point3acres.com/bbs/thread-476708-1-1.html>

题很简单了  
输入一字符串 “a->b,b->c,b->d”  
是parent-》child关系  
要求输出 child：parent1， parent2。。关系的list  
  
follow up 是node 有个value是true or false， 如果没有parent就是false， 如果有至少一个parent的value是false那就是true；  
要求在之前输出结果的基础上加上这个node 的value

<https://www.1point3acres.com/bbs/thread-490256-1-1.html>

phone  
   directed graph, preants -> children,   
   1. counting number of children for each node  
   2. given rules, calculate boolean values for each node (simply solved by revised DFS)  
    followup: what if there is loops in the graph :)  
  
onsite  
   1. coding, given a list of string representing patents and their authors respectively, sorry, i forget the rest of the question, but it could be found in 1point3acres :(  
   2. randomly pick up a url of a maven pom, e.g [http://central.maven.org/maven2/ ... 19.0/guava-19.0.pom](http://central.maven.org/maven2/com/google/guava/guava/19.0/guava-19.0.pom)   
       reading xml from the link, parse xml, print all depencdencies of this library in a given format.  
       i spending too much time reading documents of xml api though, i would recommend that you may learn a little about how to parse xml in a DOM way  
   3. given lists of denpency, find out if there is a conflict or not. (topological sort)  
   4. projects deep dive  
   5. hotel [booking](http://www.awin1.com/awclick.php?mid=6776&id=423189) system :)  
   6. ch[att](http://redirect.viglink.com/?key=a1aa544c3b328def412653f9fc432107&u=https%3A%2F%2Fwww.att.com%2Fshop%2Fwireless%2Fdevices%2Fcellphones.html)ing with hiring manager

<https://www.1point3acres.com/bbs/thread-483851-1-1.html>

一道coding题。input: board, moves  
如果board第一个数比第二个数大，1win，否则2win  
分别求出1 和 2 win的不同move的step数

<https://www.1point3acres.com/bbs/thread-481314-1-1.html>

发两道onsite的编程题目：  
  
1. Mini Make File  
  
simulate the execution of a makefile.  
  
Foo:  
        echo "Foo" > Foo  
  
Bar:  
        echo "Bar" > Bar  
  
Baz: Foo Bar  
        echo "Baz" > Baz  
        echo "MIX Foo AND Bar" > Baz  
  
  
2. 给出一个有x, y 的等式，给出x的值，编程求y. 例如，  
Evaluate an equation whth giving equation and x value, calculate y.  
Eg. "3x-y+2=x+2y-15", x = 2   
  
  
还有一题是“详细描述fopen执行后，都发生了什么，越详细越好”

<https://www.1point3acres.com/bbs/thread-479313-1-1.html>

第一轮coding，基本就是实现trie数据结构，有一些api要实现， 比如返回所有符合prefix的词， 删除一个词之类的。

第二轮实现简单的画板程序，比如画布是二维矩阵， 实现drawLine （可以是斜着的），然后实现undo操作之类的。

第三轮比较简单 top k element。

经验轮不说了。

系统设计是design hotel booking system

<https://www.1point3acres.com/bbs/thread-475381-1-1.html>

刚面了加州Square, 两轮pair coding 一轮 design 还有一轮 culture   
  
pair programming 第一轮就问怎么写一个text replacement class， 忘了python一些常用的function所以不是面的很好。第二轮是lc的一道dp题。is valid word 的slight modification 。 design就问了hotel reservation system 这个做得还可以但是跟interviewer差点吵起来了，因为意见不和。呃额算了。最后一轮我就当闲聊过去了，没想去就练练手。

<https://www.1point3acres.com/bbs/thread-475302-1-1.html>

数个齿轮咬合在一起（一字排开，齿轮大小不一，以每个齿轮有多少牙齿区分齿轮大小）  
如果转动其中一个齿轮 x圈， 剩下齿轮各转动多少圈  
  
～～～～～～～～～～～～～～～～～～～～～～～～～～～～～～～～～～～～  
给出以下关系  
专利号：作者1...N: 引用专利1..N  
例如：  
Patent1:pepter,adam:patent2  
Patent2:jay,peter:patent3  
Etc  
input: 两个人名  
output:path of Patent to link those two people togther  
~~~~~~~~~~~~~~~~~~~~~~~~  
hotel [booking](http://www.awin1.com/awclick.php?mid=6776&id=423189) system  
~~~~~~~~~~~~~~~~~~~~~~~~~~~  
讲你之前做的项目

<https://www.1point3acres.com/bbs/thread-474814-1-1.html>

刚面完的方块公司电面， 1h， 三姐，大概有30%说的话都听不清，全程我都在ha? can u repeat?  
题目很简单：给一个list of string和一个string，判断能不能从list拿出俩个来组成这个string，在这个list里有可能有重复的string出现，比如[“Apple”, "pie", "Apple"] 那么 “Applepie” 和"AppleApple"都应该返回true，list里的string每个只能用一次。  
我就写了个map存了list，value放了count，然后iterate over string的index，切两半判断一下左右俩能不能行map里有没有，要处理一下左右一样的情况。  
我大概说了下思路三姐就问复杂度了，问了算不算substring的cost说要算上。  
  
需要自己写test case，写完跑了发现几个bug还有error修了一下，感觉挺不好的。。  
搞半天终于写完跑过 但是已经过去45分钟啦，三姐又加了个follow up，说俩个变k个，需要exact k个，我就用了backtracking做了一下= = 又写了点小错，然后跑过了，已经到1h，随便问了俩问题就结束了。  
  
不知道这个k个还有没有更优做法..跟word break也不太一样，如果有大神知道优化做法求告知呀。  
sq一直对代码要求比较高，感觉题目不难最后踩点写完跑过， 但是疙里疙瘩代码也不够整洁的，也是稳跪无疑了

<https://www.1point3acres.com/bbs/thread-471976-1-1.html>

const string csv = "Name,Parent1,Parent2\n"

  "Chris,Bret,Annie\n"

  "Daphne,Chris,Emily\n"

  "Fred,Chris,Emily\n"

  "Henry,George,Daphne\n"

  "Ivy,George,Daphne\n"

  "Jack,George,Daphne\n";

写函数找出两个人的关系， child/null

问题逐级递进，用到map，面试官强行让按他的思维进行，一紧张编译的小bug过不了，就死掉了，有点可惜，不过纯粹练手