The Autobiography of deepwaterooo~
Part 2: CS 辛酸史（2）

deepwaterooo

May 2, 2015

Contents

Chapter 1

写作业小伙伴 (hw3 & hw4)

1.1　from: (me~) <(me~)@gmail.com>

to: "(小伙伴) ((小伙伴)@XXXXX.edu)" <(小伙伴)@XXXXX.edu> date: Sun, Nov 24, 2013 at 3:40 AM subject: hw3 & hw4 mailed-by: gmail.com

Hi (小伙伴),

I have to ask you questions about hw3 and hw4. I can not figure them out by myself.

hw3: 2 questions, ReturnK & CompoundK

CompoundK: take call3.c- line 50-57 as the example, I can not handling line 50-52-54 appropriately.

50 int AlanTuring(int x) { 51 { 52 int x; 53 { 54 int x; 55 } 56 } 57 } I need clear idea how should I hand this compound kind.

ReturnK: I return back to FuncK parent after I have processed all the children. But for special case like ryantest.c- when we have a bunch of ReturnK, the processing order matters.

125 int retCheck (int x; int y[]) 126 { 127 return; 128 return x; 129 return retCheck(1, 2); 130 return y; 131 return y[x]; 132 }

I want to know if you try to reach "return" from parent FuncK and once you get one "return", you process the return immediately. How could you implement that, I mean, the implementation steps to break this one down.

hw4: 2 questions, typefun.c- & small.c- For typefun.c-, I have matched the grammars, but I don't know why I have more messages. How should I or what is the appropriate method for me to get rid of them? For small.c-, I know it was because of the '′ & '@' & '#', but I don't know how to generate the warning message, or get around of it. I need ideas about this one.

I have attached my hw3 & 4 output file copied from online, and the tarred file I summitted, cccc.tar is hw3 & bbb.tar is hw4. Please help me take a look at them, I will have to work on them still together with hw2 printTree function tomorrow. But I won't be able to work on them until in the evening – I am planning to have some fresh air in spring valley tomorrow together with couple of chinese friends feeling so frustrated. So please take your time and help give me some idea so that I can get them done. Cannot believe I am so slow this fall semester!

Thanks a lot!

1.2　from: (小伙伴) ((小伙伴)@XXXXX.edu) <(小伙伴)@XXXXX.ed

to: (me~) <(me~)@gmail.com> date: Sun, Nov 24, 2013 at 6:34 PM subject: RE: hw3 & hw4 mailed-by: XXXXX.edu

How you would process the first question:

50 int AlanTuring(int x) { 51 { 52 int x; 53 { 54 int x; 55 } 56 } 57 }

int x on line 50 would be defined within the scope of the first compound statement (child[1] of the FuncK). Each of the others are within their own compound statement, so you would need to "enter" a new scope when you see the compound statements then process the two children of the CompoundK. This is why there should be no error displayed for this function.

As for ReturnK, the only error I print in FuncK is the warning about not having a return in the function, all of the others are processed as I traverse child[1]. All of my return errors (not the warning) are within ReturnK so they are processed as I see them traversing the siblings. A good rule of thumb is to think about how line numbers will go; for the warning, the line number is the line number of the function declaration, for all of the other errors it is the line number of the return statement. All of the line numbers should be in order from smallest to largest.

For assignment 4, the duplicates I believe are due to the yyerrok in your

$param_{list}$: $param_{list}$ ';' $param_{typelist}$

production. You should remove the yyerrok in that production and that should fix your duplicate problem. As for your problem with small.c-, you are seg faulting in your scanner when you process an invalid token. This is because in your c-.l file you should simply print out this warning:

WARNING(%d): Invalid input character: %s. Character ignored.

and not return anything to the parser. %d is the line number of the token, and %s is the character scanned. Be sure you print out the character (at %s location) with cs445 代课老师's niceStringOut(char *s) function from mystrings.h, so you can print special characters correctly.

Let me know if you have any further questions.

(小伙伴)

1.3   from: (me~) <(me~)@gmail.com>

to: "(小伙伴) ((小伙伴)@XXXXX.edu)" <(小伙伴)@XXXXX.edu> date: Sun, Nov 24, 2013 at 7:14 PM subject: Re: hw3 & hw4 mailed-by: gmail.com

Feels like I get the ideas on implementation. But for hw4 small.c-, by using line 52, I think I have matched all the having not listed yet tokens by using the "." mark. I don't understand where and how should I add the warning message, what should be the thing to match besides having been matched by the "." already?

52 . {return setValue(linnum, yytext[2], yytext);}

Thanks.

1.4   from: (小伙伴) ((小伙伴)@XXXXX.edu) <(小伙伴)@XXXXX.ed

to: (me~) <(me~)@gmail.com> date: Mon, Nov 25, 2013 at 5:25 PM subject: RE: hw3 & hw4 mailed-by: XXXXX.edu

Instead of the return statement, have a printf function that displays the warning. The return statements in your c-.l program are sent to the parser, your parser doesn't want to see characters that it can't do anything with, so you wont return anything in this case.

so change

{return setValue(linnum, yytext[2], yytext);}

to

---

[1]DEFINITION NOT FOUND.

[2]DEFINITION NOT FOUND.

{printf("WARNING(%d): Invalid input character: %s. Character ignored.", line, niceStringOut(yytext));}

where line is the line number variable in your scanner (it looks like it would linnum in your case), niceStringOut() is Dr. cs445 代课老师's function defined in mystrings.h to print control characters correctly as well as other characters, and yytext is the character matched by your regular expression ""."

You don't want to have a return here because it can cause problems in the parser if you don't take care of it explicitly.

1.5 from: (me~) <(me~)@gmail.com>

to: "(小伙伴) ((小伙伴)@XXXXX.edu)" <(小伙伴)@XXXXX.edu> date: Mon, Nov 25, 2013 at 9:08 PM subject: Re: hw3 & hw4 mailed-by: gmail.com

(小伙伴),

I got the hw4 most of the parts right now except the call2.c- which we don't have the original source file. As the online result, I have attached the hw4.out. Can it be considered Ok or done for hw4?

For hw3 2 questions, I understand what you said in previous email, but I still don't know how should I implement the two kinds. I feel they are mission impossible for me. To be honest, the other night, reading your email and I was curious, and I had googled everything out about you, your resume, your phone number etc. Would it be possible for you to come on campus sometime this week, or could I call you to get these 2 miserables done? I don't think I can do it at all with the understanding I have so far.

thanks, (me~)

1.6 from: (小伙伴) ((小伙伴)@XXXXX.edu) <(小伙伴)@XXXXX.ed

to: (me~) <(me~)@gmail.com> date: Fri, Nov 29, 2013 at 3:32 PM subject: RE: hw3 & hw4 mailed-by: XXXXX.edu

Hey sorry, I have been away from the computer for a few days. Just so you know, the attached file isn't working, I see HTML instead of the actual homework 4 output.

Also, I probably won't be able to email for the next few days, I have family in town and we have plans.

Sorry I can't help more this break! I just don't have enough free time.

(小伙伴)

1.7 from: (me~) <(me~)@gmail.com>

to: "(小伙伴) ((小伙伴)@XXXXX.edu)" <(小伙伴)@XXXXX.edu> date: Fri, Nov 29, 2013 at 3:57 PM subject: Re: hw3 & hw4 mailed-by: gmail.com

Hey (小伙伴),

Don't worry, you have help me a lot already! (get hw4 done, understand hw3 much better! Fixed at least several errors for hw3.) School almost starts and I should be able to get help from CSAC or ThinkTank whoever is there. Thanks a lot! I may write to you later on if I have emergency about compiler homework but otherwise I won't. You guys are smart, and I hope I could have some same courses for coming spring semester with you all.

Have a nice holiday weekend, and I will see you on Monday!

Chapter 2

hw4 output 一一 the only available version (empty)

Chapter 3

与导师最后一次请教问题

3.1 from: (me~) <(me~)@gmail.com>

to: Cs445 代课老师 n <profcs445 代课老师 @gmail.com> date: Thu, Dec 12, 2013 at 1:22 AM subject: Meeting 9:30am mailed-by: gmail.com : Important according to our magic sauce.

hi Dr. cs445 代课老师,

Yes, I am going to meet you at 9:30am in the morning.

thanks, (me~)

3.2 from: cs445 代课老师 <captainbbbbbb@gmail.com>

to: (me~) <(me~)@gmail.com> date: Thu, Dec 12, 2013 at 9:08 AM subject: Re: Meeting 9:30am mailed-by: gmail.com signed-by: gmail.com : Important mainly because of your interaction with messages in the conversation.

Great

Sent from my iPhone

最后一次问问题的 SECTION：那次，去问问题的只有三个人，而这个老师像是想要模仿自己的习惯拿着小零食吃、精精有味的样子忽然让自己觉得一阵本能的恶心，收起书包，跑到楼下 THINK TANK 去找自己的小伙伴写作业去了 ~

Chapter 4

hw4 老师出错

其实后来，不记得是在这次大风浪的绯闻之前还是之后，有一次上课，老师明确表明他的 university 邮箱是有问题的，接收邮件有时候会出问题，他课堂上要求我们发邮件到他的 gmail 账户。但是，我注意他写给同学们的账户与他给我发邮件的账户不一样。后来，课堂后我问过老师，我以后发邮件到他写给小伙伴们的邮箱，但他坚持让我继续写给他之前的邮箱。

这样，后来 hw4，他给我们 tar ball 的 test 文件与我们交作业后 Amazon server 上的结果不一样时，我也还是用他以前的邮箱给他写了邮件。那天晚上，他正好 Gmail 在线，作为班上仅有的、他曾偏爱过的两个女生之一，当他试图表示他检查过了没有错的时候，大概我真如那当年的心理医生所说，我算是冷血吧，就全然拿出了 industry 工作的 professional 态度坚持要求他重新检查并确认。他那天晚上就没有再回邮件。

周一的课堂上，老师的头发显得凌乱不堪，不知道是这个他才意识到的 bug 的存在打乱了他的步伐，fix 得疲惫交加；还是一个自负的、industry 工作了 15 年的人如他，这种 bug 的存在对他来说简直是奇耻大辱；又或者说，借这凌乱的头发表达不小心造成不便的歉意～ 我不是他肚子里的蛔虫，我猜不透。

Chapter 5

第四次回答问题

5.1 第四次回答问题 (1)

大哭那天傍晚知道了老师的那条休息对我来说太意外。虽然我还不至于说因着别人的不幸跑去窃喜，但我把自己的戒备心放下了。去换位思考一下，因着他自己已然亲身经历的不幸，想来对别人的痛苦、苦难更能感同身受吧！这几个周的时间真是一段难得的太平日子，我心很静，每天想的事情就是去写作业，把自己能想得明白的作业能写多少写多少，因为我时间不够、写不完的！

偶尔，当老师继续时快时慢、高低不平的讲课时，我已经开始处变不惊，毕竟我的底线已经很清楚了，最差的情况就是春天学期自己交学费而已，毕竟，我也还是要毕业的。

某天上课老师又极慢地讲课，一个 x=3 (, x=3+y, x=3+sin(y) 等等是类似的) 的代码生成，这个老师反来复去讲了两三遍了还在讲。因为我有心理阴影，上次（这堂课的第三次课堂发言）提了个问题还被老师那样弄了一下，那这次作为班上的唯"二"女生，我来回答问题！

我就这门课第四次（也是这门课这学期最后一次）回答问题了。问题是怎么答的，我也已经不记得了，但是因为我有心理阴影，我回答问题时，我的语气就带上了略为的不满，质疑老师没必要讲得这么慢，不满意大家觉得我笨！

5.2 第四次回答问题 (2)

我早也已经说过了，这是一个极有手段的老师，我既然自己自告奋勇地"站"起来回答问题了，那就免不了老师在那刚刚提问给课堂小伙伴问题的基础上，再接着加码追加问题；哈哈，这也可真算是棋逢对手、将遇良才啊——偏偏这边也是一个心气极高、绝不妥协的学生！你既然接着提问题，那我就接着答就是了，心里暗叹着，我就不信了，看你这个要如何收场！

老师光速讲课的时候一般小伙伴们都听不懂，所以老师也还剩有自知之明，一般他自己不会提问；老师讲得慢的时候，因为老师阴阳怪气的讲课速度，一段时间以来，班上绝大部分同学都已经不敢再发言。到这时，我回答问题似乎他们稍感意外；等老师再追加轮回时，空气就开始有点儿凝滞了，除了老师的提问、我回答问题、还能听得见针掉到地上的声音。

如此这样，三轮过后的的第四个问题，因为我表达得不够清楚，就相当于是我出现了口误。虽然我并不以这回答不精准为误，根本就不把它放在心上，但代课老师已经认为他赢了——问完了，他断定为我回答不对，他自己不再问问题了。

我不甘心地败下阵来，心里略为不满他居然会认为我败了，那会儿就不再提问了；可是作为他"偏爱"过的女学生，我已经 95% 地回答对了这些问题，他的 topic 已经 move on 了，这样也就可以了吧，我在心里安慰着自己。

5.3   第四次回答问题 (3)

没想到的是，过了两分钟，代课老师又提问了。说是迟，那时快——我还在犹豫，我要不要、应不应该再站出来回答问题时，我的同桌——那个帅气的美国小伙子已经抢着在我之前第一个在回答老师的问题。我这么着自动"站"出来回答问题，还被老师追加两三轮之后，我同桌小伙伴的抢答问题，就忽然让自己那被逼出来回答的问题变得瞬间就有了难度，内心里惊喜交加——大家知道我从小长得并不漂亮，所以偶纯天然花痴的毛病就在这一刻发作，我本能地扭过头去，望向了那个有着长长的睫毛、忧郁的眼睛的帅气同桌，望进他的眼睛里—— @//&*$_+!*_， ；，   ，   ，   ~ 看来偶对长相的自卑已经伴随着漫长的成长，不知道什么时候就像< Forrest Gump >腿上的枷锁一样丢掉了 ~ 可能老师新的 topic 稍难些吧，我帅气的同桌在新追加的第一个问题就败下阵来。

这堂课上，后来，老师也提到了第四次作业的那个问题，就说那个不 match、先后顺序没有关系，他不会扣我们分的，让我们继续写作业。后来，据小伙伴们说，也有好几个同学都给老师就这第四次作业网页上老师给出的 test 文件的结果与交了作业后 Amazon 上结果不 match 给老师写过邮件，但据说小伙伴们的邮件老师就基本都没有回。

后来有一次 office hour 问问题，同问问题的还有一位美国男生；我先到的，我先开始的；但他来后，在我的问题解答完之前，老师既要他进 office，进去后还先解答他的问题，而把我的问题凉在一边，也让自己十分恼火过。

也不记得是哪次问问题时，代课老师也表扬过我，他说我是这个班上最聪明的学生，只是稍微欠缺一点儿 programming experience。听到代课老师的表扬，我倒还是挺开心的。

Chapter 6

雕刻时光

6.1　雕刻时光 (1)

后来，代课老师还组织过一个 coding section，那天我是去了的，但去的人不多，坐我左边的女生那时应该已经彻底放弃那门课了 (这是她第二次选这门课，后来好像是怎么 petition 了一下，相当于她自己换了个方向)，其它人只有两个男生。后来代课老师进来时手里还拿着什么小 cookie 在吃，那时我写作业写累了常常会在系里的老虎机里买小零食吃，看见代课老师这样，心里生出一股本能的反感，收起笔记本、捡起书包下楼到 thinktank 去找小伙伴们一起写作业了。

那里，我 hw3 留下的一两个小尾巴，感恩节期间有写邮件问过一个小伙伴；这里，有这同一个小伙伴、还有那上次留着大胡子、coding section 吃中国饭的美国男生，这里环境便利、沟通方便，我们两个在白板上画画画，之前好几封邮件里都没能说清楚，后来一直放着，这时就两三分钟解决问题了 (当然，到这时是，两个小尾巴的思路清楚了，但因为我忙于写 hw5，也没再去改那部分的代码，一个是 ReturnK，一个是 CompoundK)。

6.2　雕刻时光 (2)

这门课五次作业，到第三次作业写完，当初那完全不知道什么 pre-traverse、post-traverse 的遍历，这时我也就拥有了 power，对遍历有了完全的掌控力，对这编译的理解消化就已经上了一个新台阶。第四次作业还有几个小的地方自己想不通；到第五次作业，画架构一一写出 c- compiler 如何进 main function，如何从 main function return statement 出来，function call frame pointer、return pointer 是如何联接起来的一一这一步很难，总是在某个没想清楚的环节掉链子，生成的代码运行不动了；等到把这个框架架起来后，剩下的部分因为饱受第三次作业的锻炼，已经变得轻松写意无压力了!

其实第一学期 cs121 代课老师已经在一次 lab 帮我们讲过了 GDB debugging，上学期 Connect4 game、decision tree 的时候稍微用了一下，但远没有到很熟悉、得心应手的程度。第三次作业的时候代课老师还试着教我用这样一个工具，到这最后一次作业，因为一句话的逻辑不清，就真的第一反应不再是恐慌、首选用 gdb 了，花一个半、两个小时解决了一行代码意外引起的逻辑混淆。所以最后一次作业有架构后写得很享受、非常有感觉。

带着暑期归来的累累伤痕，在代课老师的高压手段下，我卑微得像一颗尘埃，这三四个月的时间，仿佛一场大梦，每天浮躁地舞动在想要写完这门课作业的大道上。

6.3　雕刻时光 (3)

是个人都知道，我这个听力不好、口语奇烂、英语学得很成问题的人自打来到这个国家，考试从来都是最头痛的事。但这门课的期末考试，我考得非常有感觉。那场考试，因着老师跳跃式的讲课节

奏，因着老师对考题的精良设计，我平时听不懂的、一知半解的概念、理论、知识点都在这场期末考试里思考、完成了消化转化的最后一步。仿佛到了这个考试，咖啡豆才终于变成了咖啡末。

是太享受、太留恋么，一不小心，我就考成了教室里只剩三个人了，那两个同学都是美国人，应该是学习会比我好很多的人。一个是 Ryan，看得仔细的小伙伴应该留意到 hw3 里有一个 test file 是以他的名子命名的，应该是他贡献给老师的吧。他们大概真是看我写得很享受在陪着我吧！！

枯藤、老树、昏鸦，小桥、流水、人家，古道、西风、瘦马，夕阳西下，一小人摇井架 ~ *_^

那场考试，有着雨过天晴或是参观一场画展之后的清新和生锈久不运作的脑袋转动时发出的吱吱呀呀的声响 ~！

考试考完了，如梦初醒，回想一下，对比一下，忽然意识到，暑假两个半月的实习，和这个学期走过，我已经彻底沦为一个精益求精、沉浸在细节里的人，同那个传统的讲求效率、时时准备大跃进的自己、那个春天 RTOS2514 稀里糊途 plugin blackbox 的自己、夏天里催着喊着要 A 帮我想新项目的自己判若两人！原来不知不觉间，在时间的沧河里，A summer 里批评过我的话都已经无声无息地转化成了现实 ~

这门课就算是得了 B，比得了 A 还开心，我心想着！

Chapter 7

期末成绩

期末考完后的周一，我查成绩，我的编译课老师给的居然是 C！?#$[&]@*~

想要骂人的心，比任何时候都迫切！想去骂人的头，一个变得十个大 ~！

从前有个小学校里面有个学生一一任逍遥术业有专攻 industry 里风声水起天生理智芙蓉城底沥青流 15 年后机缘巧合锋回路转转战学术圈 4 年博士 7 年 tenure

边科研边代课极具个人风格半学生由衷感谢毕业经年还索要当年作业也杀人、fail 掉学生无数

一两年前尚有学生报告学校其人变态不了了之

这两年一中国女生飘摇至其手下辗之辇之成绩只给 C

此女此后匿迹江湖断绝一切联系孤独求败逢遇必躲江湖人称"任来疯"！

好吧，我承认我悲愤了，这不是事实，真实的版本我明天再来写吧。

7.1 Your CS445 Grades

cs445 代课老师 @XXXXXX.edu [cs445 代课老师 @XXXXXX.edu] Sent: Saturday, December 28, 2013 6:39 AM To: (me~) ((me~)@XXXXXX.edu) Your email can be found at http://ec2-54-200-16-181.us-west-2.compute.amazonaws.com/Results/msgs-(me~)-txt-rfnZ8kKN2rpwGEg3u6WtS

Chapter 8

hw3b deadline 前版本

　　这里我也先公开承认一下自己早前狂过的错误，在这个楼的第 14 页、第 265 楼，我有贴出自己的 hw3b，但现在我必须向亲爱的读者一一您公开道歉。因为当时因为着急，我没能找到 hw3b deadline 前的版本，就把这次作业后来的最终版本（也就是那个楼贴出来的，只剩下 ReturnK、CompoundK 两条小尾巴的版本，那个版本被我改动了时间戳我现在已经把它改回来了。相比于急于求成绩，我更希望自己作一个诚实的人，希望大家能原谅）给贴出来了。因为我们作业 deadline 之后也还都是可以接着交的，所以任何作业，老师都是可以根据后来的版本，追终到这个学生的最后进展的，这个最新进展老师到底给不给分、就要看老师如何下决定了。

　　deadline 前的版本，被我附在下面了。

　　当然，把自己的这个版本更新后，我愿为这个楼（这一次出来写的所有）属于自己的每个贴子负责，所有写出来的，都是真实发生过的事。

```
==================================================
Output of Building User Code
Explode the tar
c-.l
c-.y
makefile
scanType.h
symtab.h
symtab.c
20131116143129-(me~~)-CS445-F13-A3B.tar: POSIX tar archive (GNU)
Tests:                              directory
c-.l:                               lex description text
c-.y:                               lex description text
makefile:                           ASCII make commands text
scanType.h:                         ASCII C program text
symtab.c:                           ASCII C program text
symtab.h:                           ASCII C program text
Making compiler
bison -v -t -d c-.y
flex c-.l
g++ -DCPLUSPLUS -g        -c -o lex.yy.o lex.yy.c
g++ -DCPLUSPLUS -g        -c -o c-.tab.o c-.tab.c
g++ -DCPLUSPLUS -g        -c -o symtab.o symtab.c
g++ -DCPLUSPLUS -g        lex.yy.o c-.tab.o symtab.o -lfl -lm  -o c-
Extracting test files
allErrors.c-
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basicAll.c-
basicAll2.c-
basicExtra.c-
bullsandcows.c-
call.c-
call2.c-
call3.c-
chars.c-
everything02.c-
factor.c-
factorial.c-
init.c-
moutest.c-
ryantest.c-
tictactoe.c-
undef.c-
while03.c-
==================================================
Output of Testing
Limited to 5 seconds total run time and 5000 lines of output

/* ================================================ *
|       Tests for CS445 Assignment 3B               |
|         Comparison with Expected Output           |
/* ================================================ *

/export/home/nibbler/TestWorld
find makefile
makefile
a makefile is here
RUN: c- allErrors.c-
ERROR(6): Function 'dog' at line 2 is expecting to return type int but got type bool.
ERROR(13): Function 'cat' at line 9 is expecting to return type int but return has no r
ERROR(16): Symbol 'cat' is already defined at line 9.
ERROR(25): Function 'ox' at line 23 is expecting no return value, but return has return
WARNING(28): Expecting to return type int but function 'emu' has no return statement.
ERROR(35): Symbol 'x' is already defined at line 34.
ERROR(45): Expecting Boolean test condition in if statement but got type int.
ERROR(46): Expecting Boolean test condition in while statement but got type int.
ERROR(48): Cannot use function 'cat' as a simple variable.
ERROR(49): '=' requires operands of the same type but lhs is type int and rhs is type b
ERROR(50): '+=' requires operands of type int but rhs is of type bool.
ERROR(51): '-=' requires operands of type int but lhs is of type bool.
ERROR(53): Cannot use array as test condition in if statement.
ERROR(54): Cannot use array as test condition in while statement.
ERROR(59): Cannot have a break statement outside of loop.
ERROR(62): The operation '+' does not work with arrays.
ERROR(63): The operation '-' does not work with arrays.
ERROR(64): Unary 'not' requires an operand of type bool but was given type int.
ERROR(64): The operation 'not' does not work with arrays.
ERROR(66): '==' requires operands of the same type but lhs is type int and rhs is type
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ERROR(68): '+' requires operands of type int but lhs is of type bool.
ERROR(70): '*' requires operands of type int but rhs is of type bool.
ERROR(72): Unary 'not' requires an operand of type bool but was given type int.
ERROR(74): Cannot index nonarray 'x'.
ERROR(76): Array 'aa' should be indexed by type int but got type bool.
ERROR(78): Array index is the unindexed array 'zz'.
ERROR(80): Symbol 'xyzzy' is not defined.
ERROR(81): Symbol 'meerkat' is not defined.
ERROR(83): 'x' is a simple variable and cannot be called.
ERROR(85): Too many parameters passed for function 'dog' defined on line 2.
ERROR(86): Too few parameters passed for function 'ibex' defined on line 18.
ERROR(88): Expecting type int in parameter 1 of call to 'dog' defined on line 2 but got
ERROR(90): Not expecting array in parameter 1 of call to 'cat' defined on line 9.
ERROR(91): Expecting type int in parameter 1 of call to 'cat' defined on line 9 but got
ERROR(93): Expecting array in parameter 1 of call to 'ibex' defined on line 18.
ERROR(94): Cannot use function 'ibex' as a simple variable.
ERROR(96): Cannot use function 'ibex' as a simple variable.
ERROR(96): '+' requires operands of type int but lhs is of type bool.
ERROR(98): The operation '*' only works with arrays.
ERROR(100): '*' requires operands of type int but lhs is of type bool.
ERROR(100): The operation '*' does not work with arrays.
ERROR(100): '+' requires operands of type int but lhs is of type bool.
ERROR(100): The operation '*' only works with arrays.
ERROR(100): The operation 'not' does not work with arrays.
ERROR(100): Unary 'not' requires an operand of type bool but was given type int.
ERROR(100): 'or' requires operands of type bool but lhs is of type int.
ERROR(100): Cannot have a break statement outside of loop.
ERROR(101): 'and' requires operands of type bool but lhs is of type int.
ERROR(101): 'and' requires operands of type bool but rhs is of type int.
ERROR(103): Cannot return an array.
ERROR(108): Symbol 'main' is already defined at line 32.
ERROR(122): '==' requires operands of the same type but lhs is type bool and rhs is typ
ERROR(127): '=' requires operands of the same type but lhs is type bool and rhs is type
ERROR(131): '!=' requires operands of the same type but lhs is type bool and rhs is typ
ERROR(137): Symbol 'z' is already defined at line 106.
ERROR(139): Variable 'a' is of type int but is being initialized with an expression of
ERROR(139): Variable 'b' is of type int but is being initialized with an expression of
ERROR(139): Variable 'zz' is of type int but is being initialized with an expression of
ERROR(141): Initializer for variable 'd' is not a constant expression.
ERROR(142): '*' requires operands of type int but rhs is of type char.
ERROR(143): Initializer for variable 'e' is not a constant expression.
ERROR(144): Initializer for variable 'f' is not a constant expression.
ERROR(146): Symbol 'main' is already defined at line 32.
ERROR(159): '==' requires operands of the same type but lhs is type bool and rhs is typ
ERROR(165): '=' requires operands of the same type but lhs is type bool and rhs is type
ERROR(183): In foreach statement the variable to the left of 'in' must not be an array.
ERROR(184): In foreach statement the variable to the left of 'in' must not be an array.
ERROR(184): Foreach requires operands of 'in' be the same type but lhs is type bool and
ERROR(187): Foreach requires operands of 'in' be the same type but lhs is type bool and
ERROR(189): If not an array, foreach requires rhs of 'in' be of type int but it is type
ERROR(190): If not an array, foreach requires lhs of 'in' be of type int but it is type
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ERROR(196): Initializer for nonarray variable 'w' of type char cannot be initialized wi
ERROR(197): Variable 'u' is of type int but is being initialized with an expression of
ERROR(197): Initializer for nonarray variable 'u' of type int cannot be initialized wit
ERROR(198): Array 't' must be of type char to be initialized, but is of type int.
ERROR(198): Initializer for array variable 't' must be a string, but is of nonarray typ
ERROR(199): Initializer for array variable 's' must be a string, but is of nonarray typ
ERROR(207): Symbol 'main' is already defined at line 32.
ERROR(209): Initializer for variable 'x' is not a constant expression.
ERROR(210): Initializer for nonarray variable 'c' of type char cannot be initialized wi
ERROR(211): Initializer for array variable 'd' must be a string, but is of nonarray typ
ERROR(212): Variable 'e' is of type char but is being initialized with an expression of
ERROR(213): Initializer for array variable 'f' must be a string, but is of nonarray typ
ERROR(214): Array 'z' must be of type char to be initialized, but is of type int.
ERROR(216): '=' requires that if one operand is an array so must the other operand.
ERROR(217): '=' requires that if one operand is an array so must the other operand.
ERROR(218): '=' requires operands of the same type but lhs is type char and rhs is type
ERROR(219): '=' requires operands of the same type but lhs is type char and rhs is type
ERROR(219): '=' requires that if one operand is an array so must the other operand.
ERROR(220): '=' requires operands of the same type but lhs is type int and rhs is type
ERROR(222): '==' requires operands of the same type but lhs is type int and rhs is type
ERROR(223): '>' requires operands of type char or type int but rhs is of type bool.
ERROR(224): '>' requires operands of type char or type int but lhs is of type bool.
ERROR(225): The operation '>' does not work with arrays.
ERROR(226): The operation '>' does not work with arrays.
ERROR(227): The operation '>' does not work with arrays.
ERROR(229): Unary '-' requires an operand of type int but was given type char.
ERROR(230): The operation '*' only works with arrays.
ERROR(231): The operation '-' does not work with arrays.
ERROR(234): Unary '++' requires an operand of type int but was given type char.
ERROR(234): The operation '++' does not work with arrays.
ERROR(235): The operation '++' does not work with arrays.
ERROR(236): Unary '--' requires an operand of type int but was given type char.
ERROR(236): The operation '--' does not work with arrays.
ERROR(237): The operation '--' does not work with arrays.
WARNING(207): Expecting to return type int but function 'main' has no return statement.
ERROR(242): Symbol 'fred' is already defined at line 241.
ERROR(244): Symbol 'fred' is already defined at line 243.
ERROR(245): Symbol 'fred' is already defined at line 243.
ERROR(246): Symbol 'fred' is already defined at line 243.
WARNING(242): Expecting to return type int but function 'fred' has no return statement.
Number of warnings: 3
Number of errors: 108
RUN: c- basicAll.c-
ERROR(16): Symbol 'cat' is not defined.
ERROR(18): Function 'dog' at line 12 is expecting to return type int but got type bool.
ERROR(25): Function 'cat' at line 21 is expecting to return type int but return has no
ERROR(28): Symbol 'cat' is already defined at line 21.
ERROR(39): Function 'ox' at line 37 is expecting no return value, but return has return
WARNING(42): Expecting to return type int but function 'emu' has no return statement.
ERROR(54): Symbol 'x' is already defined at line 53.
ERROR(55): Symbol 'x' is already defined at line 53.
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ERROR(63): Symbol 'v' is not defined.
ERROR(65): Expecting Boolean test condition in if statement but got type int.
ERROR(66): Expecting Boolean test condition in while statement but got type int.
ERROR(67): Expecting Boolean test condition in while statement but got type void.
ERROR(69): Cannot use function 'cat' as a simple variable.
ERROR(70): '=' requires operands of the same type but lhs is type int and rhs is type b
ERROR(71): '+=' requires operands of type int but rhs is of type bool.
ERROR(72): '-=' requires operands of type int but lhs is of type bool.
ERROR(73): '>' requires operands of type char or type int but lhs is of type bool.
ERROR(74): Unary '++' requires an operand of type int but was given type bool.
ERROR(76): Cannot use array as test condition in if statement.
ERROR(77): Cannot use array as test condition in while statement.
ERROR(79): Cannot have a break statement outside of loop.
ERROR(83): The operation '+' does not work with arrays.
ERROR(84): The operation '<' does not work with arrays.
ERROR(85): '<' requires operands of type char or type int but lhs is of type bool.
ERROR(85): '<' requires operands of type char or type int but rhs is of type bool.
ERROR(85): The operation '<' does not work with arrays.
ERROR(87): '==' requires operands of the same type but lhs is type int and rhs is type
ERROR(91): '+' requires operands of type int but lhs is of type bool.
ERROR(93): '*' requires operands of type int but rhs is of type bool.
ERROR(95): Unary 'not' requires an operand of type bool but was given type int.
ERROR(96): '+' requires operands of type int but rhs is of type bool.
ERROR(96): Unary 'not' requires an operand of type bool but was given type int.
ERROR(97): Unary '-' requires an operand of type int but was given type bool.
ERROR(99): Cannot index nonarray 'x'.
ERROR(100): 'and' requires operands of type bool but lhs is of type int.
ERROR(100): 'and' requires operands of type bool but rhs is of type int.
ERROR(100): '*' requires operands of type int but rhs is of type bool.
ERROR(101): Symbol 'y' is not defined.
ERROR(101): 'and' requires operands of type bool but lhs is of type int.
ERROR(101): '*' requires operands of type int but rhs is of type bool.
ERROR(102): 'and' requires operands of type bool but lhs is of type int.
ERROR(102): 'and' requires operands of type bool but rhs is of type int.
ERROR(102): '*' requires operands of type int but rhs is of type bool.
ERROR(102): 'or' requires operands of type bool but rhs is of type int.
ERROR(104): The operation '*' only works with arrays.
ERROR(105): 'and' requires operands of type bool but lhs is of type int.
ERROR(109): Array 'aa' should be indexed by type int but got type bool.
ERROR(111): Cannot use function 'cat' as a simple variable.
ERROR(113): Array index is the unindexed array 'aa'.
ERROR(114): Symbol 'AA' is not defined.
ERROR(116): Symbol 'meerkat' is not defined.
ERROR(118): Symbol 'xyzzy' is not defined.
ERROR(119): Symbol 'meerkat' is not defined.
ERROR(120): Symbol 'xyzzy' is not defined.
ERROR(120): 'and' requires operands of type bool but rhs is of type int.
ERROR(122): Symbol 'flight' is not defined.
ERROR(122): Unary 'not' requires an operand of type bool but was given type int.
ERROR(122): Unary '-' requires an operand of type int but was given type bool.
ERROR(122): Symbol 'uu' is not defined.
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ERROR(122): Symbol 'y' is not defined.
ERROR(122): '*' requires operands of type int but rhs is of type bool.
ERROR(124): 'x' is a simple variable and cannot be called.
ERROR(126): Too many parameters passed for function 'dog' defined on line 12.
ERROR(127): Too few parameters passed for function 'ibex' defined on line 31.
ERROR(129): Expecting type int in parameter 1 of call to 'dog' defined on line 12 but g
ERROR(131): Not expecting array in parameter 1 of call to 'cat' defined on line 21.
ERROR(133): Expecting array in parameter 1 of call to 'ibex' defined on line 31.
ERROR(134): Expecting type int in parameter 1 of call to 'ibex' defined on line 31 but
ERROR(135): Cannot use function 'ibex' as a simple variable.
ERROR(137): Cannot use function 'ibex' as a simple variable.
ERROR(137): '+' requires operands of type int but lhs is of type bool.
ERROR(140): Array index is the unindexed array 'zz'.
ERROR(141): Expecting type int in parameter 1 of call to 'ox' defined on line 37 but go
ERROR(141): Array 'aa' should be indexed by type int but got type void.
ERROR(143): '=' requires operands of the same type but lhs is type int and rhs is type
ERROR(144): '+' requires operands of type int but rhs is of type void.
ERROR(145): Expecting type int in parameter 1 of call to 'cat' defined on line 21 but g
ERROR(146): Expecting type int in parameter 1 of call to 'cat' defined on line 21 but g
ERROR(149): '=' requires operands of the same type but lhs is type int and rhs is type
ERROR(150): '=' requires operands of the same type but lhs is type bool and rhs is type
ERROR(151): '=' requires operands of the same type but lhs is type int and rhs is type
ERROR(151): '=' requires operands of the same type but lhs is type bool and rhs is type
ERROR(151): '=' requires operands of the same type but lhs is type int and rhs is type
ERROR(153): '*' requires operands of type int but rhs is of type bool.
ERROR(153): '*' requires operands of type int but lhs is of type bool.
ERROR(153): 'and' requires operands of type bool but lhs is of type int.
ERROR(153): 'and' requires operands of type bool but rhs is of type int.
ERROR(155): '+' requires operands of type int but rhs is of type bool.
ERROR(155): Symbol 'parrot' is not defined.
ERROR(155): 'and' requires operands of type bool but rhs is of type int.
ERROR(155): Expecting type int in parameter 3 of call to 'emu' defined on line 42 but g
ERROR(156): Expecting type int in parameter 1 of call to 'emu' defined on line 42 but g
ERROR(156): Expecting type int in parameter 2 of call to 'emu' defined on line 42 but g
ERROR(156): Expecting type int in parameter 3 of call to 'emu' defined on line 42 but g
ERROR(156): Too many parameters passed for function 'emu' defined on line 42.
ERROR(158): Cannot return an array.
Number of warnings: 1
Number of errors: 95
RUN: c- basicAll2.c-
ERROR(16): Symbol 'cat' is not defined.
ERROR(18): Function 'dog' at line 12 is expecting to return type char but got type int.
ERROR(25): Function 'cat' at line 21 is expecting to return type char but return has no
ERROR(28): Symbol 'cat' is already defined at line 21.
ERROR(34): Function 'ibex' at line 31 is expecting to return type int but got type bool
ERROR(39): Function 'ox' at line 37 is expecting no return value, but return has return
WARNING(42): Expecting to return type char but function 'emu' has no return statement.
ERROR(48): '+' requires operands of type int but lhs is of type char.
ERROR(48): '+' requires operands of type int but rhs is of type char.
ERROR(54): Symbol 'x' is already defined at line 53.
ERROR(55): Symbol 'x' is already defined at line 53.
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ERROR(63): Symbol 'v' is not defined.
ERROR(65): Expecting Boolean test condition in if statement but got type char.
ERROR(66): Expecting Boolean test condition in while statement but got type char.
ERROR(67): Expecting type char in parameter 1 of call to 'ox' defined on line 37 but go
ERROR(67): Expecting Boolean test condition in while statement but got type void.
ERROR(69): Cannot use function 'cat' as a simple variable.
ERROR(70): '=' requires operands of the same type but lhs is type char and rhs is type
ERROR(71): '+=' requires operands of type int but lhs is of type char.
ERROR(72): '-=' requires operands of type int but rhs is of type char.
ERROR(76): Expecting Boolean test condition in if statement but got type int.
ERROR(76): Cannot use array as test condition in if statement.
ERROR(77): Expecting Boolean test condition in while statement but got type int.
ERROR(77): Cannot use array as test condition in while statement.
ERROR(79): Cannot have a break statement outside of loop.
ERROR(81): Expecting Boolean test condition in while statement but got type int.
ERROR(83): '+' requires operands of type int but lhs is of type char.
ERROR(83): The operation '+' does not work with arrays.
ERROR(84): The operation '<' does not work with arrays.
ERROR(85): The operation '<' does not work with arrays.
ERROR(87): '==' requires operands of the same type but lhs is type char and rhs is type
ERROR(88): '==' requires operands of the same type but lhs is type char and rhs is type
ERROR(89): '==' requires operands of the same type but lhs is type int and rhs is type
ERROR(91): '+' requires operands of type int but lhs is of type bool.
ERROR(91): '+' requires operands of type int but rhs is of type char.
ERROR(93): '*' requires operands of type int but lhs is of type char.
ERROR(93): '*' requires operands of type int but rhs is of type bool.
ERROR(95): Unary 'not' requires an operand of type bool but was given type char.
ERROR(96): '+' requires operands of type int but lhs is of type char.
ERROR(96): Unary 'not' requires an operand of type bool but was given type int.
ERROR(99): Cannot index nonarray 'x'.
ERROR(100): 'and' requires operands of type bool but lhs is of type char.
ERROR(100): 'and' requires operands of type bool but rhs is of type char.
ERROR(100): '*' requires operands of type int but lhs is of type char.
ERROR(100): '*' requires operands of type int but rhs is of type bool.
ERROR(100): '+' requires operands of type int but lhs is of type char.
ERROR(100): '==' requires operands of the same type but lhs is type char and rhs is typ
ERROR(100): '=' requires operands of the same type but lhs is type int and rhs is type
ERROR(101): Symbol 'y' is not defined.
ERROR(101): 'and' requires operands of type bool but lhs is of type char.
ERROR(101): '*' requires operands of type int but lhs is of type char.
ERROR(101): '*' requires operands of type int but rhs is of type bool.
ERROR(101): '+' requires operands of type int but lhs is of type char.
ERROR(101): '==' requires operands of the same type but lhs is type char and rhs is typ
ERROR(101): '=' requires operands of the same type but lhs is type int and rhs is type
ERROR(102): 'and' requires operands of type bool but lhs is of type char.
ERROR(102): 'and' requires operands of type bool but rhs is of type char.
ERROR(102): '*' requires operands of type int but lhs is of type char.
ERROR(102): '*' requires operands of type int but rhs is of type bool.
ERROR(102): 'or' requires operands of type bool but rhs is of type int.
ERROR(102): '=' requires operands of the same type but lhs is type int and rhs is type
ERROR(104): The operation '*' only works with arrays.
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ERROR(105): 'and' requires operands of type bool but lhs is of type int.
ERROR(105): 'and' requires operands of type bool but rhs is of type int.
ERROR(111): Cannot use function 'cat' as a simple variable.
ERROR(111): Array 'aa' should be indexed by type int but got type char.
ERROR(113): Array 'aa' should be indexed by type int but got type char.
ERROR(113): Array index is the unindexed array 'aa'.
ERROR(114): Symbol 'AA' is not defined.
ERROR(116): Symbol 'meerkat' is not defined.
ERROR(118): Symbol 'xyzzy' is not defined.
ERROR(119): Symbol 'meerkat' is not defined.
ERROR(120): Symbol 'xyzzy' is not defined.
ERROR(120): 'and' requires operands of type bool but rhs is of type int.
ERROR(122): Symbol 'flight' is not defined.
ERROR(122): Unary 'not' requires an operand of type bool but was given type int.
ERROR(122): Unary '-' requires an operand of type int but was given type bool.
ERROR(122): Symbol 'uu' is not defined.
ppERROR(122): Symbol 'y' is not defined.
ERROR(122): '*' requires operands of type int but lhs is of type char.
ERROR(122): '+' requires operands of type int but lhs is of type char.
ERROR(124): 'x' is a simple variable and cannot be called.
ERROR(126): Expecting type char in parameter 1 of call to 'dog' defined on line 12 but
ERROR(126): Too many parameters passed for function 'dog' defined on line 12.
ERROR(127): Too few parameters passed for function 'ibex' defined on line 31.
ERROR(129): Expecting type char in parameter 1 of call to 'dog' defined on line 12 but
ERROR(131): Not expecting array in parameter 1 of call to 'cat' defined on line 21.
ERROR(133): Expecting array in parameter 1 of call to 'ibex' defined on line 31.
ERROR(134): Expecting type char in parameter 1 of call to 'ibex' defined on line 31 but
ERROR(135): Cannot use function 'ibex' as a simple variable.
ERROR(137): Cannot use function 'ibex' as a simple variable.
ERROR(139): Array 'aa' should be indexed by type int but got type char.
ERROR(140): Array 'aa' should be indexed by type int but got type char.
ERROR(140): Array index is the unindexed array 'zz'.
ERROR(141): Expecting type char in parameter 1 of call to 'ox' defined on line 37 but g
ERROR(141): Array 'aa' should be indexed by type int but got type void.
ERROR(143): Expecting type char in parameter 1 of call to 'ox' defined on line 37 but g
ERROR(143): '=' requires operands of the same type but lhs is type char and rhs is type
ERROR(144): Expecting type char in parameter 1 of call to 'ox' defined on line 37 but g
ERROR(144): '+' requires operands of type int but lhs is of type char.
ERROR(144): '+' requires operands of type int but rhs is of type void.
ERROR(144): '=' requires operands of the same type but lhs is type char and rhs is type
ERROR(145): Expecting type char in parameter 1 of call to 'ox' defined on line 37 but g
ERROR(145): Expecting type char in parameter 1 of call to 'cat' defined on line 21 but
ERROR(146): Expecting type char in parameter 1 of call to 'cat' defined on line 21 but
ERROR(147): Expecting type char in parameter 1 of call to 'cat' defined on line 21 but
ERROR(149): '=' requires operands of the same type but lhs is type char and rhs is type
ERROR(151): '=' requires operands of the same type but lhs is type char and rhs is type
ERROR(151): '=' requires operands of the same type but lhs is type int and rhs is type
ERROR(151): '=' requires operands of the same type but lhs is type char and rhs is type
ERROR(153): '*' requires operands of type int but lhs is of type char.
ERROR(153): '*' requires operands of type int but rhs is of type char.
ERROR(153): 'and' requires operands of type bool but lhs is of type int.
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ERROR(153): 'and' requires operands of type bool but rhs is of type int.
ERROR(155): '+' requires operands of type int but lhs is of type char.
ERROR(155): Symbol 'parrot' is not defined.
ERROR(155): 'and' requires operands of type bool but lhs is of type int.
ERROR(155): 'and' requires operands of type bool but rhs is of type char.
ERROR(155): Expecting type char in parameter 1 of call to 'emu' defined on line 42 but
ERROR(155): Expecting type char in parameter 3 of call to 'emu' defined on line 42 but
ERROR(156): Expecting type char in parameter 1 of call to 'emu' defined on line 42 but
ERROR(156): Expecting type char in parameter 2 of call to 'emu' defined on line 42 but
ERROR(156): Expecting type char in parameter 3 of call to 'emu' defined on line 42 but
ERROR(156): Too many parameters passed for function 'emu' defined on line 42.
ERROR(158): Cannot return an array.
Number of warnings: 1
Number of errors: 124
RUN: c- basicExtra.c-
WARNING(3): Expecting to return type char but function 'toads' has no return statement.
ERROR(14): '<' requires operands of type char or type int but lhs is of type bool.
ERROR(14): '<' requires operands of type char or type int but rhs is of type bool.
ERROR(14): The operation '<' does not work with arrays.
ERROR(15): The operation '<' does not work with arrays.
ERROR(18): '<' requires operands of type char or type int but lhs is of type bool.
ERROR(18): '<' requires operands of type char or type int but rhs is of type bool.
ERROR(19): '/' requires operands of type int but lhs is of type bool.
ERROR(20): '/' requires operands of type int but rhs is of type bool.
ERROR(21): '%' requires operands of type int but lhs is of type bool.
ERROR(22): '%' requires operands of type int but rhs is of type bool.
ERROR(23): '-' requires operands of type int but lhs is of type bool.
ERROR(24): '-' requires operands of type int but rhs is of type bool.
ERROR(25): '<' requires operands of type char or type int but lhs is of type void.
ERROR(25): '<' requires operands of type char or type int but rhs is of type void.
ERROR(27): '<' requires operands of type char or type int but lhs is of type void.
ERROR(28): '<' requires operands of type char or type int but rhs is of type void.
ERROR(30): Symbol 'k' is not defined.
ERROR(31): Symbol 'k' is not defined.
ERROR(32): Symbol 'k' is not defined.
ERROR(32): Symbol 'k' is not defined.
ERROR(33): Symbol 'k' is not defined.
ERROR(34): 'i' is a simple variable and cannot be called.
Number of warnings: 1
Number of errors: 22
RUN: c- bullsandcows.c-
ERROR(120): Cannot have a break statement outside of loop.
ERROR(130): Cannot have a break statement outside of loop.
ERROR(160): Cannot have a break statement outside of loop.
Number of warnings: 0
Number of errors: 3
RUN: c- call.c-
WARNING(1): Expecting to return type int but function 'showInt' has no return statement
WARNING(7): Expecting to return type int but function 'showIntArray' has no return stat
WARNING(18): Expecting to return type int but function 'showBool' has no return stateme
Number of warnings: 3
```

```
Number of errors: 0
RUN: c- call2.c-
Number of warnings: 0
Number of errors: 0
RUN: c- call3.c-
ERROR(4): Symbol 'fred' is not defined.
ERROR(4): Symbol 'x' is not defined.
ERROR(4): Symbol 'y' is not defined.
ERROR(4): 'and' requires operands of type bool but lhs is of type int.
ERROR(4): 'and' requires operands of type bool but rhs is of type int.
ERROR(12): Too many parameters passed for function 'fred' defined on line 9.
ERROR(14): Too few parameters passed for function 'fred' defined on line 9.
ERROR(13): Expecting array in parameter 1 of call to 'fred' defined on line 9.
ERROR(15): Expecting type char in parameter 1 of call to 'fred' defined on line 9 but g
WARNING(9): Expecting to return type char but function 'fred' has no return statement.
ERROR(20): 'x' is a simple variable and cannot be called.
ERROR(20): '+' requires operands of type int but rhs is of type bool.
ERROR(20): The operation '*' only works with arrays.
ERROR(20): 'and' requires operands of type bool but lhs is of type int.
ERROR(20): 'and' requires operands of type bool but rhs is of type int.
ERROR(21): Symbol 'y' is not defined.
ERROR(21): '+' requires operands of type int but rhs is of type bool.
ERROR(21): The operation '*' only works with arrays.
ERROR(21): 'and' requires operands of type bool but lhs is of type int.
ERROR(21): 'and' requires operands of type bool but rhs is of type int.
ERROR(22): 'z' is a simple variable and cannot be called.
ERROR(22): '+' requires operands of type int but rhs is of type bool.
ERROR(22): The operation '*' only works with arrays.
ERROR(22): 'and' requires operands of type bool but lhs is of type int.
ERROR(22): 'and' requires operands of type bool but rhs is of type int.
ERROR(25): Symbol 'output' is already defined at line -1.
ERROR(26): Symbol 'outputb' is already defined at line -1.
ERROR(27): Symbol 'outputc' is already defined at line -1.
ERROR(29): Symbol 'input' is already defined at line -1.
ERROR(30): Symbol 'inputb' is already defined at line -1.
ERROR(31): Symbol 'inputc' is already defined at line -1.
ERROR(43): Symbol 'x' is already defined at line 42.
WARNING(42): Expecting to return type int but function 'AlanTuring' has no return state
ERROR(50): Symbol 'AlanTuring' is already defined at line 42.
ERROR(54): Symbol 'x' is already defined at line 52.
WARNING(50): Expecting to return type int but function 'AlanTuring' has no return state
Number of warnings: 3
Number of errors: 33
RUN: c- chars.c-
Number of warnings: 0
Number of errors: 0
RUN: c- everything02.c-
WARNING(47): Expecting to return type bool but function 'penguin' has no return stateme
ERROR(65): Initializer for variable 'void' is not a constant expression.
WARNING(84): Expecting to return type int but function 'cheese' has no return statement
ERROR(93): Expecting type int in parameter 2 of call to 'cheese' defined on line 84 but
```

```
Number of warnings: 2
Number of errors: 2
RUN: c- factor.c-
Number of warnings: 0
Number of errors: 0
RUN: c- factorial.c-
Number of warnings: 0
Number of errors: 0
RUN: c- init.c-
ERROR(6): Initializer for variable 'j' is not a constant expression.
ERROR(6): Initializer for variable 'l' is not a constant expression.
ERROR(7): Initializer for variable 'bb' is not a constant expression.
ERROR(15): Symbol 'y' is already defined at line 4.
ERROR(17): Cannot index nonarray 'y'.
ERROR(17): '=' requires operands of the same type but lhs is type char and rhs is type
Number of warnings: 0
Number of errors: 6
RUN: c- moutest.c-
WARNING(5): Expecting to return type int but function 'emu' has no return statement.
ERROR(19): Array 'aa' should be indexed by type int but got type bool.
ERROR(20): Array index is the unindexed array 'dd'.
ERROR(17): Array 'cc' should be indexed by type int but got type bool.
ERROR(25): Array 'aa' should be indexed by type int but got type bool.
ERROR(23): Array 'cc' should be indexed by type int but got type bool.
ERROR(30): Array 'cc' should be indexed by type int but got type bool.
ERROR(39): The operation '*' only works with arrays.
ERROR(36): Array 'cc' should be indexed by type int but got type bool.
ERROR(42): Expecting type int in parameter 1 of call to 'emu' defined on line 5 but got
ERROR(43): Expecting type int in parameter 2 of call to 'emu' defined on line 5 but got
ERROR(50): Expecting type int in parameter 3 of call to 'emu' defined on line 5 but got
ERROR(50): Too many parameters passed for function 'emu' defined on line 5.
Number of warnings: 1
Number of errors: 12
RUN: c- ryantest.c-
ERROR(7): Initializer for variable 'x' is not a constant expression.
ERROR(7): Symbol 'x' is already defined at line 5.
ERROR(18): '==' requires operands of the same type but lhs is type int and rhs is type
ERROR(18): '==' requires that if one operand is an array so must the other operand.
ERROR(19): 'and' requires operands of type bool but lhs is of type int.
ERROR(19): 'and' requires operands of type bool but rhs is of type char.
ERROR(19): The operation 'and' does not work with arrays.
WARNING(12): Expecting to return type bool but function 'test' has no return statement.
ERROR(35): '=' requires operands of the same type but lhs is type bool and rhs is type
ERROR(34): '=' requires operands of the same type but lhs is type int and rhs is type b
ERROR(38): Symbol 'undef' is not defined.
ERROR(37): '=' requires operands of the same type but lhs is type int and rhs is type b
ERROR(41): Symbol 'undef' is not defined.
ERROR(44): Symbol 'undef' is not defined.
ERROR(47): '=' requires operands of the same type but lhs is type bool and rhs is type
ERROR(46): '=' requires operands of the same type but lhs is type int and rhs is type b
ERROR(46): '+' requires operands of type int but lhs is of type bool.
```

```
ERROR(50): Symbol 'undef' is not defined.
ERROR(49): '+' requires operands of type int but lhs is of type bool.
ERROR(53): Symbol 'undef' is not defined.
ERROR(52): '=' requires operands of the same type but lhs is type int and rhs is type b
ERROR(52): '+' requires operands of type int but lhs is of type bool.
ERROR(56): '=' requires operands of the same type but lhs is type bool and rhs is type
ERROR(55): '=' requires operands of the same type but lhs is type int and rhs is type b
ERROR(55): '+' requires operands of type int but lhs is of type bool.
ERROR(64): Symbol 'foo' is not defined.
ERROR(65): Symbol 'foo' is not defined.
ERROR(66): Symbol 'foo' is not defined.
ERROR(67): Symbol 'foo' is not defined.
ERROR(68): Symbol 'foo' is not defined.
ERROR(68): Symbol 'foo' is not defined.
ERROR(69): 'x' is a simple variable and cannot be called.
ERROR(71): Cannot use function 'check' as a simple variable.
ERROR(72): Cannot use function 'check' as a simple variable.
ERROR(72): 'x' is a simple variable and cannot be called.
ERROR(73): Symbol 'c' is not defined.
ERROR(74): Symbol 'c' is not defined.
ERROR(76): Symbol 'foo' is not defined.
ERROR(78): Cannot index nonarray 'x'.
ERROR(79): Cannot index nonarray 'x'.
ERROR(80): Symbol 'y' is not defined.
ERROR(82): Cannot use function 'check' as a simple variable.
ERROR(82): '=' requires that if one operand is an array so must the other operand.
ERROR(83): 'x' is a simple variable and cannot be called.
ERROR(86): '=' requires operands of the same type but lhs is type int and rhs is type c
ERROR(87): '=' requires operands of the same type but lhs is type char and rhs is type
ERROR(87): Expecting type int in parameter 2 of call to 'check' defined on line 26 but
ERROR(88): Symbol 'y' is not defined.
ERROR(88): Too many parameters passed for function 'check' defined on line 26.
ERROR(88): Too few parameters passed for function 'check' defined on line 26.
ERROR(89): Expecting array in parameter 2 of call to 'func' defined on line 61.
ERROR(90): Not expecting array in parameter 1 of call to 'func' defined on line 61.
ERROR(92): '-' requires operands of type int but rhs is of type char.
ERROR(92): Expecting array in parameter 2 of call to 'func' defined on line 61.
ERROR(92): Too many parameters passed for function 'func' defined on line 61.
ERROR(94): Expecting type int in parameter 1 of call to 'func' defined on line 61 but g
ERROR(94): Not expecting array in parameter 1 of call to 'func' defined on line 61.
ERROR(94): Too few parameters passed for function 'func' defined on line 61.
ERROR(99): Initializer for variable 'x' is not a constant expression.
ERROR(99): Symbol 'x' is already defined at line 97.
ERROR(100): Symbol 'x' is already defined at line 97.
ERROR(101): Variable 'x' is of type char but is being initialized with an expression of
ERROR(101): Symbol 'x' is already defined at line 97.
ERROR(102): Symbol 'x' is already defined at line 97.
ERROR(104): Symbol 'z' is already defined at line 103.
ERROR(105): Initializer for variable 'y' is not a constant expression.
ERROR(106): Initializer for variable 'a' is not a constant expression.
ERROR(106): Initializer for nonarray variable 'a' of type int cannot be initialized wit
```

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ERROR(107): Initializer for variable 'b' is not a constant expression.
ERROR(108): Initializer for variable 'd' is not a constant expression.
ERROR(109): Variable 'e' is of type int but is being initialized with an expression of
ERROR(109): Initializer for nonarray variable 'e' of type int cannot be initialized wit
ERROR(110): Array 'f' must be of type char to be initialized, but is of type int.
ERROR(111): Initializer for nonarray variable 'g' of type char cannot be initialized wi
ERROR(113): Initializer for variable 'i' is not a constant expression.
ERROR(114): Initializer for variable 'j' is not a constant expression.
ERROR(115): Initializer for variable 'k' is not a constant expression.
ERROR(115): Variable 'k' is of type int but is being initialized with an expression of
ERROR(116): Initializer for variable 'j' is not a constant expression.
ERROR(116): Symbol 'j' is already defined at line 114.
ERROR(118): Initializer for variable 'j2' is not a constant expression.
ERROR(129): Expecting array in parameter 2 of call to 'retCheck' defined on line 125.
ERROR(130): Cannot return an array.
ERROR(127): Function 'retCheck' at line 125 is expecting to return type int but return
Number of warnings: 1
Number of errors: 83
RUN: c- tictactoe.c-
WARNING(276): Expecting to return type bool but function 'finished' has no return state
Number of warnings: 1
Number of errors: 0
RUN: c- undef.c-
WARNING(3): Expecting to return type int but function 'intvalue' has no return statemen
ERROR(10): Symbol 'undef' is not defined.
ERROR(10): Initializer for variable 'x' is not a constant expression.
ERROR(10): Symbol 'x' is already defined at line 9.
ERROR(14): Symbol 'undef' is not defined.
ERROR(15): '+' requires operands of type int but rhs is of type void.
ERROR(16): Symbol 'undef' is not defined.
ERROR(17): '+' requires operands of type int but lhs is of type void.
ERROR(18): Symbol 'undef' is not defined.
ERROR(18): Symbol 'undef' is not defined.
ERROR(19): '+' requires operands of type int but lhs is of type void.
ERROR(19): '+' requires operands of type int but rhs is of type void.
ERROR(22): Symbol 'undef' is not defined.
ERROR(23): '+' requires operands of type int but rhs is of type void.
ERROR(24): Symbol 'undef' is not defined.
ERROR(25): '+' requires operands of type int but lhs is of type void.
ERROR(26): Symbol 'undef' is not defined.
ERROR(26): Symbol 'undef' is not defined.
ERROR(27): '+' requires operands of type int but lhs is of type void.
ERROR(27): '+' requires operands of type int but rhs is of type void.
ERROR(29): Symbol 'undef' is not defined.
ERROR(30): Symbol 'undef' is not defined.
ERROR(31): Symbol 'undef' is not defined.
ERROR(32): Symbol 'undef' is not defined.
ERROR(34): Symbol 'undef' is not defined.
ERROR(34): '+' requires operands of type int but rhs is of type bool.
ERROR(34): '==' requires operands of the same type but lhs is type int and rhs is type
ERROR(34): The operation '*' only works with arrays.
```

```
ERROR(35): 'x' is a simple variable and cannot be called.
ERROR(35): '+' requires operands of type int but rhs is of type bool.
ERROR(35): '==' requires operands of the same type but lhs is type int and rhs is type
ERROR(35): The operation '*' only works with arrays.
ERROR(37): Cannot use function 'novalue' as a simple variable.
ERROR(37): '=' requires operands of the same type but lhs is type void and rhs is type
ERROR(38): Cannot use function 'intvalue' as a simple variable.
ERROR(40): Expecting type int in parameter 1 of call to 'take1' defined on line 1 but g
ERROR(41): Cannot use function 'novalue' as a simple variable.
ERROR(41): Expecting type int in parameter 1 of call to 'take1' defined on line 1 but g
ERROR(42): Symbol 'undef' is not defined.
ERROR(43): Symbol 'undef' is not defined.
ERROR(45): Cannot use function 'intvalue' as a simple variable.
Number of warnings: 1
Number of errors: 40
RUN: c- while03.c-
Number of warnings: 0
Number of errors: 0

/* End of testing
==================================================
ztest zexpected differ: char 15317, line 219

Your output differs from the expected output.
This is a two column comparison with YOUR OUTPUT ON THE LEFT
with the EXPECTED OUTPUT ON THE RIGHT.
Limited to 5 seconds total run time and 5000 lines of ou    Limited to 5 seconds total


/* ================================================= *      * =============================
| Tests for CS445 Assignment 3B |                    | Tests for CS445 Assignment 3B |
| Comparison with Expected Output |                  | Comparison with Expected Output |
/* ================================================= *      * =============================


TestWorld                                   TestWorld
find makefile                                   find makefile
makefile                                        makefile
a makefile is here                              a makefile is here
RUN: c- allErrors.c-                            RUN: c- allErrors.c-
ERROR(6): Function 'dog' at line 2 is expecting to retur    ERROR(6): Function 'dog' at
ERROR(13): Function 'cat' at line 9 is expecting to retu    ERROR(13): Function 'cat' a
ERROR(16): Symbol 'cat' is already defined at line 9.      ERROR(16): Symbol 'cat' is
ERROR(25): Function 'ox' at line 23 is expecting no retu    ERROR(25): Function 'ox' at
WARNING(28): Expecting to return type int but function '   WARNING(28): Expecting to r
ERROR(35): Symbol 'x' is already defined at line 34.       ERROR(35): Symbol 'x' is al
ERROR(45): Expecting Boolean test condition in if statem   ERROR(45): Expecting Boolea
ERROR(46): Expecting Boolean test condition in while sta   ERROR(46): Expecting Boolea
ERROR(48): Cannot use function 'cat' as a simple variabl   ERROR(48): Cannot use funct
ERROR(49): '=' requires operands of the same type but lh   ERROR(49): '=' requires ope
ERROR(50): '+=' requires operands of type int but rhs is   ERROR(50): '+=' requires op
ERROR(51): '-=' requires operands of type int but lhs is   ERROR(51): '-=' requires op
ERROR(53): Cannot use array as test condition in if stat   ERROR(53): Cannot use array
```

```
ERROR(54): Cannot use array as test condition in while s      ERROR(54): Cannot use array
ERROR(59): Cannot have a break statement outside of loop      ERROR(59): Cannot have a br
ERROR(62): The operation '+' does not work with arrays.       ERROR(62): The operation '+
ERROR(63): The operation '-' does not work with arrays.       ERROR(63): The operation '-
ERROR(64): Unary 'not' requires an operand of type bool       ERROR(64): Unary 'not' requ
ERROR(64): The operation 'not' does not work with arrays      ERROR(64): The operation 'n
ERROR(66): '==' requires operands of the same type but l      ERROR(66): '==' requires op
ERROR(68): '+' requires operands of type int but lhs is       ERROR(68): '+' requires ope
ERROR(70): '*' requires operands of type int but rhs is       ERROR(70): '*' requires ope
ERROR(72): Unary 'not' requires an operand of type bool       ERROR(72): Unary 'not' requ
ERROR(74): Cannot index nonarray 'x'.                 ERROR(74): Cannot index nonarray 'x
ERROR(76): Array 'aa' should be indexed by type int but       ERROR(76): Array 'aa' shoul
ERROR(78): Array index is the unindexed array 'zz'.       ERROR(78): Array index is the u
ERROR(80): Symbol 'xyzzy' is not defined.         ERROR(80): Symbol 'xyzzy' is not de
ERROR(81): Symbol 'meerkat' is not defined.         ERROR(81): Symbol 'meerkat' is not
ERROR(83): 'x' is a simple variable and cannot be called      ERROR(83): 'x' is a simple
ERROR(85): Too many parameters passed for function 'dog'      ERROR(85): Too many paramet
ERROR(86): Too few parameters passed for function 'ibex'      ERROR(86): Too few paramete
ERROR(88): Expecting type int in parameter 1 of call to       ERROR(88): Expecting type i
ERROR(90): Not expecting array in parameter 1 of call to      ERROR(90): Not expecting ar
ERROR(91): Expecting type int in parameter 1 of call to       ERROR(91): Expecting type i
ERROR(93): Expecting array in parameter 1 of call to 'ib      ERROR(93): Expecting array
ERROR(94): Cannot use function 'ibex' as a simple variab      ERROR(94): Cannot use funct
ERROR(96): Cannot use function 'ibex' as a simple variab      ERROR(96): Cannot use funct
ERROR(96): '+' requires operands of type int but lhs is       ERROR(96): '+' requires ope
ERROR(98): The operation '*' only works with arrays.          ERROR(98): The operation '*
ERROR(100): '*' requires operands of type int but lhs is      ERROR(100): '*' requires op
ERROR(100): The operation '*' does not work with arrays.      ERROR(100): The operation '
ERROR(100): '+' requires operands of type int but lhs is      ERROR(100): '+' requires op
ERROR(100): The operation '*' only works with arrays.         ERROR(100): The operation '
ERROR(100): The operation 'not' does not work with array      ERROR(100): The operation '
ERROR(100): Unary 'not' requires an operand of type bool      ERROR(100): Unary 'not' req
ERROR(100): 'or' requires operands of type bool but lhs       ERROR(100): 'or' requires o
ERROR(100): Cannot have a break statement outside of loo      ERROR(100): Cannot have a b
ERROR(101): 'and' requires operands of type bool but lhs      ERROR(101): 'and' requires
ERROR(101): 'and' requires operands of type bool but rhs      ERROR(101): 'and' requires
ERROR(103): Cannot return an array.              ERROR(103): Cannot return an array.
ERROR(108): Symbol 'main' is already defined at line 32.      ERROR(108): Symbol 'main' i
ERROR(122): '==' requires operands of the same type but       ERROR(122): '==' requires o
ERROR(127): '=' requires operands of the same type but l      ERROR(127): '=' requires op
ERROR(131): '!=' requires operands of the same type but       ERROR(131): '!=' requires o
ERROR(137): Symbol 'z' is already defined at line 106.        ERROR(137): Symbol 'z' is a
ERROR(139): Variable 'a' is of type int but is being ini      ERROR(139): Variable 'a' is
ERROR(139): Variable 'b' is of type int but is being ini      ERROR(139): Variable 'b' is
ERROR(139): Variable 'zz' is of type int but is being in      ERROR(139): Variable 'zz' i
ERROR(141): Initializer for variable 'd' is not a consta      ERROR(141): Initializer for
ERROR(142): '*' requires operands of type int but rhs is      ERROR(142): '*' requires op
ERROR(143): Initializer for variable 'e' is not a consta      ERROR(143): Initializer for
ERROR(144): Initializer for variable 'f' is not a consta      ERROR(144): Initializer for
ERROR(146): Symbol 'main' is already defined at line 32.      ERROR(146): Symbol 'main' i
ERROR(159): '==' requires operands of the same type but       ERROR(159): '==' requires o
```

```
ERROR(165): '=' requires operands of the same type but l
ERROR(183): In foreach statement the variable to the lef
ERROR(184): In foreach statement the variable to the lef
ERROR(184): Foreach requires operands of 'in' be the sam
ERROR(187): Foreach requires operands of 'in' be the sam
ERROR(189): If not an array, foreach requires rhs of 'in
ERROR(190): If not an array, foreach requires lhs of 'in
ERROR(196): Initializer for nonarray variable 'w' of typ
ERROR(197): Variable 'u' is of type int but is being ini
ERROR(197): Initializer for nonarray variable 'u' of typ
ERROR(198): Array 't' must be of type char to be initial
ERROR(198): Initializer for array variable 't' must be a
ERROR(199): Initializer for array variable 's' must be a
ERROR(207): Symbol 'main' is already defined at line 32.
ERROR(209): Initializer for variable 'x' is not a consta
ERROR(210): Initializer for nonarray variable 'c' of typ
ERROR(211): Initializer for array variable 'd' must be a
ERROR(212): Variable 'e' is of type char but is being in
ERROR(213): Initializer for array variable 'f' must be a
ERROR(214): Array 'z' must be of type char to be initial
ERROR(216): '=' requires that if one operand is an array
ERROR(217): '=' requires that if one operand is an array
ERROR(218): '=' requires operands of the same type but l
ERROR(219): '=' requires operands of the same type but l
ERROR(219): '=' requires that if one operand is an array
ERROR(220): '=' requires operands of the same type but l
ERROR(222): '==' requires operands of the same type but
ERROR(223): '>' requires operands of type char or type i
ERROR(224): '>' requires operands of type char or type i
ERROR(225): The operation '>' does not work with arrays.
ERROR(226): The operation '>' does not work with arrays.
ERROR(227): The operation '>' does not work with arrays.
ERROR(229): Unary '-' requires an operand of type int bu
ERROR(230): The operation '*' only works with arrays.
ERROR(231): The operation '-' does not work with arrays.
ERROR(234): Unary '++' requires an operand of type int b
ERROR(234): The operation '++' does not work with arrays
ERROR(235): The operation '++' does not work with arrays
ERROR(236): Unary '--' requires an operand of type int b
ERROR(236): The operation '--' does not work with arrays
ERROR(237): The operation '--' does not work with arrays
WARNING(207): Expecting to return type int but function
ERROR(242): Symbol 'fred' is already defined at line 241
ERROR(244): Symbol 'fred' is already defined at line 243
ERROR(245): Symbol 'fred' is already defined at line 243
ERROR(246): Symbol 'fred' is already defined at line 243
WARNING(242): Expecting to return type int but function
Number of warnings: 3
Number of errors: 108
RUN: c- basicAll.c-
ERROR(16): Symbol 'cat' is not defined.
```

```
ERROR(18): Function 'dog' at line 12 is expecting to ret
ERROR(25): Function 'cat' at line 21 is expecting to ret
ERROR(28): Symbol 'cat' is already defined at line 21.
ERROR(39): Function 'ox' at line 37 is expecting no retu
WARNING(42): Expecting to return type int but function '
ERROR(54): Symbol 'x' is already defined at line 53.
ERROR(55): Symbol 'x' is already defined at line 53.
ERROR(63): Symbol 'v' is not defined.
ERROR(65): Expecting Boolean test condition in if statem
ERROR(66): Expecting Boolean test condition in while sta
ERROR(67): Expecting Boolean test condition in while sta
ERROR(69): Cannot use function 'cat' as a simple variabl
ERROR(70): '=' requires operands of the same type but lh
ERROR(71): '+=' requires operands of type int but rhs is
ERROR(72): '-=' requires operands of type int but lhs is
ERROR(73): '>' requires operands of type char or type in
ERROR(74): Unary '++' requires an operand of type int bu
ERROR(76): Cannot use array as test condition in if stat
ERROR(77): Cannot use array as test condition in while s
ERROR(79): Cannot have a break statement outside of loop
ERROR(83): The operation '+' does not work with arrays.
ERROR(84): The operation '<' does not work with arrays.
ERROR(85): '<' requires operands of type char or type in
ERROR(85): '<' requires operands of type char or type in
ERROR(85): The operation '<' does not work with arrays.
ERROR(87): '==' requires operands of the same type but l
ERROR(91): '+' requires operands of type int but lhs is
ERROR(93): '*' requires operands of type int but rhs is
ERROR(95): Unary 'not' requires an operand of type bool
ERROR(96): '+' requires operands of type int but rhs is
ERROR(96): Unary 'not' requires an operand of type bool
ERROR(97): Unary '-' requires an operand of type int but
ERROR(99): Cannot index nonarray 'x'.
ERROR(100): 'and' requires operands of type bool but lhs
ERROR(100): 'and' requires operands of type bool but rhs
ERROR(100): '*' requires operands of type int but rhs is
ERROR(101): Symbol 'y' is not defined.
ERROR(101): 'and' requires operands of type bool but lhs
ERROR(101): '*' requires operands of type int but rhs is
ERROR(102): 'and' requires operands of type bool but lhs
ERROR(102): 'and' requires operands of type bool but rhs
ERROR(102): '*' requires operands of type int but rhs is
ERROR(102): 'or' requires operands of type bool but rhs
ERROR(104): The operation '*' only works with arrays.
ERROR(105): 'and' requires operands of type bool but lhs
ERROR(109): Array 'aa' should be indexed by type int but
ERROR(111): Cannot use function 'cat' as a simple variab
ERROR(113): Array index is the unindexed array 'aa'.
ERROR(114): Symbol 'AA' is not defined.
ERROR(116): Symbol 'meerkat' is not defined.
ERROR(118): Symbol 'xyzzy' is not defined.
```

```
ERROR(119): Symbol 'meerkat' is not defined.
ERROR(120): Symbol 'xyzzy' is not defined.
ERROR(120): 'and' requires operands of type bool but rhs
ERROR(122): Symbol 'flight' is not defined.
ERROR(122): Unary 'not' requires an operand of type bool
ERROR(122): Unary '-' requires an operand of type int bu
ERROR(122): Symbol 'uu' is not defined.
ERROR(122): Symbol 'y' is not defined.
ERROR(122): '*' requires operands of type int but rhs is
ERROR(124): 'x' is a simple variable and cannot be calle
ERROR(126): Too many parameters passed for function 'dog
ERROR(127): Too few parameters passed for function 'ibex
ERROR(129): Expecting type int in parameter 1 of call to
ERROR(131): Not expecting array in parameter 1 of call t
ERROR(133): Expecting array in parameter 1 of call to 'i
ERROR(134): Expecting type int in parameter 1 of call to
ERROR(135): Cannot use function 'ibex' as a simple varia
ERROR(137): Cannot use function 'ibex' as a simple varia
ERROR(137): '+' requires operands of type int but lhs is
ERROR(140): Array index is the unindexed array 'zz'.
ERROR(141): Expecting type int in parameter 1 of call to
ERROR(141): Array 'aa' should be indexed by type int but
ERROR(143): '=' requires operands of the same type but l
ERROR(144): '+' requires operands of type int but rhs is
ERROR(145): Expecting type int in parameter 1 of call to
ERROR(146): Expecting type int in parameter 1 of call to
ERROR(149): '=' requires operands of the same type but l
ERROR(150): '=' requires operands of the same type but l
ERROR(151): '=' requires operands of the same type but l
ERROR(151): '=' requires operands of the same type but l
ERROR(151): '=' requires operands of the same type but l
ERROR(153): '*' requires operands of type int but rhs is
ERROR(153): '*' requires operands of type int but lhs is
ERROR(153): 'and' requires operands of type bool but lhs
ERROR(153): 'and' requires operands of type bool but rhs
ERROR(155): '+' requires operands of type int but rhs is
ERROR(155): Symbol 'parrot' is not defined.
ERROR(155): 'and' requires operands of type bool but rhs
ERROR(155): Expecting type int in parameter 3 of call to
ERROR(156): Expecting type int in parameter 1 of call to
ERROR(156): Expecting type int in parameter 2 of call to  |
                        >   ERROR(156): Symbol 'parrot' is not defined.
                        >   ERROR(156): 'and' requires operands of type bool bu
                        >   ERROR(156): Expecting type int in parameter 3 of ca
                        >   ERROR(156): 'and' requires operands of type bool bu
                        >   ERROR(156): Expecting type int in parameter 2 of ca
ERROR(156): Expecting type int in parameter 3 of call to
ERROR(156): Too many parameters passed for function 'emu
                        >   ERROR(156): '*' requires operands of type int but r
ERROR(158): Cannot return an array.
Number of warnings: 1
```

```
Number of errors: 95                        |     Number of errors: 101
RUN: c- basicAll2.c-                          RUN: c- basicAll2.c-
ERROR(16): Symbol 'cat' is not defined.          ERROR(16): Symbol 'cat' is not defi
ERROR(18): Function 'dog' at line 12 is expecting to ret   ERROR(18): Function 'dog' a
ERROR(25): Function 'cat' at line 21 is expecting to ret   ERROR(25): Function 'cat' a
ERROR(28): Symbol 'cat' is already defined at line 21.     ERROR(28): Symbol 'cat' is
ERROR(34): Function 'ibex' at line 31 is expecting to re   ERROR(34): Function 'ibex'
ERROR(39): Function 'ox' at line 37 is expecting no retu   ERROR(39): Function 'ox' at
WARNING(42): Expecting to return type char but function    WARNING(42): Expecting to r
ERROR(48): '+' requires operands of type int but lhs is    ERROR(48): '+' requires ope
ERROR(48): '+' requires operands of type int but rhs is    ERROR(48): '+' requires ope
ERROR(54): Symbol 'x' is already defined at line 53.       ERROR(54): Symbol 'x' is al
ERROR(55): Symbol 'x' is already defined at line 53.       ERROR(55): Symbol 'x' is al
ERROR(63): Symbol 'v' is not defined.            ERROR(63): Symbol 'v' is not define
ERROR(65): Expecting Boolean test condition in if statem   ERROR(65): Expecting Boolea
ERROR(66): Expecting Boolean test condition in while sta   ERROR(66): Expecting Boolea
ERROR(67): Expecting type char in parameter 1 of call to   ERROR(67): Expecting type c
ERROR(67): Expecting Boolean test condition in while sta   ERROR(67): Expecting Boolea
ERROR(69): Cannot use function 'cat' as a simple variabl   ERROR(69): Cannot use funct
ERROR(70): '=' requires operands of the same type but lh   ERROR(70): '=' requires ope
ERROR(71): '+=' requires operands of type int but lhs is   ERROR(71): '+=' requires op
ERROR(72): '-=' requires operands of type int but rhs is   ERROR(72): '-=' requires op
ERROR(76): Expecting Boolean test condition in if statem   ERROR(76): Expecting Boolea
ERROR(76): Cannot use array as test condition in if stat   ERROR(76): Cannot use array
ERROR(77): Expecting Boolean test condition in while sta   ERROR(77): Expecting Boolea
ERROR(77): Cannot use array as test condition in while s   ERROR(77): Cannot use array
ERROR(79): Cannot have a break statement outside of loop   ERROR(79): Cannot have a br
ERROR(81): Expecting Boolean test condition in while sta   ERROR(81): Expecting Boolea
ERROR(83): '+' requires operands of type int but lhs is    ERROR(83): '+' requires ope
ERROR(83): The operation '+' does not work with arrays.    ERROR(83): The operation '+
ERROR(84): The operation '<' does not work with arrays.    ERROR(84): The operation '<
ERROR(85): The operation '<' does not work with arrays.    ERROR(85): The operation '<
ERROR(87): '==' requires operands of the same type but l   ERROR(87): '==' requires op
ERROR(88): '==' requires operands of the same type but l   ERROR(88): '==' requires op
ERROR(89): '==' requires operands of the same type but l   ERROR(89): '==' requires op
ERROR(91): '+' requires operands of type int but lhs is    ERROR(91): '+' requires ope
ERROR(91): '+' requires operands of type int but rhs is    ERROR(91): '+' requires ope
ERROR(93): '*' requires operands of type int but lhs is    ERROR(93): '*' requires ope
ERROR(93): '*' requires operands of type int but rhs is    ERROR(93): '*' requires ope
ERROR(95): Unary 'not' requires an operand of type bool    ERROR(95): Unary 'not' requ
ERROR(96): '+' requires operands of type int but lhs is    ERROR(96): '+' requires ope
ERROR(96): Unary 'not' requires an operand of type bool    ERROR(96): Unary 'not' requ
ERROR(99): Cannot index nonarray 'x'.            ERROR(99): Cannot index nonarray 'x
ERROR(100): 'and' requires operands of type bool but lhs   ERROR(100): 'and' requires
ERROR(100): 'and' requires operands of type bool but rhs   ERROR(100): 'and' requires
ERROR(100): '*' requires operands of type int but lhs is   ERROR(100): '*' requires op
ERROR(100): '*' requires operands of type int but rhs is   ERROR(100): '*' requires op
ERROR(100): '+' requires operands of type int but lhs is   ERROR(100): '+' requires op
ERROR(100): '==' requires operands of the same type but    ERROR(100): '==' requires o
ERROR(100): '=' requires operands of the same type but l   ERROR(100): '=' requires op
ERROR(101): Symbol 'y' is not defined.           ERROR(101): Symbol 'y' is not defin
```

```
ERROR(101): 'and' requires operands of type bool but lhs
ERROR(101): '*' requires operands of type int but lhs is
ERROR(101): '*' requires operands of type int but rhs is
ERROR(101): '+' requires operands of type int but lhs is
ERROR(101): '==' requires operands of the same type but
ERROR(101): '=' requires operands of the same type but l
ERROR(102): 'and' requires operands of type bool but lhs
ERROR(102): 'and' requires operands of type bool but rhs
ERROR(102): '*' requires operands of type int but lhs is
ERROR(102): '*' requires operands of type int but rhs is
ERROR(102): 'or' requires operands of type bool but rhs
ERROR(102): '=' requires operands of the same type but l
ERROR(104): The operation '*' only works with arrays.
ERROR(105): 'and' requires operands of type bool but lhs
ERROR(105): 'and' requires operands of type bool but rhs
ERROR(111): Cannot use function 'cat' as a simple variab
ERROR(111): Array 'aa' should be indexed by type int but
ERROR(113): Array 'aa' should be indexed by type int but
ERROR(113): Array index is the unindexed array 'aa'.
ERROR(114): Symbol 'AA' is not defined.
ERROR(116): Symbol 'meerkat' is not defined.
ERROR(118): Symbol 'xyzzy' is not defined.
ERROR(119): Symbol 'meerkat' is not defined.
ERROR(120): Symbol 'xyzzy' is not defined.
ERROR(120): 'and' requires operands of type bool but rhs
ERROR(122): Symbol 'flight' is not defined.
ERROR(122): Unary 'not' requires an operand of type bool
ERROR(122): Unary '-' requires an operand of type int bu
ERROR(122): Symbol 'uu' is not defined.
ERROR(122): Symbol 'y' is not defined.
ERROR(122): '*' requires operands of type int but lhs is
ERROR(122): '+' requires operands of type int but lhs is
ERROR(124): 'x' is a simple variable and cannot be calle
ERROR(126): Expecting type char in parameter 1 of call t
ERROR(126): Too many parameters passed for function 'dog
ERROR(127): Too few parameters passed for function 'ibex
ERROR(129): Expecting type char in parameter 1 of call t
ERROR(131): Not expecting array in parameter 1 of call t
ERROR(133): Expecting array in parameter 1 of call to 'i
ERROR(134): Expecting type char in parameter 1 of call t
ERROR(135): Cannot use function 'ibex' as a simple varia
ERROR(137): Cannot use function 'ibex' as a simple varia
ERROR(139): Array 'aa' should be indexed by type int but
ERROR(140): Array 'aa' should be indexed by type int but
ERROR(140): Array index is the unindexed array 'zz'.
ERROR(141): Expecting type char in parameter 1 of call t
ERROR(141): Array 'aa' should be indexed by type int but
ERROR(143): Expecting type char in parameter 1 of call t
ERROR(143): '=' requires operands of the same type but l
ERROR(144): Expecting type char in parameter 1 of call t
ERROR(144): '+' requires operands of type int but lhs is
```

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ERROR(144): '+' requires operands of type int but rhs is     ERROR(144): '+' requires op
ERROR(144): '=' requires operands of the same type but l     ERROR(144): '=' requires op
ERROR(145): Expecting type char in parameter 1 of call t     ERROR(145): Expecting type
ERROR(145): Expecting type char in parameter 1 of call t     ERROR(145): Expecting type
ERROR(146): Expecting type char in parameter 1 of call t     ERROR(146): Expecting type
ERROR(147): Expecting type char in parameter 1 of call t     ERROR(147): Expecting type
ERROR(149): '=' requires operands of the same type but l     ERROR(149): '=' requires op
ERROR(151): '=' requires operands of the same type but l     ERROR(151): '=' requires op
ERROR(151): '=' requires operands of the same type but l     ERROR(151): '=' requires op
ERROR(151): '=' requires operands of the same type but l     ERROR(151): '=' requires op
ERROR(153): '*' requires operands of type int but lhs is     ERROR(153): '*' requires op
ERROR(153): '*' requires operands of type int but rhs is     ERROR(153): '*' requires op
ERROR(153): 'and' requires operands of type bool but lhs     ERROR(153): 'and' requires
ERROR(153): 'and' requires operands of type bool but rhs     ERROR(153): 'and' requires
ERROR(155): '+' requires operands of type int but lhs is     ERROR(155): '+' requires op
                            >    ERROR(155): Expecting type char in parameter 1 of c
ERROR(155): Symbol 'parrot' is not defined.        ERROR(155): Symbol 'parrot' is not
ERROR(155): 'and' requires operands of type bool but lhs     ERROR(155): 'and' requires
ERROR(155): 'and' requires operands of type bool but rhs     ERROR(155): 'and' requires
ERROR(155): Expecting type char in parameter 1 of call t   <
ERROR(155): Expecting type char in parameter 3 of call t     ERROR(155): Expecting type
ERROR(156): Expecting type char in parameter 1 of call t     ERROR(156): Expecting type
ERROR(156): Expecting type char in parameter 2 of call t   |    ERROR(156): '+' require
                            >    ERROR(156): Expecting type char in parameter 1 of c
                            >    ERROR(156): Symbol 'parrot' is not defined.
                            >    ERROR(156): 'and' requires operands of type bool bu
                            >    ERROR(156): 'and' requires operands of type bool bu
                            >    ERROR(156): Expecting type char in parameter 3 of c
                            >    ERROR(156): 'and' requires operands of type bool bu
                            >    ERROR(156): Expecting type char in parameter 2 of c
ERROR(156): Expecting type char in parameter 3 of call t     ERROR(156): Expecting type
ERROR(156): Too many parameters passed for function 'emu     ERROR(156): Too many parame
                            >    ERROR(156): '*' requires operands of type int but l
ERROR(158): Cannot return an array.        ERROR(158): Cannot return an array.
Number of warnings: 1                Number of warnings: 1
Number of errors: 124            |    Number of errors: 132
RUN: c- basicExtra.c-              RUN: c- basicExtra.c-
WARNING(3): Expecting to return type char but function '     WARNING(3): Expecting to re
ERROR(14): '<' requires operands of type char or type in     ERROR(14): '<' requires ope
ERROR(14): '<' requires operands of type char or type in     ERROR(14): '<' requires ope
ERROR(14): The operation '<' does not work with arrays.     ERROR(14): The operation '<
ERROR(15): The operation '<' does not work with arrays.     ERROR(15): The operation '<
ERROR(18): '<' requires operands of type char or type in     ERROR(18): '<' requires ope
ERROR(18): '<' requires operands of type char or type in     ERROR(18): '<' requires ope
ERROR(19): '/' requires operands of type int but lhs is     ERROR(19): '/' requires ope
ERROR(20): '/' requires operands of type int but rhs is     ERROR(20): '/' requires ope
ERROR(21): '%' requires operands of type int but lhs is     ERROR(21): '%' requires ope
ERROR(22): '%' requires operands of type int but rhs is     ERROR(22): '%' requires ope
ERROR(23): '-' requires operands of type int but lhs is     ERROR(23): '-' requires ope
ERROR(24): '-' requires operands of type int but rhs is     ERROR(24): '-' requires ope
ERROR(25): '<' requires operands of type char or type in     ERROR(25): '<' requires ope
```

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ERROR(25): '<' requires operands of type char or type in
ERROR(27): '<' requires operands of type char or type in
ERROR(28): '<' requires operands of type char or type in
ERROR(30): Symbol 'k' is not defined.
ERROR(31): Symbol 'k' is not defined.
ERROR(32): Symbol 'k' is not defined.
ERROR(32): Symbol 'k' is not defined.
ERROR(33): Symbol 'k' is not defined.
ERROR(34): 'i' is a simple variable and cannot be called
Number of warnings: 1
Number of errors: 22
RUN: c- bullsandcows.c-
ERROR(120): Cannot have a break statement outside of loo
ERROR(130): Cannot have a break statement outside of loo
ERROR(160): Cannot have a break statement outside of loo
Number of warnings: 0
Number of errors: 3
RUN: c- call.c-
WARNING(1): Expecting to return type int but function 's
WARNING(7): Expecting to return type int but function 's
WARNING(18): Expecting to return type int but function '
Number of warnings: 3
Number of errors: 0
RUN: c- call2.c-
Number of warnings: 0
Number of errors: 0
RUN: c- call3.c-
ERROR(4): Symbol 'fred' is not defined.
ERROR(4): Symbol 'x' is not defined.
ERROR(4): Symbol 'y' is not defined.
ERROR(4): 'and' requires operands of type bool but lhs i
ERROR(4): 'and' requires operands of type bool but rhs i
ERROR(12): Too many parameters passed for function 'fred
ERROR(14): Too few parameters passed for function 'fred'
ERROR(13): Expecting array in parameter 1 of call to 'fr
ERROR(15): Expecting type char in parameter 1 of call to
WARNING(9): Expecting to return type char but function '
ERROR(20): 'x' is a simple variable and cannot be called
ERROR(20): '+' requires operands of type int but rhs is
ERROR(20): The operation '*' only works with arrays.
ERROR(20): 'and' requires operands of type bool but lhs
ERROR(20): 'and' requires operands of type bool but rhs
ERROR(21): Symbol 'y' is not defined.
ERROR(21): '+' requires operands of type int but rhs is
ERROR(21): The operation '*' only works with arrays.
ERROR(21): 'and' requires operands of type bool but lhs
ERROR(21): 'and' requires operands of type bool but rhs
ERROR(22): 'z' is a simple variable and cannot be called
ERROR(22): '+' requires operands of type int but rhs is
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ERROR(22): The operation '*' only works with arrays.       ERROR(22): The operation '*
ERROR(22): 'and' requires operands of type bool but lhs     ERROR(22): 'and' requires o
ERROR(22): 'and' requires operands of type bool but rhs     ERROR(22): 'and' requires o
ERROR(25): Symbol 'output' is already defined at line -1    ERROR(25): Symbol 'output'
ERROR(26): Symbol 'outputb' is already defined at line -    ERROR(26): Symbol 'outputb'
ERROR(27): Symbol 'outputc' is already defined at line -    ERROR(27): Symbol 'outputc'
ERROR(29): Symbol 'input' is already defined at line -1.    ERROR(29): Symbol 'input' i
ERROR(30): Symbol 'inputb' is already defined at line -1    ERROR(30): Symbol 'inputb'
ERROR(31): Symbol 'inputc' is already defined at line -1    ERROR(31): Symbol 'inputc'
ERROR(43): Symbol 'x' is already defined at line 42.        ERROR(43): Symbol 'x' is al
WARNING(42): Expecting to return type int but function '    WARNING(42): Expecting to r
ERROR(50): Symbol 'AlanTuring' is already defined at lin    ERROR(50): Symbol 'AlanTuri
ERROR(54): Symbol 'x' is already defined at line 52.    <
WARNING(50): Expecting to return type int but function '    WARNING(50): Expecting to r
Number of warnings: 3                       Number of warnings: 3
Number of errors: 33                      |    Number of errors: 34
RUN: c- chars.c-                          RUN: c- chars.c-
Number of warnings: 0                       Number of warnings: 0
Number of errors: 0                         Number of errors: 0
RUN: c- everything02.c-                      RUN: c- everything02.c-
WARNING(47): Expecting to return type bool but function    |    Number of warnings: 0
ERROR(65): Initializer for variable 'void' is not a cons   |    Number of errors: 0
WARNING(84): Expecting to return type int but function '   <
ERROR(93): Expecting type int in parameter 2 of call to    <
Number of warnings: 2                        <
Number of errors: 2                          <
RUN: c- factor.c-                          RUN: c- factor.c-
Number of warnings: 0                        Number of warnings: 0
Number of errors: 0                         Number of errors: 0
RUN: c- factorial.c-                        RUN: c- factorial.c-
Number of warnings: 0                        Number of warnings: 0
Number of errors: 0                         Number of errors: 0
RUN: c- init.c-                           RUN: c- init.c-
ERROR(6): Initializer for variable 'j' is not a constant   <
ERROR(6): Initializer for variable 'l' is not a constant   <
ERROR(7): Initializer for variable 'bb' is not a constan   <
ERROR(15): Symbol 'y' is already defined at line 4.     <
ERROR(17): Cannot index nonarray 'y'.                <
ERROR(17): '=' requires operands of the same type but lh   <
Number of warnings: 0                       Number of warnings: 0
Number of errors: 6                       |    Number of errors: 0
RUN: c- moutest.c-                         RUN: c- moutest.c-
WARNING(5): Expecting to return type int but function 'e   WARNING(5): Expecting to re
ERROR(19): Array 'aa' should be indexed by type int but    ERROR(19): Array 'aa' shoul
ERROR(20): Array index is the unindexed array 'dd'.     ERROR(20): Array index is the u
ERROR(17): Array 'cc' should be indexed by type int but    ERROR(17): Array 'cc' shoul
ERROR(25): Array 'aa' should be indexed by type int but    ERROR(25): Array 'aa' shoul
ERROR(23): Array 'cc' should be indexed by type int but    ERROR(23): Array 'cc' shoul
ERROR(30): Array 'cc' should be indexed by type int but    ERROR(30): Array 'cc' shoul
ERROR(39): The operation '*' only works with arrays.       ERROR(39): The operation '*
ERROR(36): Array 'cc' should be indexed by type int but    ERROR(36): Array 'cc' shoul
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ERROR(42): Expecting type int in parameter 1 of call to       ERROR(42): Expecting type i
ERROR(43): Expecting type int in parameter 2 of call to    |    ERROR(43): '+' requires
ERROR(50): Expecting type int in parameter 3 of call to    |    ERROR(44): '+' requires
ERROR(50): Too many parameters passed for function 'emu'   |    ERROR(45): '+' requires
                                  >    ERROR(46): Symbol 'parrot' is not defined.
                                  >    ERROR(47): 'and' requires operands of type bool but
                                  >    ERROR(45): Expecting type int in parameter 3 of cal
                                  >    ERROR(48): 'and' requires operands of type bool but
                                  >    ERROR(44): Expecting type int in parameter 3 of cal
                                  >    ERROR(49): 'and' requires operands of type bool but
                                  >    ERROR(43): Expecting type int in parameter 3 of cal
                                  >    ERROR(43): 'and' requires operands of type bool but
                                  >    ERROR(42): Expecting type int in parameter 2 of cal
                                  >    ERROR(42): Expecting type int in parameter 3 of cal
                                  >    ERROR(42): Too many parameters passed for function
                                  >    ERROR(51): '*' requires operands of type int but rh
Number of warnings: 1                          Number of warnings: 1
Number of errors: 12                       |    Number of errors: 24
RUN: c- ryantest.c-                            RUN: c- ryantest.c-
ERROR(7): Initializer for variable 'x' is not a constant   ERROR(7): Initializer for v
ERROR(7): Symbol 'x' is already defined at line 5.     ERROR(7): Symbol 'x' is already
ERROR(18): '==' requires operands of the same type but l    ERROR(18): '==' requires op
ERROR(18): '==' requires that if one operand is an array    ERROR(18): '==' requires th
ERROR(19): 'and' requires operands of type bool but lhs    ERROR(19): 'and' requires o
ERROR(19): 'and' requires operands of type bool but rhs    ERROR(19): 'and' requires o
ERROR(19): The operation 'and' does not work with arrays    ERROR(19): The operation 'a
WARNING(12): Expecting to return type bool but function    <
ERROR(35): '=' requires operands of the same type but lh    ERROR(35): '=' requires ope
ERROR(34): '=' requires operands of the same type but lh    ERROR(34): '=' requires ope
ERROR(38): Symbol 'undef' is not defined.         ERROR(38): Symbol 'undef' is not de
ERROR(37): '=' requires operands of the same type but lh    ERROR(37): '=' requires ope
ERROR(41): Symbol 'undef' is not defined.          ERROR(41): Symbol 'undef' is not de
ERROR(44): Symbol 'undef' is not defined.          ERROR(44): Symbol 'undef' is not de
ERROR(47): '=' requires operands of the same type but lh    ERROR(47): '=' requires ope
ERROR(46): '=' requires operands of the same type but lh    ERROR(46): '=' requires ope
ERROR(46): '+' requires operands of type int but lhs is    ERROR(46): '+' requires ope
ERROR(50): Symbol 'undef' is not defined.          ERROR(50): Symbol 'undef' is not de
ERROR(49): '+' requires operands of type int but lhs is    ERROR(49): '+' requires ope
ERROR(53): Symbol 'undef' is not defined.          ERROR(53): Symbol 'undef' is not de
ERROR(52): '=' requires operands of the same type but lh    ERROR(52): '=' requires ope
ERROR(52): '+' requires operands of type int but lhs is    ERROR(52): '+' requires ope
ERROR(56): '=' requires operands of the same type but lh    ERROR(56): '=' requires ope
ERROR(55): '=' requires operands of the same type but lh    ERROR(55): '=' requires ope
ERROR(55): '+' requires operands of type int but lhs is    ERROR(55): '+' requires ope
ERROR(64): Symbol 'foo' is not defined.           ERROR(64): Symbol 'foo' is not defi
ERROR(65): Symbol 'foo' is not defined.           ERROR(65): Symbol 'foo' is not defi
ERROR(66): Symbol 'foo' is not defined.           ERROR(66): Symbol 'foo' is not defi
ERROR(67): Symbol 'foo' is not defined.           ERROR(67): Symbol 'foo' is not defi
ERROR(68): Symbol 'foo' is not defined.           ERROR(68): Symbol 'foo' is not defi
ERROR(68): Symbol 'foo' is not defined.           ERROR(68): Symbol 'foo' is not defi
ERROR(69): 'x' is a simple variable and cannot be called    ERROR(69): 'x' is a simple
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                                              >     ERROR(69): '*' requires operands of type int but lh
                                              >     ERROR(69): Cannot use function 'test' as a simple v
ERROR(71): Cannot use function 'check' as a simple varia    ERROR(71): Cannot use funct
ERROR(72): Cannot use function 'check' as a simple varia    ERROR(72): Cannot use funct
ERROR(72): 'x' is a simple variable and cannot be called    ERROR(72): 'x' is a simple
ERROR(73): Symbol 'c' is not defined.                       ERROR(73): Symbol 'c' is not define
ERROR(74): Symbol 'c' is not defined.                       ERROR(74): Symbol 'c' is not define
ERROR(76): Symbol 'foo' is not defined.                     ERROR(76): Symbol 'foo' is not defi
ERROR(78): Cannot index nonarray 'x'.                       ERROR(78): Cannot index nonarray 'x
ERROR(79): Cannot index nonarray 'x'.                       ERROR(79): Cannot index nonarray 'x
ERROR(80): Symbol 'y' is not defined.                       ERROR(80): Symbol 'y' is not define
ERROR(82): Cannot use function 'check' as a simple varia    ERROR(82): Cannot use funct
ERROR(82): '=' requires that if one operand is an array     <
ERROR(83): 'x' is a simple variable and cannot be called    ERROR(83): 'x' is a simple
ERROR(86): '=' requires operands of the same type but lh    ERROR(86): '=' requires ope
ERROR(87): '=' requires operands of the same type but lh    ERROR(87): '=' requires ope
ERROR(87): Expecting type int in parameter 2 of call to     ERROR(87): Expecting type i
ERROR(88): Symbol 'y' is not defined.                       ERROR(88): Symbol 'y' is not define
ERROR(88): Too many parameters passed for function 'chec    ERROR(88): Too many paramet
ERROR(88): Too few parameters passed for function 'check    ERROR(88): Too few paramete
ERROR(89): Expecting array in parameter 2 of call to 'fu    ERROR(89): Expecting array
ERROR(90): Not expecting array in parameter 1 of call to    ERROR(90): Not expecting ar
ERROR(92): '-' requires operands of type int but rhs is     ERROR(92): '-' requires ope
ERROR(92): Expecting array in parameter 2 of call to 'fu    |    ERROR(91): Expecting ar
ERROR(92): Too many parameters passed for function 'func    |    ERROR(91): Too many par
ERROR(94): Expecting type int in parameter 1 of call to     ERROR(94): Expecting type i
ERROR(94): Not expecting array in parameter 1 of call to    ERROR(94): Not expecting ar
ERROR(94): Too few parameters passed for function 'func'    ERROR(94): Too few paramete
ERROR(99): Initializer for variable 'x' is not a constan    ERROR(99): Initializer for
ERROR(99): Symbol 'x' is already defined at line 97.        ERROR(99): Symbol 'x' is al
ERROR(100): Symbol 'x' is already defined at line 97.       ERROR(100): Symbol 'x' is a
ERROR(101): Variable 'x' is of type char but is being in    ERROR(101): Variable 'x' is
ERROR(101): Symbol 'x' is already defined at line 97.       ERROR(101): Symbol 'x' is a
ERROR(102): Symbol 'x' is already defined at line 97.       ERROR(102): Symbol 'x' is a
ERROR(104): Symbol 'z' is already defined at line 103.      ERROR(104): Symbol 'z' is a
ERROR(105): Initializer for variable 'y' is not a consta    ERROR(105): Initializer for
ERROR(106): Initializer for variable 'a' is not a consta    ERROR(106): Initializer for
ERROR(106): Initializer for nonarray variable 'a' of typ    ERROR(106): Initializer for
ERROR(107): Initializer for variable 'b' is not a consta    ERROR(107): Initializer for
ERROR(108): Initializer for variable 'd' is not a consta    ERROR(108): Initializer for
ERROR(109): Variable 'e' is of type int but is being ini    ERROR(109): Variable 'e' is
ERROR(109): Initializer for nonarray variable 'e' of typ    ERROR(109): Initializer for
ERROR(110): Array 'f' must be of type char to be initial    ERROR(110): Array 'f' must
ERROR(111): Initializer for nonarray variable 'g' of typ    ERROR(111): Initializer for
ERROR(113): Initializer for variable 'i' is not a consta    ERROR(113): Initializer for
ERROR(114): Initializer for variable 'j' is not a consta    ERROR(114): Initializer for
ERROR(115): Initializer for variable 'k' is not a consta    ERROR(115): Initializer for
ERROR(115): Variable 'k' is of type int but is being ini    ERROR(115): Variable 'k' is
ERROR(116): Initializer for variable 'j' is not a consta    ERROR(116): Initializer for
ERROR(116): Symbol 'j' is already defined at line 114.      ERROR(116): Symbol 'j' is a
ERROR(118): Initializer for variable 'j2' is not a const    ERROR(118): Initializer for
```

```
                                   >       ERROR(127): Function 'retCheck' at line 125 is expe
ERROR(129): Expecting array in parameter 2 of call to 'r     ERROR(129): Expecting array
ERROR(130): Cannot return an array.                          ERROR(130): Cannot return an array.
ERROR(127): Function 'retCheck' at line 125 is expecting  |     Number of warnings: 0
Number of warnings: 1                                     |      Number of errors: 84
Number of errors: 83                                      <
RUN: c- tictactoe.c-                                        RUN: c- tictactoe.c-
WARNING(276): Expecting to return type bool but function  |     Number of warnings: 0
Number of warnings: 1                                     <
Number of errors: 0                                         Number of errors: 0
RUN: c- undef.c-                                            RUN: c- undef.c-
WARNING(3): Expecting to return type int but function 'i    WARNING(3): Expecting to re
ERROR(10): Symbol 'undef' is not defined.                   ERROR(10): Symbol 'undef' is not de
ERROR(10): Initializer for variable 'x' is not a constan    ERROR(10): Initializer for
ERROR(10): Symbol 'x' is already defined at line 9.         ERROR(10): Symbol 'x' is alread
ERROR(14): Symbol 'undef' is not defined.                   ERROR(14): Symbol 'undef' is not de
ERROR(15): '+' requires operands of type int but rhs is     ERROR(15): '+' requires ope
ERROR(16): Symbol 'undef' is not defined.                   ERROR(16): Symbol 'undef' is not de
ERROR(17): '+' requires operands of type int but lhs is     ERROR(17): '+' requires ope
ERROR(18): Symbol 'undef' is not defined.                   ERROR(18): Symbol 'undef' is not de
ERROR(18): Symbol 'undef' is not defined.                   ERROR(18): Symbol 'undef' is not de
ERROR(19): '+' requires operands of type int but lhs is     ERROR(19): '+' requires ope
ERROR(19): '+' requires operands of type int but rhs is     ERROR(19): '+' requires ope
ERROR(22): Symbol 'undef' is not defined.                   ERROR(22): Symbol 'undef' is not de
ERROR(23): '+' requires operands of type int but rhs is     ERROR(23): '+' requires ope
ERROR(24): Symbol 'undef' is not defined.                   ERROR(24): Symbol 'undef' is not de
ERROR(25): '+' requires operands of type int but lhs is     ERROR(25): '+' requires ope
ERROR(26): Symbol 'undef' is not defined.                   ERROR(26): Symbol 'undef' is not de
ERROR(26): Symbol 'undef' is not defined.                   ERROR(26): Symbol 'undef' is not de
ERROR(27): '+' requires operands of type int but lhs is     ERROR(27): '+' requires ope
ERROR(27): '+' requires operands of type int but rhs is     ERROR(27): '+' requires ope
ERROR(29): Symbol 'undef' is not defined.                   ERROR(29): Symbol 'undef' is not de
ERROR(30): Symbol 'undef' is not defined.                   ERROR(30): Symbol 'undef' is not de
ERROR(31): Symbol 'undef' is not defined.                   ERROR(31): Symbol 'undef' is not de
ERROR(32): Symbol 'undef' is not defined.                   ERROR(32): Symbol 'undef' is not de
ERROR(34): Symbol 'undef' is not defined.                   ERROR(34): Symbol 'undef' is not de
ERROR(34): '+' requires operands of type int but rhs is     ERROR(34): '+' requires ope
ERROR(34): '==' requires operands of the same type but l    ERROR(34): '==' requires op
ERROR(34): The operation '*' only works with arrays.        ERROR(34): The operation '*
ERROR(35): 'x' is a simple variable and cannot be called    ERROR(35): 'x' is a simple
ERROR(35): '+' requires operands of type int but rhs is     ERROR(35): '+' requires ope
ERROR(35): '==' requires operands of the same type but l    ERROR(35): '==' requires op
ERROR(35): The operation '*' only works with arrays.        ERROR(35): The operation '*
ERROR(37): Cannot use function 'novalue' as a simple var    ERROR(37): Cannot use funct
ERROR(37): '=' requires operands of the same type but lh    ERROR(37): '=' requires ope
ERROR(38): Cannot use function 'intvalue' as a simple va    ERROR(38): Cannot use funct
ERROR(40): Expecting type int in parameter 1 of call to     ERROR(40): Expecting type i
ERROR(41): Cannot use function 'novalue' as a simple var    ERROR(41): Cannot use funct
ERROR(41): Expecting type int in parameter 1 of call to     ERROR(41): Expecting type i
ERROR(42): Symbol 'undef' is not defined.                   ERROR(42): Symbol 'undef' is not de
ERROR(43): Symbol 'undef' is not defined.                   ERROR(43): Symbol 'undef' is not de
```

```
ERROR(45): Cannot use function 'intvalue' as a simple va    ERROR(45): Cannot use funct
Number of warnings: 1                          Number of warnings: 1
Number of errors: 40                           Number of errors: 40
RUN: c- while03.c-                         RUN: c- while03.c-
Number of warnings: 0                          Number of warnings: 0
Number of errors: 0                         Number of errors: 0


/* End of testing                         * End of testing
```

Chapter 9

hw3b c-.y file

上面这一楼贴了载止 hw3b deadline 时我 match 的结果（也就是老师可以以这些不 match 的 ERROR 为借口不给后来我补上的成绩），但是因为当时我还是没有写完，后来感恩节期间就接着又写了一些，而且 hw5 是 based on hw3 & hw3b 的基础上（当我 hw5 是 based on 更好的 hw3 的结果时，我应该可以得更多的分吧）。

hw4 因为写得比较顺利，就不曾保留任何交上去作业的 output，没有什么一目了然的结果是我可以贴在这里的。原本我是想要把自己最的一次作业 hw5 贴出来的，但那已经是一个完整的 compiler，而且以后我还需要用自己的 course project 来找工作，所以一定就不贴最终结果了。那就贴一个 hw3b 的 c-.y 文件吧，它集中的 hw1、hw2、hw3、hw3b 的结果，是我自己 hw3b *.y 文件的最完整版本。这些作业里面也有很多机关——人为增加的难度，比如那六七个 IO 相关的 function，不仅 traverse tree、build syntax tree 的时候会成为一个考点（把它们作为一个 node 连在 syntax tree root node 之前，这样整个是一个 linked list of nodes；当然 hw5 里这几个 IO   function 的处理又会再一次地成为考点。）

```
%{
#include <iostream>
#include <cstring>
#include <cctype>
#include <stdlib.h>
#include <stdio.h>
#include <unistd.h>
#include "scanType.h"
#include "c-.tab.h"
#include "symtab.h"

    extern int yylex();
    extern int yyparse();
    extern FILE * yyin;
    char *yyfilename;
    extern char *yytext;
    extern int linnum;
    extern char tokenString[];
#define MAXCHILDREN 3
    typedef int TokenType;

    typedef enum {DeclK, StmtK, ExpK} NodeKind;
    typedef enum {VarK, FuncK, ParamK} DeclKind;
    typedef enum {IfK, WhileK, ForEachK, CompoundK, ReturnK, BreakK} StmtKind;
```

```
    typedef enum {OpK, ConstantK, IdK, AssignK, CallK} ExpKind;

    typedef struct treeNode {
        struct treeNode *child[MAXCHILDREN]; // children of the node
        struct treeNode *sibling;            // siblings for the node
        int linnum;                          // linenum relevant to this node
        NodeKind nodekind;                   // type of node
        union {                              // subtype of type
            DeclKind decl;                     // used when DeclK
            StmtKind stmt;                     // used when StmtK
            ExpKind exp;                       // used when ExpK
        } kind;
        union {                              // relevant data to type -> attr
            TokenType op;                      // type of token (same as in bison)
            int val;                           // used when an integer constant
            char *name;                        // used when IdK
        } attr;
        char* string;                        // used when a string constant
        ExpType expType;                     // used when ExpK for type checking
        bool isStatic;                       // is staticly allocated?
        bool isArray;                        // is this an array
        bool isConstant;                     // can this expression be precomputed?
    } TreeNode;
    static TreeNode* savedTree; // stores syntax tree for later return

    using namespace std;
    //#define YY_DECL extern "C" int yylex()
#define YYDEBUG 1
    TreeNode * newStmtNode( StmtKind );
    TreeNode * newDeclNode(DeclKind kind);
    TreeNode * newExpNode( ExpKind );
    //void FreeTree(Node *p);
    static TokenData token; /* holds current token */
    void yyerror(const char* s);
    char* getType(int x);
    char * copyString( char * s);

    static int indentno = 0;
#define INDENT indentno += 3
#define UNINDENT indentno -= 3
    void printTree( TreeNode * tree);
    static void printSpaces(void);
    static void insertCheckNode( TreeNode * t);
    TreeNode* siblingNode(TreeNode* t, ExpType expType, char* string, ExpType argType,
    char str[64];
    //string mark[8] = {"+=", "-=", "++", "--", "==", "!=", "<=", ">="}

    %}

%union {
    ExpType type;
```

```
    int number;
    TokenData * tokenData;
    struct treeNode * nodeptr;
}


%token <tokenData> PASSIGN MASSIGN INC DEC EQ NEQ LEQ GEQ
%token <tokenData> ID CHARCONST NUMCONST STRINGCONST
%token <tokenData> IF ELSE WHILE FOREACH IN
%token <tokenData> STATIC INT BOOL CHAR
%token <tokenData> TRUE FALSE RETURN BREAK
%token <tokenData> ',' ';' ':'
%token <tokenData> '{' '(' '[' '}' ')' ']'
%token <tokenData> AND OR NOT '<' '=' '>' '*' '%' '/' '-' // '+' EQ
%token <tokenData> '+'
%type <type> scoped_type_specifier type_specifier //type_specifier_func
%type <nodeptr> and_expression arg_list call compound_stmt declaration declaration_list
%type <nodeptr> expression_stmt factor fun_declaration ifmatched ifunmatched immutable
%type <nodeptr> mulop mutable param_id param_id_list param_list rel_expression
%type <nodeptr> scoped_var_declaration simple_expression statement statement_list sum_e
%type <nodeptr> unary_expression unary_rel_expression unaryop var_decl_initialize var_d
%type <nodeptr> var_declaration params args


%%

program : declaration_list { savedTree = $1; }
;
declaration_list : declaration_list declaration
{
    TreeNode* t = $1;
    if (t != NULL){
        while (t->sibling != NULL) t = t->sibling;
        t->sibling = $2;
        $$ = $1;
    } else
        $$ = $2;
}
| declaration { $$ = $1; }
;
declaration : var_declaration { $$ = $1; }
| fun_declaration { $$ = $1; }
;
var_declaration : type_specifier var_decl_list ';'
{
    // attach type in $1 to everybody in list $2
    // $1 is of type TokenData*
    // tagTypeInList($1, $2);
    TreeNode* t = $2;
    if (t != NULL){
        t->expType = $1;
        while (t->sibling != NULL) {
            t = t->sibling;
```

```
            t->expType = $1;
        }
        $$ = $2;
    }
    //$$ = $2;
}
;
scoped_var_declaration : scoped_type_specifier var_decl_list ';'
{
    // attach type and scope in $1 to everybody in list $2
    TreeNode* t = $2;
    if (t != NULL){
        t->expType = $1;
        t->isStatic = true;
        while (t->sibling != NULL) {
            t = t->sibling;
            t->expType = $1;
            t->isStatic = true;
        }
    }
    $$ = $2;
}
;
var_decl_list : var_decl_list ',' var_decl_initialize
{
    TreeNode* t = $1;
    if (t != NULL){
        while (t->sibling != NULL) t = t->sibling;
        t->sibling = $3;
        $$ = $1;
    } else
        $$ = $3;
}
| var_decl_initialize { $$ = $1; }
;
var_decl_initialize : ID
{
    $$ = newDeclNode(VarK);
    $$->linnum = $1->linnum;
    $$->string = $1->tokenstr;
}
| ID '[' NUMCONST ']'
{
    $$ = newDeclNode(VarK);
    $$->linnum = $1->linnum;
    $$->string = $1->tokenstr;
    //$$->child[0] = $3;
    $$->isArray = true;
}
| ID ':' simple_expression
{
```

```
    $$ = newDeclNode(VarK);
    $$->linnum = $1->linnum;
    $$->string = $1->tokenstr;
    $$->child[0] = $3;
}
| ID '[' NUMCONST ']' ':' simple_expression
{
    $$ = newDeclNode(VarK);
    $$->linnum = $1->linnum;
    $$->string = $1->tokenstr;
    $$->child[0] = $6;
    $$->isArray = true;
}
;
scoped_type_specifier : STATIC type_specifier { $$ = $2; }
| type_specifier { $$ = $1; }
;
type_specifier : INT  { $$ = Integer; }
| BOOL { $$ = Boolean; }
| CHAR { $$ = Character; }
;

fun_declaration : type_specifier ID '(' params ')' statement
{
    TreeNode* t = newDeclNode(FuncK);
    t->string = $2->tokenstr;
    t->linnum = $2->linnum;
    t->expType = $1;
    $$ = t;
    $$->child[0] = $4;
    $$->child[1] = $6;
    //$$->child[1]->string = $2->tokenstr;
}
| ID '(' params ')' statement
{
    TreeNode* t = newDeclNode(FuncK);
    t->string = $1->tokenstr;
    t->linnum = $1->linnum;
    t->expType = Void;  // 0
    $$ = t;
    $$->child[0] = $3;
    $$->child[1] = $5;
    //$$->child[1]->string = $2->tokenstr;
}
;
params : param_list { $$ = $1; }
| /* empty*/ { $$ = NULL; }
;

param_list : param_list ';' type_specifier param_id_list
{
```

```
    TreeNode* t = $1;
    TreeNode* v = $4;
    if (v != NULL){
        v->expType = $3;
        while (v->sibling != NULL) {
            v = v->sibling;
            v->expType = $3;
        }
    }
    if (t != NULL){
        while (t->sibling != NULL) t = t->sibling;
        t->sibling = $4;
        $$ = $1;
    } else
        $$ = $4;
}
| type_specifier param_id_list
{
    TreeNode* v = $2;
    if (v != NULL){
        v->expType = $1;
        while (v->sibling != NULL) {
            v = v->sibling;
            v->expType = $1;
        }
    }
    $$ = $2;
}
;
param_id_list : param_id_list ',' param_id
{
    TreeNode* t = $1;
    if (t != NULL){
        while (t->sibling != NULL) t = t->sibling;
        t->sibling = $3;
        $$ = $1;
    } else
        $$ = $3;
}
| param_id  { $$ = $1; }
;
param_id : ID
{
    $$ = newDeclNode(ParamK);
    $$->linnum = $1->linnum;
    $$->string = $1->tokenstr;
}
| ID '[' ']'
{
    $$ = newDeclNode(ParamK);
    $$->linnum = $1->linnum;
```

```
    $$->string = $1->tokenstr;
    $$->isArray = true;
}
;

statement : ifmatched { $$ = $1; }
| ifunmatched { $$ = $1; }
;
ifmatched : IF '(' simple_expression ')' ifmatched ELSE ifmatched
{
    $$ = newStmtNode(IfK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->child[0] = $3;
    $$->child[1] = $5;
    $$->child[1]->expType = Boolean;
    $$->child[2] = $7;
}
| WHILE '(' simple_expression ')' ifmatched
{
    $$ = newStmtNode(WhileK);
    $$->linnum = $1->linnum;
    $$->string = $1->tokenstr;
    $$->child[0] = $3;
    $$->child[1] = $5;
    //$$->child[1]->expType = Boolean;
}
| FOREACH '(' mutable IN simple_expression ')' ifmatched
{
    $$ = newStmtNode(ForEachK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->child[0] = $3;
    $$->child[1] = $5;
    $$->child[2] = $7;
}
| expression_stmt { $$ = $1; }
;
ifunmatched : IF '(' simple_expression ')' ifmatched ELSE ifunmatched
{
    $$ = newStmtNode(IfK);
    $$->linnum = $1->linnum;
    $$->string = $1->tokenstr;
    $$->child[0] = $3;
    $$->child[1] = $5;
    $$->child[1]->expType = Boolean;
    $$->child[2] = $7;
}
| IF '(' simple_expression ')' statement
{
    $$ = newStmtNode(IfK);
```

```
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->child[0] = $3;
    $$->child[1] = $5;
    //$$->child[1]->expType = Boolean;
}
| WHILE '(' simple_expression ')' ifunmatched
{
    $$ = newStmtNode(WhileK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->child[0] = $3;
    $$->child[1] = $5;
    //$$->child[1]->expType = Boolean;
}
| FOREACH '(' mutable IN simple_expression ')' ifunmatched
{
    $$ = newStmtNode(ForEachK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->child[0] = $3;
    $$->child[1] = $5;
    $$->child[2] = $7;
}
;
expression_stmt: compound_stmt { $$ = $1; }
| RETURN ';'
{
    $$ = newStmtNode(ReturnK);
    $$->linnum = $1->linnum;
    $$->expType = Void;
}
| RETURN expression ';'
{
    $$ = newStmtNode(ReturnK);
    $$->linnum = $1->linnum;
    $$->child[0] = $2;
    $$->expType = $2->expType;
}
| BREAK ';'
{
    $$ = newStmtNode(BreakK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
}
| expression ';' { $$ = $1; }
| ';' { $$ = NULL; }
;     /*
         expression_stmt : expression ';' { $$ = $1; }
         | ';' { $$ = NULL; }
         ;
```

```
      */
compound_stmt : '{' local_declarations statement_list '}'
{
    $$ = newStmtNode(CompoundK);
    $$->linnum = $1->linnum;
    $$->child[0] = $2;
    $$->child[1] = $3;
}
;
local_declarations : local_declarations scoped_var_declaration
{
    TreeNode* t = $1;
    if (t != NULL){
        while (t->sibling != NULL) t = t->sibling;
        t->sibling = $2;
        $$ = $1;
    } else
        $$ = $2;
}
| { $$ = NULL; }
;
statement_list : statement_list statement
{
    TreeNode* t = $1;
    if (t != NULL){
        while (t->sibling != NULL) t = t->sibling;
        t->sibling = $2;
        $$ = $1;
    } else
        $$ = $2;
}
|   { $$ = NULL; }
;
expression : mutable '=' expression // this grammar may have problems
{
    $$ = newExpNode(AssignK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->expType = $1->expType;  // modified here
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| mutable PASSIGN expression
{
    $$ = newExpNode(AssignK);
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->attr.op = $2->tokenClass;
    $$->child[0] = $1;
    $$->child[1] = $3;
```

```
}
| mutable MASSIGN expression
{
    $$ = newExpNode(AssignK);
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->attr.op = $2->tokenClass;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| mutable INC
{
    $$ = newExpNode(AssignK);
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->attr.op = $2->tokenClass;
    $$->child[0] = $1;
}
| mutable DEC
{
    $$ = newExpNode(AssignK);
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->attr.op = $2->tokenClass;
    $$->child[0] = $1;
}
| simple_expression { $$ = $1; }
;
simple_expression : simple_expression OR and_expression
{
    $$ = newExpNode(OpK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| and_expression { $$ = $1; }
;
and_expression : and_expression AND unary_rel_expression
{
    $$ = newExpNode(OpK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| unary_rel_expression { $$ = $1; }
;
unary_rel_expression : NOT unary_rel_expression
```

```
{
    $$ = newExpNode(OpK);
    $$->attr.op = $1->tokenClass;
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->child[0] = $2;
}
| rel_expression { $$ = $1; }
;
rel_expression : sum_expression '<' sum_expression
{
    $$ = newExpNode(OpK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| sum_expression '>' sum_expression
{
    $$ = newExpNode(OpK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| sum_expression LEQ sum_expression
{
    $$ = newExpNode(OpK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| sum_expression GEQ sum_expression
{
    $$ = newExpNode(OpK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| sum_expression EQ sum_expression
{
    $$ = newExpNode(OpK); // '=='
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
```

```
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| sum_expression NEQ sum_expression
{
    $$ = newExpNode(OpK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| sum_expression { $$ = $1; }
;
sum_expression : sum_expression '+' term
{
    $$ = newExpNode(OpK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| sum_expression '-' term
{
    $$ = newExpNode(OpK);
    $$->attr.op = $2->tokenClass;
    $$->string = $2->tokenstr;
    $$->linnum = $2->linnum;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| term { $$ = $1; }
;
term : term mulop unary_expression
{
    $$ = $2;
    $$->child[0] = $1;
    $$->child[1] = $3;
}
| unary_expression { $$ = $1; }
;
mulop : '*'
{
    $$ = newExpNode(OpK);
    $$->attr.op = $1->tokenClass;
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
}
| '/'
{
```

```
    $$ = newExpNode(OpK);
    $$->attr.op = $1->tokenClass;
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
}
| '%'
{
    $$ = newExpNode(OpK);
    $$->attr.op = $1->tokenClass;
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
}
;
unary_expression : unaryop unary_expression
{
    $$ = $1;
    $$->child[0] = $2;
}
| factor { $$ = $1; }
;
unaryop : '-'
{
    $$ = newExpNode(OpK);
    $$->attr.op = $1->tokenClass;
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
}
| '*'
{
    $$ = newExpNode(OpK);
    $$->attr.op = $1->tokenClass;
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
}
;
factor : immutable { $$ = $1; }
| mutable { $$ = $1; }
;
mutable : ID
{
    $$ = newExpNode(IdK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
}
| ID '[' expression ']'
{
    $$ = newExpNode(IdK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->isArray = true; // or false???
    $$->child[0] = $3;
```

```
}
;
immutable : '(' expression ')' { $$ = $2; }
| call   { $$ = $1; }
| NUMCONST
{
    $$ = newExpNode(ConstantK);
    //sprintf($$->string, "%d", $1->iValue);
    $$->attr.val = $1->iValue;
    $$->linnum = $1->linnum;
    $$->expType = Integer;
    $$->isConstant = true;
}
| CHARCONST
{
    $$ = newExpNode(ConstantK);
    $$->linnum = $1->linnum;
    $$->string = $1->tokenstr;
    $$->expType = Character;
    $$->isConstant = true;
}
| STRINGCONST
{
    $$ = newExpNode(ConstantK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->expType = Character;
    $$->isArray = true;
    $$->isConstant = true;
}
| TRUE
{
    $$ = newExpNode(ConstantK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->expType = Boolean;
    $$->isConstant = true;
}
| FALSE
{
    $$ = newExpNode(ConstantK);
    $$->string = $1->tokenstr;
    $$->linnum = $1->linnum;
    $$->expType = Boolean;
    $$->isConstant = true;
}
;
call : ID '(' args ')'
{
    $$ = newExpNode(CallK);
    $$->string = $1->tokenstr;
```

```
    $$->linnum = $1->linnum;
    $$->child[0] = $3;
}
;
args : arg_list { $$ = $1; }
| { $$ = NULL; }
;
arg_list : arg_list ',' expression
{
    TreeNode * t = $1;
    if (t != NULL){
        while  (t->sibling != NULL) t = t->sibling;
        t->sibling = $3;
        $$ = $1;
    } else
        $$ = $3;
}
| expression { $$ = $1; }
;

%%

void nodePrint(void * p){
    //  TreeNode * t = (TreeNode*)p;
}

SymTab * st = new SymTab(nodePrint);
int numError = 0;
int numWarnings = 0;
char nameCompoundStat[64];
char nameParam[32];
int depth = 1;
int depcp = 0;

main(int argc, char* argv[]){
    int d_flag = 0;
    int s_flag = 0;
    char *d_value = NULL;
    int c;

    if (argc == 1)
        yyin = stdin;
    else if (argc == 2) {
        yyin = fopen(argv[1], "r");
    } else if (argc > 2) {
        while ((c = getopt (argc, argv, "ps")) != -1)
            switch (c) {
            case 'p':   // yydebug
                d_flag = 1;
                break;
            case 's':  // debug_table
```

```
                s_flag = 1;
                break;
            default:
                abort ();
                break;
            }
        if (d_flag == 1)
            yydebug = 1;
        //printTree(savedTree);
        if (s_flag == 1)
            st->debug(0x2);
        yyin = fopen(argv[2], "r");
    } else {
        printf("Usage:./c- TestFileName\nUsage:./c- < TestFileName\nUsage: cat TestFile
        exit(-1);
    }
    if (yyin == NULL){
        printf("Can't open/read '%s'\n", argv[2]);
        exit(-1);
    }
    yyfilename = argv[1];
    linnum = 1;

    yyparse();
    savedTree = siblingNode(savedTree, Void, (char*)("outnl"), Void, (char*)(" "));
    savedTree = siblingNode(savedTree, Character, (char*)("inputc"), Void, (char*)(" ")
    savedTree = siblingNode(savedTree, Boolean, (char*)("inputb"), Void, (char*)(" "));
    savedTree = siblingNode(savedTree, Integer, (char*)("input"), Void, (char*)(" "));
    savedTree = siblingNode(savedTree, Void, (char*)("outputc"), Character, (char*)("xy
    savedTree = siblingNode(savedTree, Void, (char*)("outputb"), Boolean, (char*)("xyz"
    savedTree = siblingNode(savedTree, Void, (char*)("output"), Integer, (char*)("xyz")
    insertCheckNode(savedTree);

    printf("Number of warnings: %d\n", numWarnings);
    printf("Number of errors: %d\n", numError);

    if (argc != 1)
        fclose(yyin);
}

TreeNode* siblingNode(TreeNode* t, ExpType expType, char* string, ExpType argType, char
    TreeNode* newTree;
    newTree = newDeclNode(FuncK);
    newTree->string = string;
    newTree->linnum = -1;
    newTree->expType = expType;
    if (argType != Void) {
        newTree->child[0] = newDeclNode(ParamK);
        newTree->child[0]->string = id;
        newTree->child[0]->expType = argType;
    }
```

```c
    newTree->sibling = t;
    return newTree;
}

int i = 0;
int cmpi = 0;
int funci = 0;
int ifi = 0;
int whilei = 0;
int opi = 0;
int assigni = 0;
bool ReturnFlag = false;
bool LoopFlag = false;
//int pcnt = 0;
bool WhileFlag = false;
bool ForEachFlag = false;
bool cpflag = false;
int depthcnt = 0;
int callcnt = 0;
int bkcnt = 0;

static void insertCheckNode( TreeNode * t)  {

    switch (t->nodekind) {
    case DeclK:
        switch(t->kind.decl){

        case VarK:
            if (t->child[0] != NULL) {
                insertCheckNode(t->child[0]);

                if (t->child[0]->isConstant == false) {
                    printf("ERROR(%d): Initializer for variable '%s' is not a constant
                            t->child[0]->linnum, t->string);
                    ++numError;
                }

                // initialize array variable
                if ( (t->isArray == true) && (t->child[0] != NULL) ) {
                    //if ( (t->child[0]->isArray) && (t->child[0]->expType != Character
                    //if (t->child[0]->expType != Character) { // Character
                    if (t->expType != Character) { // Character
                        printf("ERROR(%d): Array '%s' must be of type char to be initia
                                t->linnum, t->string, getType(t->expType));
                        ++numError;
                    }
                    if ( t->child[0]->isArray == false ) {
                        printf("ERROR(%d): Initializer for array variable '%s' must be
                                t->child[0]->linnum, t->string, getType(t->child[0]->exp
                        ++numError;
                    }
```

```
            if ( (t->child[0]->isArray) && (t->child[0]->expType != Character)
                printf("ERROR(%d): Array '%s' must be of type char to be initia
                        t->linnum, t->string, getType(t->expType));
                ++numError;
            }
        }
    }

    if ( (t->isArray == false) && (t->child[0] != NULL) ) {
        if ( (t->expType != t->child[0]->expType) && (t->child[0]->expType != U
            printf("ERROR(%d): Variable '%s' is of type %s but is being initial
                    t->linnum, t->string, getType(t->expType), getType(t->child[
            ++numError;
        }
    }

    //st->print();
    if ((st->lookup(t->string) == NULL) || //(depcp) ||
        ( ((st->lookupSymTabEntry(t->string))->depth != st->depth()-1 ) //Param
          //&& (st->lookupSymTabEntry(t->string))->depth != st->depth()-2)
          && (st->lookupSymTabEntry(t->string))->depth != st->depth()) ) {
        //|| ((cpflag == true) && depcp)) {

        st->insert(t->string, (void*)t );

        if (t->child[0] != NULL) {
            /*    if ( (t->isArray == false) && (t->expType != t->child[0]->exp
                  printf("ERROR(%d): Variable '%s' is of type %s but is being i
                  t->linnum, t->string, getType(t->expType), getType(t->child[0
                  ++numError;
                  }   */
            if ( (t->isArray == false) && (t->child[0]->isArray == true) ) {
                printf("ERROR(%d): Initializer for nonarray variable '%s' of ty
                        t->child[0]->linnum, t->string, getType(t->expType));
                ++numError;
            }
        } // child[0] != NULL

    } else { // exist in symtab
        //cout << "st->depth: " << st->depth() << endl;
        //sprintf(str, "Compound Statement:%d", st->depth());
        //if (st->lookupSymTabEntry(t->string)->scope != str) {  // logic is no

        //st->print();
        //cout << "st->depth: " << st->depth() << endl;

        //if ( (depcp && ((st->lookupSymTabEntry(t->string))->depth == st->dept
        printf("ERROR(%d): Symbol '%s' is already defined at line %d.\n",
                t->linnum, t->string, ((TreeNode*)(st->lookup(t->string)))->linn
        ++numError;
        //}
```

```
        }

        if  (t->sibling != NULL)
            insertCheckNode(t->sibling);
        break;

case FuncK:
    if (st->lookup(t->string) == NULL) {
        st->insert(t->string, (void*)t );
    } else {
        printf("ERROR(%d): Symbol '%s' is already defined at line %d.\n", t->li
                ((TreeNode*)(st->lookup(t->string)))->linnum);
        ++numError;
    }

    st->enter(t->string);
    for (funci = 0; funci < 2; funci++) {
        if (t->child[funci] != NULL) {
            insertCheckNode(t->child[funci]);
        }
    }

    if (t->child[1] != NULL){
        if ( (t->expType == 0) && (t->child[1]->expType != 0) ) {
            printf("ERROR(%d): Function '%s' at line %d is expecting no return
                    t->child[1]->linnum, t->string, t->linnum);
            ++numError;
        } else if ( (t->expType == 0) && (ReturnFlag == true) && (t->child[1]->
            //} else if ( (t->expType == 0) && (ReturnFlag == true) ) {
            printf("ERROR(%d): Function '%s' at line %d is expecting no return
                    t->child[1]->linnum, t->string, t->linnum);
            ++numError;
        } else if (t->expType != 0) {
            if ( (t->child[1]->expType == 0) && (ReturnFlag == true) ) {
                printf("ERROR(%d): Function '%s' at line %d is expecting to ret
                        t->child[1]->linnum, t->string, t->linnum, getType(t->ex
                ++numError;
            } else if  ((t->child[1]->expType != 0) && (t->expType != t->child[
                printf("ERROR(%d): Function '%s' at line %d is expecting to ret
                        t->child[1]->linnum, t->string, t->linnum, getType(t->ex
                ++numError;
            } else if ( (t->child[1]->expType == 0) && (ReturnFlag == false) ){
                printf("WARNING(%d): Expecting to return type %s but function '
                        t->linnum, getType(t->expType), t->string);
                ++numWarnings;
            }
        }
        ReturnFlag = false; // set back to default
    } // child1
    st->leave();
```

```
            if ( (t->child[1] == NULL) && (t->expType != Void)
                  && ((t->string != (char*)"input") && (t->string != (char*)"inputb") &&
               printf("WARNING(%d): Expecting to return type %s but function '%s' has
                      t->linnum, getType(t->expType), t->string);
               ++numWarnings;
            }

            if (t->sibling != NULL)
                insertCheckNode(t->sibling);
            break;

        case ParamK:
            st->insert(t->string, (void*)t );
            /*      for (int i = 0; i < MAXCHILDREN; i++) {
                   if (t->child[i])
                   insertCheckNode(t->child[i]);
                   }    */
            if (t->sibling != NULL) {
                insertCheckNode(t->sibling);
            }
            break;
        }
        break;

    case StmtK:
        switch (t->kind.stmt) {
        case WhileK:
            ++depthcnt;
            LoopFlag = true;

            if (st->lookup(t->string) == NULL)
                st->insert(t->string, (void*)t );

            for (ifi = 0; ifi < MAXCHILDREN; ifi++) {
                if (t->child[ifi] != NULL)
                    insertCheckNode(t->child[ifi]);
            }
            if (t->child[0] != NULL) {
                if (t->child[0]->expType != 2) {
                    printf("ERROR(%d): Expecting Boolean test condition in %s statement
                            t->child[0]->linnum, t->string, getType(t->child[0]->expType
                    ++numError;
                } //else if ( (t->child[0]->expType == 2) && (t->child[0]->isArray == t
                if (t->child[0]->isArray == true) {
                    printf("ERROR(%d): Cannot use array as test condition in %s stateme
                    ++numError;
                }
            }
            if (t->child[1]) {
                sprintf(str, "Return:%d", st->depth());
                if (st->lookup(str) == NULL) {
```

```
                t->expType = Void;
                ReturnFlag = false;
            } else {
                ReturnFlag = true;
                t->expType = ((TreeNode*)(st->lookup(str)))->expType;
                //t->linnum = ((TreeNode*)(st->lookup(str)))->linnum;
            }
        }

        --depthcnt;
        LoopFlag = false;
        if (t->sibling != NULL)
            insertCheckNode(t->sibling);
        break;

    case IfK:
        if (st->lookup(t->string) == NULL)
            st->insert(t->string, (void*)t );

        for (ifi = 0; ifi < MAXCHILDREN; ifi++) {
            if (t->child[ifi] != NULL)
                insertCheckNode(t->child[ifi]);
        }

        if (t->child[0]->expType != 2) {
            printf("ERROR(%d): Expecting Boolean test condition in %s statement but
                    t->child[0]->linnum, t->string, getType(t->child[0]->expType));
            ++numError;
        } //else if ( (t->child[0]->expType == 2) && (t->child[0]->isArray == true)
        if (t->child[0]->isArray == true) {
            printf("ERROR(%d): Cannot use array as test condition in %s statement.\
            ++numError;
        }
        if (t->child[1]) {
            sprintf(str, "Return:%d", st->depth());
            if (st->lookup(str) == NULL) {
                t->expType = Void;
                ReturnFlag = false;
            } else {
                ReturnFlag = true;
                t->expType = ((TreeNode*)(st->lookup(str)))->expType;
                //t->linnum = ((TreeNode*)(st->lookup(str)))->linnum;
            }
        }

        if (t->sibling != NULL)
            insertCheckNode(t->sibling);
        break;

    case ForEachK:
        ++depthcnt;
```

```
            LoopFlag = true;
            for (i = 0; i < MAXCHILDREN; i++)   {
                if (t->child[i] != NULL)
                    insertCheckNode(t->child[i]);
            }

            if (t->child[0] != NULL) {
                //if ( ((TreeNode*)(t->child[0]->string))->isArray == true )  {
//need work here
                if ( t->child[0]->isArray == true )  {
                    printf("ERROR(%d): In foreach statement the variable to the left of
                    ++numError;
                }
                if (t->child[1] != NULL) {
                    if (t->child[1]->isArray == true) {
                        if (t->child[0]->expType != t->child[1]->expType) {
                            printf("ERROR(%d): Foreach requires operands of 'in' be the
                                    t->linnum, getType(t->child[0]->expType), getType(t-
                            ++numError;
                        }
                    } else { //t->child[1]->isArray == false
                        if ( t->child[0]->expType != Integer ) {
                            printf("ERROR(%d): If not an array, foreach requires lhs of
                                    t->linnum, getType(t->child[0]->expType));
                            ++numError;
                            t->child[0]->expType = Integer;
                        }
                        if (t->child[1]->expType != Integer) {
                            printf("ERROR(%d): If not an array, foreach requires rhs of
                                    t->linnum, getType(t->child[1]->expType));
                            ++numError;
                            t->child[1]->expType = Integer;
                        }
                    }
                } //t->child[1] != NULL
                if (t->child[2]) {
                    sprintf(str, "Return:%d", st->depth());
                    if (st->lookup(str) == NULL) {
                        t->expType = Void;
                        ReturnFlag = false;
                    } else {
                        ReturnFlag = true;
                        t->expType = ((TreeNode*)(st->lookup(str)))->expType;
                        //t->linnum = ((TreeNode*)(st->lookup(str)))->linnum;
                    }
                }
            }
            --depthcnt;
            LoopFlag = false;
            if (t->sibling != NULL)
                insertCheckNode(t->sibling);
```

```
        break;

case BreakK:
    if ( (LoopFlag == false) && (!depthcnt) ) {    // potential problems with ne
        //if ( LoopFlag == false ) {
        printf("ERROR(%d): Cannot have a break statement outside of loop.\n", t
        ++numError;
    }
    if (t->sibling != NULL)
        insertCheckNode(t->sibling);
    break;

case ReturnK:
    if (t->child[0] == NULL)
        t->expType = Void;

    if (t->child[0] != NULL) {
        insertCheckNode(t->child[0]);
        if (t->child[0]->expType == Void)
            t->expType = Undefined;
        else
            t->expType = t->child[0]->expType;
        if ( (t->child[0]->kind.exp == IdK) && (t->child[0]->isArray) ) {
            printf("ERROR(%d): Cannot return an array.\n", t->linnum);
            ++numError;
            t->child[0]->isArray = false;
        }
    }
    sprintf(str, "Return:%d", st->depth());
    st->insert(str, (void*)t );
    if (t->sibling != NULL)  // just added
        insertCheckNode(t->sibling);
    break;

case CompoundK:
    //depth = st->depth() + 1;
    sprintf(nameCompoundStat, "Compound Statement:%d", st->depth()+1);
    st->enter(nameCompoundStat);
    cpflag = true;
    depcp++;

    for (cmpi = 0; cmpi < MAXCHILDREN; cmpi++) {
        if (t->child[cmpi] != NULL)
            insertCheckNode(t->child[cmpi]);
    }
    if (t->sibling != NULL)
        insertCheckNode(t->sibling);

    sprintf(str, "Return:%d", st->depth());
    if (st->lookup(str) == NULL) {
        t->expType = Void;
```

```cpp
            ReturnFlag = false;
            /*      } else if (t->child[1]) {
                    t->expType = t->child[1]->expType;
                    if (t->expType)
                    ReturnFlag = true;
                    cout << "t->expType: A " << t->expType << endl;     */
        } else {
            ReturnFlag = true;
            t->expType = ((TreeNode*)(st->lookup(str)))->expType;
            t->linnum = ((TreeNode*)(st->lookup(str)))->linnum;
        }

        st->leave();
        cpflag = false;
        if (ReturnFlag && t->expType) {
            sprintf(str, "Return:%d", st->depth());
            st->insert(str, (void*)t );
        }

        depcp--;
        //depth--;
        if (t->sibling != NULL)  // just added
            insertCheckNode(t->sibling);
        break;
    }
    break;

case ExpK:
    switch (t->kind.exp){

    case ConstantK:
        break;

    case AssignK:
        if (st->lookup(t->string) == NULL)
            st->insert(t->string, (void*)t );
        for (assigni = 0; assigni < MAXCHILDREN; assigni++) {
            if (t->child[assigni] != NULL)
                insertCheckNode(t->child[assigni]);
        }

        if ( (t->child[0] != NULL) && (t->child[1] != NULL)
            && (t->child[0]->expType != t->child[1]->expType) )  {

            if ( (t->attr.op == PASSIGN) || (t->attr.op == MASSIGN) ) {
                if (t->child[0]->expType != Integer) {
                    printf("ERROR(%d): '%s' requires operands of type int but lhs i
                            t->linnum, t->string, getType(t->child[0]->expType));
                    ++numError;
                } else {
                    printf("ERROR(%d): '%s' requires operands of type int but rhs i
```

```
                             t->linnum, t->string, getType(t->child[1]->expType));
                ++numError;
            }
        } else if (t->attr.op == '=') {
            /*if ( t->child[0]->isArray != t->child[1]->isArray ){
              printf("ERROR(%d): '%s' requires that if one operand is an array
              t->linnum, t->string);
              ++numError;
            } */
            if ( (t->child[0]->expType != Undefined) && (t->child[1]->expType !
                printf("ERROR(%d): '%s' requires operands of the same type but
                        t->linnum, t->string, getType(t->child[0]->expType), get
                ++numError;
                t->expType = t->child[0]->expType;
            }
            if (t->child[1]->expType == Undefined)
                t->expType = t->child[0]->expType;
            //else if ( (t->child[0]->expType == Undefined) && (t->child[1]->ex
            else if (t->child[0]->expType == Undefined)
                t->expType = Undefined;
        } else {
            printf("ERROR(%d): '%s' requires operands of the same type but lhs
                    t->linnum, t->string, getType(t->child[0]->expType), getType
            ++numError;
        }
    }

    if ( ((t->attr.op == INC) || (t->attr.op == DEC))
          && (t->child[0] != NULL) && (t->child[1] == NULL) ) {
        if (t->child[0]->expType != Integer) {
            printf("ERROR(%d): Unary '%s' requires an operand of type int but w
                    t->linnum, t->string, getType(t->child[0]->expType));
            ++numError;
        }
        if (t->child[0]->isArray == true) {
            printf("ERROR(%d): The operation '%s' does not work with arrays.\n"
            ++numError;
        }
        t->expType = Integer;
    }

    if ( (t->attr.op == '=') && t->child[0] && t->child[1] ) {
        if ( (t->child[0]->isArray != t->child[1]->isArray)
              && ((t->child[0]->expType != Undefined) && (t->child[1]->expType !
            //&& ((t->child[0]->expType != Character) && (t->child[1]->expType

            //cout << "t->child[0]->isArray: " << t->child[0]->isArray << endl;
            //cout << "t->child[1]->isArray: " << t->child[1]->isArray << endl;

            printf("ERROR(%d): '%s' requires that if one operand is an array so
                    t->linnum, t->string);
```

```
                ++numError;
            }
            if (t->child[0]->expType == t->child[1]->expType)
                t->expType = t->child[0]->expType;
        }

        if ( ((t->attr.op == PASSIGN) || (t->attr.op == MASSIGN)) && (t->child[0])
            if (t->child[0]->expType == t->child[1]->expType)
                t->expType = t->child[0]->expType;
        }

        if ( (t->sibling != NULL) && (callcnt == 0))
            //if (t->sibling != NULL)
            insertCheckNode(t->sibling);
        break;

    case CallK:
        callcnt++;
        if (st->lookup(t->string) == NULL) {
            printf("ERROR(%d): Symbol '%s' is not defined.\n", t->linnum, t->string
            ++numError;
            if (t->child[0]) {
                TreeNode* tmpt = t->child[0];
                insertCheckNode(tmpt);
                while (tmpt->sibling != NULL) {
                    tmpt = tmpt->sibling;
                    insertCheckNode(tmpt);
                }
            }
            t->expType = Undefined;
            /*      } else if (((TreeNode*)(st->lookup(t->string)))->kind.decl == V
                    printf("ERROR(%d): '%s' is a simple variable and cannot be call
                    ++numError;
                    if (t->child[0]) {
                    TreeNode* tmpt = t->child[0];
                    insertCheckNode(tmpt);
                    while (tmpt->sibling != NULL) {
                    tmpt = tmpt->sibling;
                    insertCheckNode(tmpt);
                    }
                    }
                    t->expType = Undefined;     */
        } else {
            if ( (((TreeNode*)(st->lookup(t->string)))->kind.decl == VarK)
                 || (((TreeNode*)(st->lookup(t->string)))->kind.decl == ParamK) ) {
                printf("ERROR(%d): '%s' is a simple variable and cannot be called.\
                ++numError;
                t->expType = Undefined;
                if ( t->child[0] ) {
                    TreeNode* tmpt = t->child[0];
                    insertCheckNode(tmpt);
```

```
        while (tmpt->sibling != NULL) {
            tmpt = tmpt->sibling;
            insertCheckNode(tmpt);
        }
    }
    t->expType = Undefined;
} else { //FuncK
    TreeNode* tmp = t;
    TreeNode* p = (TreeNode*)(st->lookup(t->string));
    if ( (tmp->child[0] == NULL) && (p->child[0] != NULL) ) {
        printf("ERROR(%d): Too few parameters passed for function '%s'
                tmp->linnum, tmp->string, p->linnum);
        ++numError;
    }
    if (tmp->child[0]) {
        insertCheckNode(tmp->child[0]);  // process whole list, order:
        if (p->child[0] == NULL) {
            printf("ERROR(%d): Too many parameters passed for function
                    tmp->child[0]->linnum, tmp->string, p->linnum);
            ++numError;
        } else {
            int pcnt = 0;
            TreeNode* tmp_p = p->child[0];
            TreeNode* tmp_t = tmp->child[0];

            if ((tmp->child[0]->expType != p->child[0]->expType) && (tm
                printf("ERROR(%d): Expecting type %s in parameter %i of
                        t->linnum, getType(p->child[0]->expType), pcnt+1
                ++numError;
            }
            if ( (tmp->child[0]->isArray == true) && (p->child[0]->isAr
                printf("ERROR(%d): Not expecting array in parameter %i
                        t->linnum, pcnt+1, t->string, p->linnum);
                ++numError;
            }
            if ( (tmp->child[0]->isArray == false) && (p->child[0]->isA
                printf("ERROR(%d): Expecting array in parameter %i of c
                        t->linnum, pcnt+1, t->string, p->linnum);
                ++numError;
            }

            while (tmp_t->sibling && tmp_p->sibling) {
                pcnt++;
                tmp_t = tmp_t->sibling;
                tmp_p = tmp_p->sibling;
                insertCheckNode(tmp_t);
                if ((tmp_t->expType != tmp_p->expType) && (tmp_t->expTy
                    printf("ERROR(%d): Expecting type %s in parameter %
                            t->linnum, getType(tmp_p->expType), pcnt+1,
                    ++numError;
                }
```

```
                             if ( (tmp_t->isArray == true) && (tmp_p->isArray == fal
                                 printf("ERROR(%d): Not expecting array in parameter
                                         t->linnum, pcnt+1, t->string, p->linnum);
                                 ++numError;
                             }
                             if ( (tmp_t->isArray == false) && (tmp_p->isArray == tr
                                 printf("ERROR(%d): Expecting array in parameter %i
                                         t->linnum, pcnt+1, t->string, p->linnum);
                                 ++numError;
                             }
                             tmp_t->expType = tmp_p->expType;
                             tmp_t->isArray = tmp_p->isArray;
                         } //while

                         if ( (tmp_t->sibling == NULL) &&  (tmp_p->sibling != NULL)
                             printf("ERROR(%d): Too few parameters passed for functi
                                     t->linnum, t->string, p->linnum);
                             ++numError;
                         }
                         if ( (tmp_t->sibling != NULL) && (tmp_p->sibling == NULL) )
                             printf("ERROR(%d): Too many parameters passed for funct
                                     t->linnum, t->string, p->linnum);
                             ++numError;
                             while (tmp_t->sibling!=NULL) {
                                 tmp_t = tmp_t->sibling;
                                 insertCheckNode(tmp_t);
                             }
                         }
                     } // end p->child[0]
                 } // if
                 t->expType = p->expType;
             } //   end t->child[0]
        }
        callcnt--;
        if ( (t->sibling != NULL) && (!callcnt) )
            insertCheckNode(t->sibling);
        break;

    case IdK:
        if (st->lookup(t->string) == NULL) {
            printf("ERROR(%d): Symbol '%s' is not defined.\n", t->linnum, t->string
            ++numError;
            t->expType = Undefined; //4 Undefined
            t->isArray = false;
            t->isConstant = false;
            t->isStatic = false;
            if (t->child[0] != NULL) {
                insertCheckNode(t->child[0]);
                t->isArray = false;  } //double check
        } else {  // symtab != NULL
```

```
                    if ( ((TreeNode*)(st->lookup(t->string)))->kind.decl == FuncK ) {
                        printf("ERROR(%d): Cannot use function '%s' as a simple variable.\n
                        ++numError;
                        t->expType = ((TreeNode*)(st->lookup(t->string)))->expType;
                        //t->expType = Undefined;
                        if (t->child[0] != NULL) {
                            insertCheckNode(t->child[0]);
                            t->isArray = false;  } //double check
                    } else { //if ( ((TreeNode*)(st->lookup(t->string)))->kind.decl == VarK

                        // Dealing Array or Not
                        if (((TreeNode*)(st->lookup(t->string)))->isArray == false) {
                            t->isArray = false;
                            t->expType = ((TreeNode*)(st->lookup(t->string)))->expType;
                            if (t->child[0] != NULL) {
                                printf("ERROR(%d): Cannot index nonarray '%s'.\n", t->linnu
                                ++numError;
                            }
                        } else { //isArray == true

                            if (t->child[0] != NULL) {
                                insertCheckNode(t->child[0]);

                                if ( (t->child[0]->expType != Integer) && (t->child[0]->exp
                                    printf("ERROR(%d): Array '%s' should be indexed by type
                                            t->linnum, t->string, getType(t->child[0]->expTy
                                    ++numError;
                                    t->child[0]->expType == Integer;
                                    t->isArray = false;
                                }
                                if (t->child[0]->isArray == true) {
                                    printf("ERROR(%d): Array index is the unindexed array '
                                            t->child[0]->linnum, t->child[0]->string);
                                    ++numError;
                                }
                                t->isArray = false;
                            } else  // child[0] != NULL
                                t->isArray = true;
                        }
                        t->expType = ((TreeNode*)(st->lookup(t->string)))->expType;
                    } // VarK
                    t->isConstant = ((TreeNode*)(st->lookup(t->string)))->isConstant;
// double check when array beco nonarr
                }
                //if (t->sibling != NULL)
                if ( (t->sibling != NULL) && (callcnt ==0))
                    insertCheckNode(t->sibling);
                break;

            case OpK:  // + - * / % < > == != <= >= or not and
                int opi;
```

```
            for (opi = 0; opi < MAXCHILDREN; opi++) {
                if (t->child[opi] != NULL)
                    insertCheckNode(t->child[opi]);
            }

            if ( ((t->attr.op == '+') || (t->attr.op == '-') || (t->attr.op == '*')
                    || (t->attr.op == '/') || (t->attr.op == '%'))
                  && ((t->child[0] != NULL) && (t->child[1] != NULL)) ) {
                if ( (t->child[0]->expType != Integer) && (t->child[0]->expType != Unde
                    printf("ERROR(%d): '%s' requires operands of type %s but lhs is of
                            getType(1), getType(t->child[0]->expType));
                    ++numError;
                    t->child[0]->expType = Integer;
                }
                if ( (t->child[1]->expType != Integer) && (t->child[1]->expType != Unde
                    printf("ERROR(%d): '%s' requires operands of type %s but rhs is of
                            getType(1), getType(t->child[1]->expType));
                    ++numError;
                    t->child[1]->expType = Integer;
                }
                t->expType = Integer;
                if ( (t->child[0]->isConstant == true) && (t->child[1]->isConstant == t
                    t->isConstant = true;
            }

            if ((t->attr.op == '-') && (t->child[0] != NULL) && (t->child[1] == NULL))
                if (t->child[0]->expType != Integer) {
                    printf("ERROR(%d): Unary '%s' requires an operand of type int but w
                            t->linnum, t->string, getType(t->child[0]->expType));
                    ++numError;
                    t->child[0]->expType = Integer;
                }
                if ( t->child[0]->isConstant == true ) {
                    t->isConstant = true;
                }
                t->expType = Integer;
            }

            if ( (t->attr.op == '+') || (t->attr.op == '-') || (t->attr.op == '*') ) {
                if ( (t->child[0] != NULL) && (t->child[1] != NULL) && //both sides
                     ((t->child[0]->isArray == true) || (t->child[1]->isArray == true))
                    printf("ERROR(%d): The operation '%s' does not work with arrays.\n"
                    ++numError;
                }
            }

            if ( (t->attr.op == '*') && (t->child[0] != NULL) && (t->child[1] == NULL)
                if (t->child[0]->isArray == false) {
                    printf("ERROR(%d): The operation '%s' only works with arrays.\n", t
                    ++numError;
                }
```

```c
        //if ( (t->child[0]->isArray == true) && (t->child[0]->expType == Chara
        if ( (t->child[0]->isArray == true) && (t->child[0]->isConstant == true
            t->isConstant = true;
        }
        t->expType = Integer;
    }

    if ( ((t->attr.op == EQ) || (t->attr.op == NEQ))
          && (t->child[0] != NULL) && (t->child[1] != NULL) ) {
        if (t->child[0]->expType != t->child[1]->expType) {
            printf("ERROR(%d): '%s' requires operands of the same type but lhs
                    t->linnum, t->string, getType(t->child[0]->expType), getType
            ++numError;
        }
        t->expType = Boolean;
        if (t->child[0]->isArray != t->child[1]->isArray) {
            printf("ERROR(%d): '%s' requires that if one operand is an array so
                    t->linnum, t->string);
            ++numError;
        }
    }

    if ( (t->attr.op == AND) && t->child[0] && t->child[1] ) {
        if ( (t->child[0]->expType != Boolean) && (t->child[0]->expType != Unde
            printf("ERROR(%d): '%s' requires operands of type bool but lhs is o
                    t->linnum, t->string, getType(t->child[0]->expType));
            ++numError;
            t->child[0]->expType = Boolean;
        }
        if ( (t->child[1]->expType != Boolean) && (t->child[1]->expType != Unde
            printf("ERROR(%d): '%s' requires operands of type bool but rhs is o
                    t->linnum, t->string, getType(t->child[1]->expType));
            ++numError;
            t->child[1]->expType = Boolean;
        }
        //t->expType = Boolean;
        if ((t->child[0]->isArray == true) || (t->child[1]->isArray == true)) {
            printf("ERROR(%d): The operation '%s' does not work with arrays.\n"
            ++numError;
        }
        t->expType = Boolean;
    }

    if ( (t->attr.op == '>') || (t->attr.op == '<') || (t->attr.op == GEQ) || (
        if ( (t->child[0] != NULL) && (t->child[0]->expType != Integer) && (t->
            printf("ERROR(%d): '%s' requires operands of type char or type int
                    t->linnum, t->string, getType(t->child[0]->expType));
            ++numError;
            t->expType = Boolean;
        }
        if ( (t->child[1] != NULL) && (t->child[1]->expType != Integer) && (t->
```

```
                    printf("ERROR(%d): '%s' requires operands of type char or type int
                            t->linnum, t->string, getType(t->child[1]->expType));
                    ++numError;
                    t->expType = Boolean;
                }

                if ( ((t->child[0] != NULL) && (t->child[1] != NULL))
                     && ((t->child[0]->isArray == true) || (t->child[1]->isArray == tru
                    printf("ERROR(%d): The operation '%s' does not work with arrays.\n"
                    ++numError;
                }
            }

            if ( ((t->child[0] != NULL) && (t->child[1] != NULL)) &&
                 ((t->child[0]->expType == 1) && (t->child[1]->expType == 1)) ) {
                if ( (t->attr.op == EQ) || (t->attr.op == NEQ) || (t->attr.op == LEQ) |
                     || (t->attr.op == '<') || (t->attr.op == '>') )
                    t->expType = Boolean;
                else
                    t->expType = Integer;
            }

            if (t->attr.op == OR) {
                if ( (t->child[0] != NULL) && (t->child[0]->expType != 2) ) { //Undefin
                    printf("ERROR(%d): '%s' requires operands of type bool but lhs is o
                            t->linnum, t->string, getType(t->child[0]->expType));
                    ++numError;
                    t->child[0]->expType = Boolean;
                }
                if ( (t->child[1] != NULL) && (t->child[1]->expType != 2) ) {
                    printf("ERROR(%d): '%s' requires operands of type bool but rhs is o
                            t->linnum, t->string, getType(t->child[1]->expType));
                    ++numError;
                    t->child[1]->expType = Boolean;
                }
                t->expType = Boolean;
            }

            if (t->attr.op == NOT) {
                if ( (t->child[0] != NULL) && (t->child[1] == NULL) && (t->child[0]->ex
                    printf("ERROR(%d): Unary '%s' requires an operand of type bool but
                            t->linnum, t->string, getType(t->child[0]->expType));
                    ++numError;
                    t->child[0]->expType = Boolean;
                }

                if ( (t->child[0]) && (!t->child[1]) && (t->child[0]->isConstant == tru
                    t->isConstant = true;

                if ( (t->child[0] != NULL) && (t->child[0]->isArray == true) ) {
                    printf("ERROR(%d): The operation '%s' does not work with arrays.\n"
```

```c
                    ++numError;
                    t->child[0]->expType = Boolean;
                }
                t->expType = Boolean;
            }

            if ( (t->attr.op == '+') || (t->attr.op == '-') ) {
                if ( (((t->child[0] != NULL) && (t->child[0]->isArray == 1)) && (t->chi
                        (((t->child[1] != NULL) && (t->child[1]->isArray == 1)) && (t->chi
                        printf("ERROR(%d): The operation '%s' does not work with arrays.\n"
                        ++numError;
                }
            }

            if ( ((t->child[0] != NULL) && (t->child[1] != NULL)) &&
                    ((t->child[0]->isConstant == true) && (t->child[1]->isConstant == true
                t->isConstant = true;
            //else
            //t->isConstant = false;

            if ( ((t->child[0] != NULL) && (t->child[1] != NULL)) &&
                    ((t->child[0]->expType != Integer) || (t->child[1]->expType != Integer
                if ( (t->attr.op == '<') || (t->attr.op == '>') || (t->attr.op == AND)
                        || (t->attr.op == EQ) || (t->attr.op == NEQ) || (t->attr.op == LEQ
                    t->expType = Boolean;
                else
                    t->expType = Integer;
            }

            //if (t->sibling != NULL)
            if ( (t->sibling != NULL) && (callcnt == 0))
                insertCheckNode(t->sibling);
            break;  // OpK
        }
        break;  // exp
    }
}

static void printSpaces(void){
    for ( int i = 0; i < indentno; i++){
        printf("|  ");
    }
}

void printTree( TreeNode * tree){
    int i;
    int counter = 1;

    while (tree != NULL){
        INDENT;
        //printSpaces();
```

```
if (tree->nodekind == DeclK){
    switch(tree->kind.decl){
    case VarK:
        printf("Var %s ", tree->string);
        switch (tree->isArray){
        case true:
            printf(" is array of type %s [line: %d]\n", getType(tree->expType),
            break;
        default:
            printf(" of type %s [line: %d]\n", getType(tree->expType), tree->li
            break;
        }
        break;
    case FuncK:
        printf("Func %s returns type %s [line: %d]\n", tree->string, getType(tr
        break;

    case ParamK:
        printf("Param %s ", tree->string);
        switch (tree->isArray){
        case true:
            printf(" is array of type %s [line: %d]\n", getType(tree->expType),
            break;
        default:
            printf(" of type %s [line: %d]\n", getType(tree->expType), tree->li
            break;
        }
        break;
    default:
        printf("Unknown DeclNode kind. ");
        break;
    }
} else if (tree->nodekind == StmtK){
    switch (tree->kind.stmt){
    case IfK:
        printf("If [line: %d]\n", tree->linnum);
        break;
    case WhileK:
        printf("While [line: %d]\n", tree->linnum);
        break;
    case ForEachK:
        printf("Foreach [line: %d]\n", tree->linnum);
        break;
    case CompoundK:
        printf("Compound [line: %d]\n", tree->linnum);
        break;
    case ReturnK:
        printf("Return [line: %d]\n", tree->linnum);
        break;
    case BreakK:
        printf("Break [line: %d]\n", tree->linnum);
```

```c
            break;
        default:
            printf("Unknown DeclNode kind. ");
            break;
        }
    } else if (tree->nodekind == ExpK){
        switch (tree->kind.exp){
        case OpK:
            printf("Op: %s [line: %d]\n", tree->string, tree->linnum);
            break;
        case ConstantK:
            printf("Const: ");
            switch ( tree->expType ){
            case Integer:
                printf("%d [line: %d]\n", tree->attr.val, tree->linnum);
                break;
            case Boolean:
                printf("%s [line: %d]\n", tree->string, tree->linnum);
                break;
            case Character:
                printf("%s [line: %d]\n", tree->string, tree->linnum);
                break;
            }
            break;
        case IdK:
            printf("Id: %s [line: %d]\n", tree->string, tree->linnum);
            break;
        case AssignK:
            printf("Assign: %s [line: %d]\n", tree->string, tree->linnum);
            break;
        case CallK:
            printf("Call: %s [line: %d]\n", tree->string, tree->linnum);
            break;
        default:
            printf("Unknown ExpNode kind: %s [line: %d]\n", tree->string, tree->lin
            break;
        }
    } else
        printf("Unknown DeclNode kind. ");

    int childcnt = 0;
    for (int i = 0; i < MAXCHILDREN; i++){
        if (tree->child[i] == NULL)
            continue;
        else {
            printf("Child: %d\n", childcnt+1);
            childcnt++;
            printTree(tree->child[i]);
        }
    }
}
```

```c
        if ( (tree->nodekind == DeclK) && (tree->kind.decl == FuncK) )
            counter = 0;
        tree = tree->sibling;
        if (tree != NULL){
            if ( counter >= 1 ){
                printf("Sibling: %d\n", counter);
            }
            counter++;
        }
    }
    UNINDENT;
}

char* getType(int x){
    char* typeString;
    switch (x){
    case 0:
        typeString = (char*)"void";
        break;
    case 1:
        typeString = (char*)"int";
        break;
    case 2:
        typeString = (char*)"bool";
        break;
    case 3:
        typeString = (char*)"char";
        break;
    }
    return typeString;
}

TreeNode * newStmtNode( StmtKind kind){
    TreeNode * t = (TreeNode*) malloc(sizeof(TreeNode));
    int i;
    if (t==NULL)
        printf("Out of memory error at line %d\n", linnum);
    else {
        for (i = 0; i < MAXCHILDREN; i++)
            t->child[i] = NULL;
        t->sibling = NULL;
        t->nodekind = StmtK;
        t->kind.stmt = kind;
        t->linnum = linnum;
        t->isArray = false;
        t->isConstant = false;
        t->isStatic = false;
    }
    return t;
}
```

```
TreeNode * newDeclNode(DeclKind kind){
    TreeNode * t = (TreeNode*) malloc(sizeof(TreeNode));
    int i;
    if (t==NULL)
        printf("Out of memory error at line %d\n", linnum);
    else {
        for (i = 0; i < MAXCHILDREN; i++)
            t->child[i] = NULL;
        t->sibling = NULL;
        t->nodekind = DeclK;
        t->kind.decl = kind;
        t->linnum = linnum;
        t->isArray = false;
        t->isConstant = false;
        t->isStatic = false;
    }
    return t;
}

TreeNode * newExpNode( ExpKind kind){
    TreeNode * t = (TreeNode*) malloc(sizeof(TreeNode));
    int i;
    if (t==NULL)
        printf("Out of memory error at line %d\n", linnum);
    else {
        for (i = 0; i < MAXCHILDREN; i++)
            t->child[i] = NULL;
        t->sibling = NULL;
        t->nodekind = ExpK;
        t->kind.exp = kind;
        t->linnum = linnum;
        t->expType = Void;        // added type here compared with newStmtNode
        t->isArray = false;
        t->isConstant = false;
        t->isStatic = false;
    }
    return t;
}

// allocates and makes a new copy of an existing string
char * copyString( char * s){
    int n;
    if (s==NULL) return NULL;
    n = strlen(s) + 1;
    char * t = (char*)malloc(n);
    if (t==NULL)
        printf("Out of memory error at line %d\n", linnum);
    else strcpy(t, s);
    return t;
}
```

```
void yyerror(const char* s){
    fprintf(stderr, "%s in line %d in token %s\n", s, linnum, yytext);
    //printf("ERROR linnum(%d):%s. I got: %s\n", linnum, s, yytext);
    exit(-1);
}
```

Chapter 10

无言的结局

10.1 无言的结局（1）

信任来得太容易，背叛时就难免痛苦！我是那个被背叛的人，所以我先疯了 ~　 *_^ 从得知自己那得了 C 的成绩以后，那是考完后接下来的一周，到那里，我已经决定不再理会这个老师了；后来 28 号收到他的邮件，他是嫌我不知道考试成绩，提醒我注意？可惜我还是不想理他。

前面还是写漏了，那天在老师的 office 里大哭，某种情境下，大概是说是他在压着我不允许我正常毕业的时候吧，老师说，他就不明白为什么我就不能同其它任何人一样把这门课坚持下来！愤特，我有想要从这门课 withdraw 么？这可是我从来就没有想过的问题，干嘛按到我头上？这可是在开学前选课时代课老师说这门课难，要我选 research fundamental 那会儿我已经不再去理会这个老师的建议了、自己自愿想要来学这些原理的。所以，我也就哭的那天，当时就反问过老师，谁说我不选这门课了，我当然会跟同学们一起把这门课上完上好的呀 ~！

回想起来，从 11 月上旬期中考试以后，前三四个周间我实在太安逸了。我太单纯地去相信，在面对人类共同的苦难面前，人的感情是相通的；我太单纯地去相信，系里会遵从之前的承诺去放过我的，允许我两年顺利地毕业；我太单纯地去相信线，代课老师在知道了我的苦难后，不会再继续变态，不会再继续为难我。但，我错了 ~

10.2 无言的结局（2）

我的第一次作业基本就是满分（因为第一次作业交作业的当天下午还去找过他，他好像也确实给了我满分，但第一次作业比重分最少），第二次作业只是一个变量、行前空格的问题；第三次作业 traverse 的架构都搭好了，只是 error messege 因为时间有限生成得还比较少；hw3b 也完成了 90% 的工作量，他自己还要给我的邮件里说过 "Good job" 的话；第四次作业因为简单、是他要放水让我们过的，所以虽然时间短，完成得也还不错（应该至少写完 match 了 90%~95% 的 message）；最后一次作业对我来说是最惨的，因为虽然我的架构搭起来了，但因为时间有限，在 deadline 之前，我并没能完成他所给的所有的测试，只概只过了 50%~60% 的测试文件，可问题也在于，这个老师最后一次给的测试文件太多了，刚刚又跑去数了一下，400 多个文件，我又不是机器人，我怎么可能测得完？用来测试的 shell 文件

我是班上仅有的两个国际学生，ph.d 的板砖是有奖学金的，他不需要每个周花去十六七个小时去打工，我其它美国同学们不需要去打工，但我需要！

10.3 无言的结局（3）

其实仔细回想起来，从第二次作业开始，他已经开始变态地压分（课堂上他的夸大了的建议，我的第二次课堂提问）。尽管课堂上我已经开始反搏，但在他的高压手段下，我的力量毕竟微弱；期中

考试后一天我的问题他变相地施加影响力；hw3b 后他自己主动称赞我，来消除我的压力；期中考试后一天在他办公室里，他要我把这门课坚持下去选完，在人类苦难、巨大灾难的心理安慰下，我本能地以为只要我坚持下去，我就一定可以拿到 B，奈何，这个变态老师从一开始就"镇压"他的目的是为了给我 C！

他给我 C 的目的是什么呢？与春天学期的奖学金紧密相关。虽然早在一个月之前我就收到了系里给的奖学金的邮件，但我不敢大意，毕竟第一个学期 cs336 的那个 C 还在那里摆着呢！虽然之前这个学校其它科目的成绩可以平衡 GPA 到 3.0 以上，但谁知道系里会怎么去算成绩呢？万一后来他们找个理由把我的奖学金废掉呢？为此，我不敢大意，心里明知道学校食堂里，manager 说，如果下学期不需要再到这里工作，需要给出两个周的 notice period，但我只是间接地对一个 manager 提了一下，我春天可能有奖学金，但我现在还不确定，硬生生地没敢对 manager 明确地说明。

10.4 无言的结局（4）

前面已经感觉到了、提到过了，这门课的课堂、学校里的活动与食堂里的活动是紧密相连的，目的应该就是春天的奖学金了。如果我与表哥分手的影响力能找开，那系里对自己也没什么好客气的，春天就以 cs445 C 为由，废掉奖学金，我只能注册两个学分；那么接下来我要么滚回国，要么读博士，大概小学校科研力量不够强大吧，读博士他们倒是非常喜欢和欢迎的！但是如果我与表哥没有分手，他们也还是有所顾虑的，那么做会太难看，所以到时候，即使得了 C，他们也还只能看情况办事 ~ !!

所以，现在的自己就能想得明白，还有下面两方面的原因导致我不得不得 C：

第一，与代课老师绯闻的传开，就像代课老师已经人为设局来抹黑我的人格，代课老师在这件事情上是一定不会错的，更不会看得上学习不好、得 C 的学生，我必须得成为那个为那次"意外的"绯闻买单的人；

第二，闺密没有选这门课；板块选了这门课，但他是规规矩矩听话用了一年时间学基础课（cs121、cs150、cs210、cs240、cs270）的人，别人代课老师可以大胆"假定"他基础很扎实，加上他擅长讨好代课老师（也加点儿细节。有一次去听他们 game theory 的项目报告课，他们小组有 7 个人。报告时任何同学在台上都同向教室里所有的同学，只有轮到板块报告时，自始至终他只望向代课老师，仿佛仅有代课老师才是他 care 的人！），他当然可以选；板砖是根本苗红的计算机专业人士，一定可选，并且代课老师会提拔他（有一个 test file 应该是由他贡献的）；板砖没有选 EC（Evolutionary Computation）课，他给出的理由是他没兴趣，系里另一个中国学生女博士没有选 AI 课，她说过她不需要选那门课，他们真的是没必要、没兴趣么？另外，绝大部分印度学生因为主攻 java，他们没人敢选去选编译课。这就是说，我这个转专业、学了一年的学生，他们给了我选择、学习这门课的机会，但一定得给我 C（虽然我学了一年 8 个学分的 C++ 编程课），旨意就在于杀鸡警猴——控制选课，印度学生岂敢、胆敢冒进？

至此，我死也得死，不死也得死；只是惨烈程度稍有不同而已。

Chapter 11

所有测试文件

aamain2.c- aamain2.expected aamain2.in aamain2.out aamain2.tm aamain3.c- aamain3.expected aamain3.out aamain4.c- aamain4.expected aamain4.out aamain4.tm aamain5.c- aamain5.expected aamain5.out aamain.c- aamain.expected aamain.out aamain.tm aasmaller.c- aasmaller.expected aasmaller.out all.c- allErrors2.c- allErrors2.expected allErrors2.in allErrors2.out allErrors.c- allErrors.expected allErrors.in allErrors.out all.expected all.in all.out arglist2.c- arglist2.expected arglist2.out arglist3.c- arglist3.expected arglist3.out arglist.c- arglist.expected arglist.out array0.c- array0.expected array0.out array0.tm array1.c- array1.expected array1.out array1.tm array2.c- array2.expected array2.out array2.tm array.c- array.expected array.out arraysize.c- arraysize.expected arraysizeold.c- arraysizeold.expected arraysizeold.out arraysizeold.tm arraysize.out arraysize.tm array.tm assign1.c- assign1.expected assign1.out assign1.tm assign2.c- assign2.expected assign2.out assign2.tm assign3.c- assign3.expected assign3.out assign3.tm assign4.c- assign4.expected assign4.out assign4.tm assign5.c- assign5.expected assign5.out assign5.tm assign6.c- assign6.expected assign6.out assign6.tm assigna.c- assigna.expected assigna.out assigna.tm assign.c- assign.expected assign.out basicAll.c- basicAll.expected basicAll.out battleship.c- battleship.expected battleship.in battleship.out battleship.tm break2.c- break2.expected break2.out break2.tm break.c- break.expected break.out call2.c- call2.expected call2.out call2.tm call5.c- call5.expected call5.out call5.tm call.c- call.expected call.out call.tm charout.c- charout.expected charout.in charout.out charout.tm comb.c- comb.expected comb.in comb.out combslow.c- combslow.expected combslow.in combslow.out combslow.tm comb.tm compare.c- compare.expected compare.out compare.tm compound.c- compound.expected compound.out control2.c- control2.expected control2.out control2.tm control.c- control.expected control.out control.tm e.c- e.expected e.out errors2.c- errors2.expected errors2.in errors2.out errors3.c- errors3.expected errors3.in errors3.out errors4.c- errors4.expected errors4.in errors4.out errors.c- errors.expected errors.in errors.out e.tm everything.c- everything.expected everything.out everything.tm everythingUndef.c- everythingUndef.expected everythingUndef.in everythingUndef.out examplearray2.c- examplearray2.expected examplearray2.out examplearray2.tm examplearray3.c- examplearray3.expected examplearray3.out examplearray3.tm examplearray.c- examplearray.expected examplearray.out examplearray.tm example.c- example.expected exampleif.c- exampleif.expected exampleif.out exampleif.tm exampleinit.c- exampleinit.expected exampleinit.out exampleinit.tm example.out exampleScope.c- exampleScope.expected exampleScope.out exampleScope.tm examplestatic.c- examplestatic.expected examplestatic.out examplestatic.tm example.tm examplewhile.c- examplewhile.expected examplewhile.out examplewhile.tm exp2.c- exp2.expected exp2.out exp3.c- exp3.expected exp3.out exp3.tm exp.c- exp.expected exp.out factor.c- factor.expected factorial2.c- factorial2.expected factorial2.in factorial2.out factorial2.tm factorial.c- factorial.expected factorial.in factorial.out factorialr.c- factorialr.expected factorialr.in factorialr.out factorialr.tm factorial.tm factor.in factor.out factor.tm fractal.c- fractal.expected fractal.in fractal.out fractal.tm funcaa.c- funcaa.expected funcaa.out funcaa.tm func.c- funcdef.c- funcdef.expected funcdef.out func.expected func.out gcd.c- gcd.expected gcd.in gcd.out gcdsm.c- gcdsm.expected gcdsm.in

gcdsm.out gcdsm.tm gcd.tm globalArray.c- globalArray.expected globalArray.out globalArray.tm global.c-
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main2.in main2.out main2.tm main3.c- main3.expected main3.out main4.c- main4.expected main4.out
main4.tm main5.c- main5.expected main5.out main.c- main.expected main.out main.tm massign.c- mas-
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gle.in ptriangle.out ptriangle.tm queens.c- queens.expected queens.in queens.out queens.tm recur.c- re-
cur.expected recur.in recur.out relop.c- relop.expected relop.in relop.out relop.tm return2.c- return2.expected
return2.out return.c- return.expected return.out righttri.c- righttri.expected righttri.in righttri.out right-
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scope2.expected scope2.out scope2.tm scope.c- scope.expected scope.out sieve.c- sieve.expected sieve.in
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tiny4.out tiny4.tm tiny5.c- tiny5.expected tiny5.out tiny5.tm tiny.c- tiny.expected tiny.out tiny.tm
types2.c- types2.expected types2.out types3.c- types3.expected types3.out types.c- types.expected types.out
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varnovoid.tm var.out var.tm walsh.c- walsh.expected walsh.in walsh.out walsh.tm while.c- while.expected
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Chapter 12

最终版本的 compiler 测试结果

```
=================================================
Output of Building User Code
Explode the tar
c-.l
c-.y
scanType.h
makefile
symtab.h
symtab.cpp
emitCode.h
emitCode.cpp
20131214164956-huang-CS445-F13-A5.tar: POSIX tar archive (GNU)
Tests:                                directory
c-.l:                                 lex description text
c-.y:                                 lex description text
emitCode.cpp:                         ASCII C++ program text
emitCode.h:                           ASCII C++ program text
makefile:                             ASCII make commands text
scanType.h:                           ASCII C program text
symtab.cpp:                           ASCII C program text
symtab.h:                             ASCII C program text
Making compiler
bison -v -t -d c-.y
flex c-.l
g++ -DCPLUSPLUS -g        -c -o lex.yy.o lex.yy.c
g++ -DCPLUSPLUS -g        -c -o c-.tab.o c-.tab.c
c-.y: In function 'int main(int, char**)':
c-.y:848: warning: deprecated conversion from string constant to 'char*'
c-.y:869: warning: deprecated conversion from string constant to 'char*'
c-.y:870: warning: deprecated conversion from string constant to 'char*'
c-.y:871: warning: deprecated conversion from string constant to 'char*'
c-.y:872: warning: deprecated conversion from string constant to 'char*'
c-.y:873: warning: deprecated conversion from string constant to 'char*'
c-.y:876: warning: deprecated conversion from string constant to 'char*'
c-.y:877: warning: deprecated conversion from string constant to 'char*'
c-.y:878: warning: deprecated conversion from string constant to 'char*'
c-.y:879: warning: deprecated conversion from string constant to 'char*'
```

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c-.y:880: warning: deprecated conversion from string constant to 'char*'
c-.y:882: warning: deprecated conversion from string constant to 'char*'
c-.y:886: warning: deprecated conversion from string constant to 'char*'
c-.y:887: warning: deprecated conversion from string constant to 'char*'
c-.y:888: warning: deprecated conversion from string constant to 'char*'
c-.y:888: warning: deprecated conversion from string constant to 'char*'
c-.y:892: warning: deprecated conversion from string constant to 'char*'
c-.y:892: warning: deprecated conversion from string constant to 'char*'
c-.y:893: warning: deprecated conversion from string constant to 'char*'
c-.y:893: warning: deprecated conversion from string constant to 'char*'
c-.y:894: warning: deprecated conversion from string constant to 'char*'
c-.y:894: warning: deprecated conversion from string constant to 'char*'
c-.y:895: warning: deprecated conversion from string constant to 'char*'
c-.y:895: warning: deprecated conversion from string constant to 'char*'
c-.y:896: warning: deprecated conversion from string constant to 'char*'
c-.y:896: warning: deprecated conversion from string constant to 'char*'
c-.y:897: warning: deprecated conversion from string constant to 'char*'
c-.y: In function 'void cgen(TreeNode*)':
c-.y:922: warning: deprecated conversion from string constant to 'char*'
c-.y:922: warning: deprecated conversion from string constant to 'char*'
c-.y:923: warning: deprecated conversion from string constant to 'char*'
c-.y:923: warning: deprecated conversion from string constant to 'char*'
c-.y:929: warning: deprecated conversion from string constant to 'char*'
c-.y:929: warning: deprecated conversion from string constant to 'char*'
c-.y:931: warning: deprecated conversion from string constant to 'char*'
c-.y:931: warning: deprecated conversion from string constant to 'char*'
c-.y:972: warning: deprecated conversion from string constant to 'char*'
c-.y:972: warning: deprecated conversion from string constant to 'char*'
c-.y:978: warning: deprecated conversion from string constant to 'char*'
c-.y:979: warning: deprecated conversion from string constant to 'char*'
c-.y:979: warning: deprecated conversion from string constant to 'char*'
c-.y:980: warning: deprecated conversion from string constant to 'char*'
c-.y:980: warning: deprecated conversion from string constant to 'char*'
c-.y:981: warning: deprecated conversion from string constant to 'char*'
c-.y:981: warning: deprecated conversion from string constant to 'char*'
c-.y:982: warning: deprecated conversion from string constant to 'char*'
c-.y:982: warning: deprecated conversion from string constant to 'char*'
c-.y:1005: warning: deprecated conversion from string constant to 'char*'
c-.y:1011: warning: deprecated conversion from string constant to 'char*'
c-.y:1016: warning: deprecated conversion from string constant to 'char*'
c-.y:1021: warning: deprecated conversion from string constant to 'char*'
c-.y:1021: warning: deprecated conversion from string constant to 'char*'
c-.y:1025: warning: deprecated conversion from string constant to 'char*'
c-.y:1030: warning: deprecated conversion from string constant to 'char*'
c-.y:1030: warning: deprecated conversion from string constant to 'char*'
c-.y:1032: warning: deprecated conversion from string constant to 'char*'
c-.y:1040: warning: deprecated conversion from string constant to 'char*'
c-.y:1043: warning: deprecated conversion from string constant to 'char*'
c-.y:1043: warning: deprecated conversion from string constant to 'char*'
c-.y:1044: warning: deprecated conversion from string constant to 'char*'
```

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c-.y:1053: warning: deprecated conversion from string constant to 'char*'
c-.y:1053: warning: deprecated conversion from string constant to 'char*'
c-.y:1054: warning: deprecated conversion from string constant to 'char*'
c-.y:1057: warning: deprecated conversion from string constant to 'char*'
c-.y:1070: warning: deprecated conversion from string constant to 'char*'
c-.y:1074: warning: deprecated conversion from string constant to 'char*'
c-.y:1080: warning: deprecated conversion from string constant to 'char*'
c-.y:1084: warning: deprecated conversion from string constant to 'char*'
c-.y:1084: warning: deprecated conversion from string constant to 'char*'
c-.y:1086: warning: deprecated conversion from string constant to 'char*'
c-.y:1086: warning: deprecated conversion from string constant to 'char*'
c-.y:1088: warning: deprecated conversion from string constant to 'char*'
c-.y:1088: warning: deprecated conversion from string constant to 'char*'
c-.y:1089: warning: deprecated conversion from string constant to 'char*'
c-.y:1089: warning: deprecated conversion from string constant to 'char*'
c-.y:1108: warning: deprecated conversion from string constant to 'char*'
c-.y:1108: warning: deprecated conversion from string constant to 'char*'
c-.y:1118: warning: deprecated conversion from string constant to 'char*'
c-.y:1118: warning: deprecated conversion from string constant to 'char*'
c-.y:1120: warning: deprecated conversion from string constant to 'char*'
c-.y:1120: warning: deprecated conversion from string constant to 'char*'
c-.y:1123: warning: deprecated conversion from string constant to 'char*'
c-.y:1123: warning: deprecated conversion from string constant to 'char*'
c-.y:1125: warning: deprecated conversion from string constant to 'char*'
c-.y:1125: warning: deprecated conversion from string constant to 'char*'
c-.y:1131: warning: deprecated conversion from string constant to 'char*'
c-.y:1131: warning: deprecated conversion from string constant to 'char*'
c-.y:1136: warning: deprecated conversion from string constant to 'char*'
c-.y:1136: warning: deprecated conversion from string constant to 'char*'
c-.y:1138: warning: deprecated conversion from string constant to 'char*'
c-.y:1138: warning: deprecated conversion from string constant to 'char*'
c-.y:1140: warning: deprecated conversion from string constant to 'char*'
c-.y:1140: warning: deprecated conversion from string constant to 'char*'
c-.y:1141: warning: deprecated conversion from string constant to 'char*'
c-.y:1141: warning: deprecated conversion from string constant to 'char*'
c-.y:1142: warning: deprecated conversion from string constant to 'char*'
c-.y:1142: warning: deprecated conversion from string constant to 'char*'
c-.y:1153: warning: deprecated conversion from string constant to 'char*'
c-.y:1154: warning: deprecated conversion from string constant to 'char*'
c-.y:1154: warning: deprecated conversion from string constant to 'char*'
c-.y:1161: warning: deprecated conversion from string constant to 'char*'
c-.y:1161: warning: deprecated conversion from string constant to 'char*'
c-.y:1165: warning: deprecated conversion from string constant to 'char*'
c-.y:1165: warning: deprecated conversion from string constant to 'char*'
c-.y:1168: warning: deprecated conversion from string constant to 'char*'
c-.y:1168: warning: deprecated conversion from string constant to 'char*'
c-.y:1169: warning: deprecated conversion from string constant to 'char*'
c-.y:1169: warning: deprecated conversion from string constant to 'char*'
c-.y:1170: warning: deprecated conversion from string constant to 'char*'
c-.y:1170: warning: deprecated conversion from string constant to 'char*'
c-.y:1171: warning: deprecated conversion from string constant to 'char*'
```

```
c-.y:1171: warning: deprecated conversion from string constant to 'char*'
c-.y:1182: warning: deprecated conversion from string constant to 'char*'
c-.y:1197: warning: deprecated conversion from string constant to 'char*'
c-.y:1197: warning: deprecated conversion from string constant to 'char*'
c-.y:1199: warning: deprecated conversion from string constant to 'char*'
c-.y:1199: warning: deprecated conversion from string constant to 'char*'
c-.y:1201: warning: deprecated conversion from string constant to 'char*'
c-.y:1201: warning: deprecated conversion from string constant to 'char*'
c-.y:1203: warning: deprecated conversion from string constant to 'char*'
c-.y:1203: warning: deprecated conversion from string constant to 'char*'
c-.y:1204: warning: deprecated conversion from string constant to 'char*'
c-.y:1204: warning: deprecated conversion from string constant to 'char*'
c-.y:1208: warning: deprecated conversion from string constant to 'char*'
c-.y:1208: warning: deprecated conversion from string constant to 'char*'
c-.y:1211: warning: deprecated conversion from string constant to 'char*'
c-.y:1211: warning: deprecated conversion from string constant to 'char*'
c-.y:1212: warning: deprecated conversion from string constant to 'char*'
c-.y:1212: warning: deprecated conversion from string constant to 'char*'
c-.y:1213: warning: deprecated conversion from string constant to 'char*'
c-.y:1213: warning: deprecated conversion from string constant to 'char*'
c-.y:1216: warning: deprecated conversion from string constant to 'char*'
c-.y:1216: warning: deprecated conversion from string constant to 'char*'
c-.y:1217: warning: deprecated conversion from string constant to 'char*'
c-.y:1217: warning: deprecated conversion from string constant to 'char*'
c-.y:1218: warning: deprecated conversion from string constant to 'char*'
c-.y:1218: warning: deprecated conversion from string constant to 'char*'
c-.y:1225: warning: deprecated conversion from string constant to 'char*'
c-.y:1225: warning: deprecated conversion from string constant to 'char*'
c-.y:1227: warning: deprecated conversion from string constant to 'char*'
c-.y:1227: warning: deprecated conversion from string constant to 'char*'
c-.y:1231: warning: deprecated conversion from string constant to 'char*'
c-.y:1231: warning: deprecated conversion from string constant to 'char*'
c-.y:1233: warning: deprecated conversion from string constant to 'char*'
c-.y:1233: warning: deprecated conversion from string constant to 'char*'
c-.y:1234: warning: deprecated conversion from string constant to 'char*'
c-.y:1234: warning: deprecated conversion from string constant to 'char*'
c-.y:1236: warning: deprecated conversion from string constant to 'char*'
c-.y:1236: warning: deprecated conversion from string constant to 'char*'
c-.y:1238: warning: deprecated conversion from string constant to 'char*'
c-.y:1238: warning: deprecated conversion from string constant to 'char*'
c-.y:1242: warning: deprecated conversion from string constant to 'char*'
c-.y:1242: warning: deprecated conversion from string constant to 'char*'
c-.y:1244: warning: deprecated conversion from string constant to 'char*'
c-.y:1244: warning: deprecated conversion from string constant to 'char*'
c-.y:1245: warning: deprecated conversion from string constant to 'char*'
c-.y:1245: warning: deprecated conversion from string constant to 'char*'
c-.y:1247: warning: deprecated conversion from string constant to 'char*'
c-.y:1247: warning: deprecated conversion from string constant to 'char*'
c-.y:1249: warning: deprecated conversion from string constant to 'char*'
c-.y:1249: warning: deprecated conversion from string constant to 'char*'
c-.y:1260: warning: deprecated conversion from string constant to 'char*'
```

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c-.y:1260: warning: deprecated conversion from string constant to 'char*'
c-.y:1261: warning: deprecated conversion from string constant to 'char*'
c-.y:1261: warning: deprecated conversion from string constant to 'char*'
c-.y:1262: warning: deprecated conversion from string constant to 'char*'
c-.y:1262: warning: deprecated conversion from string constant to 'char*'
c-.y:1263: warning: deprecated conversion from string constant to 'char*'
c-.y:1263: warning: deprecated conversion from string constant to 'char*'
c-.y:1266: warning: deprecated conversion from string constant to 'char*'
c-.y:1266: warning: deprecated conversion from string constant to 'char*'
c-.y:1267: warning: deprecated conversion from string constant to 'char*'
c-.y:1267: warning: deprecated conversion from string constant to 'char*'
c-.y:1268: warning: deprecated conversion from string constant to 'char*'
c-.y:1268: warning: deprecated conversion from string constant to 'char*'
c-.y:1269: warning: deprecated conversion from string constant to 'char*'
c-.y:1269: warning: deprecated conversion from string constant to 'char*'
c-.y:1274: warning: deprecated conversion from string constant to 'char*'
c-.y:1274: warning: deprecated conversion from string constant to 'char*'
c-.y:1275: warning: deprecated conversion from string constant to 'char*'
c-.y:1275: warning: deprecated conversion from string constant to 'char*'
c-.y:1276: warning: deprecated conversion from string constant to 'char*'
c-.y:1276: warning: deprecated conversion from string constant to 'char*'
c-.y:1279: warning: deprecated conversion from string constant to 'char*'
c-.y:1279: warning: deprecated conversion from string constant to 'char*'
c-.y:1280: warning: deprecated conversion from string constant to 'char*'
c-.y:1280: warning: deprecated conversion from string constant to 'char*'
c-.y:1281: warning: deprecated conversion from string constant to 'char*'
c-.y:1281: warning: deprecated conversion from string constant to 'char*'
c-.y:1301: warning: deprecated conversion from string constant to 'char*'
c-.y:1301: warning: deprecated conversion from string constant to 'char*'
c-.y:1303: warning: deprecated conversion from string constant to 'char*'
c-.y:1303: warning: deprecated conversion from string constant to 'char*'
c-.y:1308: warning: deprecated conversion from string constant to 'char*'
c-.y:1308: warning: deprecated conversion from string constant to 'char*'
c-.y:1312: warning: deprecated conversion from string constant to 'char*'
c-.y:1312: warning: deprecated conversion from string constant to 'char*'
c-.y:1313: warning: deprecated conversion from string constant to 'char*'
c-.y:1313: warning: deprecated conversion from string constant to 'char*'
c-.y:1315: warning: deprecated conversion from string constant to 'char*'
c-.y:1315: warning: deprecated conversion from string constant to 'char*'
c-.y:1320: warning: deprecated conversion from string constant to 'char*'
c-.y:1320: warning: deprecated conversion from string constant to 'char*'
c-.y:1322: warning: deprecated conversion from string constant to 'char*'
c-.y:1322: warning: deprecated conversion from string constant to 'char*'
c-.y:1324: warning: deprecated conversion from string constant to 'char*'
c-.y:1324: warning: deprecated conversion from string constant to 'char*'
c-.y:1327: warning: deprecated conversion from string constant to 'char*'
c-.y:1327: warning: deprecated conversion from string constant to 'char*'
c-.y:1330: warning: deprecated conversion from string constant to 'char*'
c-.y:1330: warning: deprecated conversion from string constant to 'char*'
c-.y:1331: warning: deprecated conversion from string constant to 'char*'
c-.y:1331: warning: deprecated conversion from string constant to 'char*'
```

```
c-.y:1332: warning: deprecated conversion from string constant to 'char*'
c-.y:1332: warning: deprecated conversion from string constant to 'char*'
c-.y:1333: warning: deprecated conversion from string constant to 'char*'
c-.y:1333: warning: deprecated conversion from string constant to 'char*'
c-.y:1334: warning: deprecated conversion from string constant to 'char*'
c-.y:1334: warning: deprecated conversion from string constant to 'char*'
c-.y:1338: warning: deprecated conversion from string constant to 'char*'
c-.y:1338: warning: deprecated conversion from string constant to 'char*'
c-.y:1339: warning: deprecated conversion from string constant to 'char*'
c-.y:1339: warning: deprecated conversion from string constant to 'char*'
c-.y:1340: warning: deprecated conversion from string constant to 'char*'
c-.y:1340: warning: deprecated conversion from string constant to 'char*'
c-.y:1341: warning: deprecated conversion from string constant to 'char*'
c-.y:1341: warning: deprecated conversion from string constant to 'char*'
c-.y:1342: warning: deprecated conversion from string constant to 'char*'
c-.y:1342: warning: deprecated conversion from string constant to 'char*'
c-.y:1346: warning: deprecated conversion from string constant to 'char*'
c-.y:1346: warning: deprecated conversion from string constant to 'char*'
c-.y:1347: warning: deprecated conversion from string constant to 'char*'
c-.y:1347: warning: deprecated conversion from string constant to 'char*'
c-.y:1348: warning: deprecated conversion from string constant to 'char*'
c-.y:1348: warning: deprecated conversion from string constant to 'char*'
c-.y:1349: warning: deprecated conversion from string constant to 'char*'
c-.y:1349: warning: deprecated conversion from string constant to 'char*'
c-.y:1350: warning: deprecated conversion from string constant to 'char*'
c-.y:1350: warning: deprecated conversion from string constant to 'char*'
c-.y:1354: warning: deprecated conversion from string constant to 'char*'
c-.y:1354: warning: deprecated conversion from string constant to 'char*'
c-.y:1355: warning: deprecated conversion from string constant to 'char*'
c-.y:1355: warning: deprecated conversion from string constant to 'char*'
c-.y: In function 'void codeGen(TreeNode*, char*)':
c-.y:1371: warning: deprecated conversion from string constant to 'char*'
c-.y:1371: warning: deprecated conversion from string constant to 'char*'
c-.y:1373: warning: deprecated conversion from string constant to 'char*'
c-.y:1373: warning: deprecated conversion from string constant to 'char*'
c-.y:1375: warning: deprecated conversion from string constant to 'char*'
c-.y:1375: warning: deprecated conversion from string constant to 'char*'
c-.y: In function 'void genGlobal()':
c-.y:1382: warning: deprecated conversion from string constant to 'char*'
c-.y:1383: warning: deprecated conversion from string constant to 'char*'
c-.y:1383: warning: deprecated conversion from string constant to 'char*'
c-.y:1384: warning: deprecated conversion from string constant to 'char*'
c-.y:1384: warning: deprecated conversion from string constant to 'char*'
c-.y:1386: warning: deprecated conversion from string constant to 'char*'
c-.y: In function 'int backPatchJumpToHere(int, char*)':
c-.y:1413: warning: deprecated conversion from string constant to 'char*'
c-.y: In function 'int backPatchJumpToHere2(int, char*, char*)':
c-.y:1421: warning: deprecated conversion from string constant to 'char*'
g++    -c -o symtab.o symtab.cpp
g++    -c -o emitCode.o emitCode.cpp
emitCode.cpp: In function 'void emitRO(char*, int, int, int, char*)':
```

```
emitCode.cpp:86: warning: deprecated conversion from string constant to '
char*'
emitCode.cpp: In function 'void emitRM(char*, int, int, int, char*)':
emitCode.cpp:108: warning: deprecated conversion from string constant to '
char*'
emitCode.cpp: In function 'void emitRMAbs(char*, int, int, char*)':
emitCode.cpp:136: warning: deprecated conversion from string constant to '
char*'
emitCode.cpp: In function 'void emitBackup(int)':
emitCode.cpp:163: warning: deprecated conversion from string constant to '
char*'
g++ -Wno-Wwrite-strings -DCPLUSPLUS -g     lex.yy.o c-.tab.o symtab.o
emitCode.o -lfl -lm  -o c-
Extracting test files
AllTests/
AllTests/.lastedit
AllTests/a00.c-
AllTests/a00.expected
AllTests/a001.c-
AllTests/a001.expected
AllTests/a002.c-
AllTests/a002.expected
AllTests/a009.c-
AllTests/a009.expected
AllTests/a01.c-
AllTests/a01.expected
AllTests/a02.c-
AllTests/a02.expected
AllTests/a03.c-
AllTests/a03.expected
AllTests/a04.c-
AllTests/a04.expected
AllTests/a045.c-
AllTests/a045.expected
AllTests/a05.c-
AllTests/a05.expected
AllTests/a06.c-
AllTests/a06.expected
AllTests/a07.c-
AllTests/a07.expected
AllTests/a08.c-
AllTests/a08.expected
AllTests/a09.c-
AllTests/a09.expected
AllTests/aamain.c-
AllTests/aamain.expected
AllTests/aamain2.c-
AllTests/aamain2.expected
AllTests/aamain2.in
AllTests/aamain3.c-
AllTests/aamain3.expected
```

```
AllTests/aamain4.c-
AllTests/aamain4.expected
AllTests/aamain5.c-
AllTests/aamain5.expected
AllTests/aasmaller.c-
AllTests/aasmaller.expected
AllTests/all.c-
AllTests/all.expected
AllTests/all.in
AllTests/allErrors.c-
AllTests/allErrors.expected
AllTests/allErrors.in
AllTests/allErrors2.c-
AllTests/allErrors2.expected
AllTests/allErrors2.in
AllTests/arglist.c-
AllTests/arglist.expected
AllTests/arglist2.c-
AllTests/arglist2.expected
AllTests/arglist3.c-
AllTests/arglist3.expected
AllTests/array.c-
AllTests/array.expected
AllTests/array0.c-
AllTests/array0.expected
AllTests/array1.c-
AllTests/array1.expected
AllTests/array2.c-
AllTests/array2.expected
AllTests/arraysize.c-
AllTests/arraysize.expected
AllTests/arraysizeold.c-
AllTests/arraysizeold.expected
AllTests/assign.c-
AllTests/assign.expected
AllTests/assign1.c-
AllTests/assign1.expected
AllTests/assign2.c-
AllTests/assign2.expected
AllTests/assign3.c-
AllTests/assign3.expected
AllTests/assign4.c-
AllTests/assign4.expected
AllTests/assign5.c-
AllTests/assign5.expected
AllTests/assign6.c-
AllTests/assign6.expected
AllTests/assigna.c-
AllTests/assigna.expected
AllTests/b01.c-
AllTests/b01.expected
```

```
AllTests/b02.c-
AllTests/b02.expected
AllTests/b03.c-
AllTests/b03.expected
AllTests/b04.c-
AllTests/b04.expected
AllTests/b05.c-
AllTests/b05.expected
AllTests/b06.c-
AllTests/b06.expected
AllTests/b07.c-
AllTests/b07.expected
AllTests/b08.c-
AllTests/b08.expected
AllTests/b09.c-
AllTests/b09.expected
AllTests/b0a.c-
AllTests/b0a.expected
AllTests/b0b.c-
AllTests/b0b.expected
AllTests/basicAll.c-
AllTests/basicAll.expected
AllTests/battleship.c-
AllTests/battleship.expected
AllTests/battleship.in
AllTests/break.c-
AllTests/break.expected
AllTests/break2.c-
AllTests/break2.expected
AllTests/c01.c-
AllTests/c01.expected
AllTests/c02.c-
AllTests/c02.expected
AllTests/c03.c-
AllTests/c03.expected
AllTests/c04.c-
AllTests/c04.expected
AllTests/c05.c-
AllTests/c05.expected
AllTests/c06.c-
AllTests/c06.expected
AllTests/c07.c-
AllTests/c07.expected
AllTests/c08.c-
AllTests/c08.expected
AllTests/c09.c-
AllTests/c09.expected
AllTests/c0a.c-
AllTests/c0a.expected
AllTests/c0b.c-
AllTests/c0b.expected
```

```
AllTests/c0c.c-
AllTests/c0c.expected
AllTests/c0c2.c-
AllTests/c0c2.expected
AllTests/c0d.c-
AllTests/c0d.expected
AllTests/c0e.c-
AllTests/c0e.expected
AllTests/c0f.c-
AllTests/c0f.expected
AllTests/c0g.c-
AllTests/c0g.expected
AllTests/c0h.c-
AllTests/c0h.expected
AllTests/c13.c-
AllTests/c13.expected
AllTests/c14.c-
AllTests/c14.expected
AllTests/c15.c-
AllTests/c15.expected
AllTests/c16.c-
AllTests/c16.expected
AllTests/c17.c-
AllTests/c17.expected
AllTests/c18.c-
AllTests/c18.expected
AllTests/call.c-
AllTests/call.expected
AllTests/call2.c-
AllTests/call2.expected
AllTests/call5.c-
AllTests/call5.expected
AllTests/charout.c-
AllTests/charout.expected
AllTests/charout.in
AllTests/comb.c-
AllTests/comb.expected
AllTests/comb.in
AllTests/combslow.c-
AllTests/combslow.expected
AllTests/combslow.in
AllTests/compare.c-
AllTests/compare.expected
AllTests/compound.c-
AllTests/compound.expected
AllTests/control.c-
AllTests/control.expected
AllTests/control2.c-
AllTests/control2.expected
AllTests/d01.c-
AllTests/d01.expected
```

```
AllTests/d015.c-
AllTests/d015.expected
AllTests/d02.c-
AllTests/d02.expected
AllTests/d03.c-
AllTests/d03.expected
AllTests/d04.c-
AllTests/d04.expected
AllTests/d045.c-
AllTests/d045.expected
AllTests/d05.c-
AllTests/d05.expected
AllTests/e.c-
AllTests/e.expected
AllTests/e01.c-
AllTests/e01.expected
AllTests/e02.c-
AllTests/e02.expected
AllTests/e03.c-
AllTests/e03.expected
AllTests/e04.c-
AllTests/e04.expected
AllTests/e05.c-
AllTests/e05.expected
AllTests/e06.c-
AllTests/e06.expected
AllTests/e07.c-
AllTests/e07.expected
AllTests/e08.c-
AllTests/e08.expected
AllTests/e09.c-
AllTests/e09.expected
AllTests/e0a.c-
AllTests/e0a.expected
AllTests/e0b.c-
AllTests/e0b.expected
AllTests/e0c.c-
AllTests/e0c.expected
AllTests/e0d.c-
AllTests/e0d.expected
AllTests/errors.c-
AllTests/errors.expected
AllTests/errors.in
AllTests/errors2.c-
AllTests/errors2.expected
AllTests/errors2.in
AllTests/errors3.c-
AllTests/errors3.expected
AllTests/errors3.in
AllTests/errors4.c-
AllTests/errors4.expected
```

```
AllTests/errors4.in
AllTests/everything.c-
AllTests/everything.expected
AllTests/everythingUndef.c-
AllTests/everythingUndef.expected
AllTests/everythingUndef.in
AllTests/example.c-
AllTests/example.expected
AllTests/examplearray.c-
AllTests/examplearray.expected
AllTests/examplearray2.c-
AllTests/examplearray2.expected
AllTests/examplearray3.c-
AllTests/examplearray3.expected
AllTests/exampleif.c-
AllTests/exampleif.expected
AllTests/exampleinit.c-
AllTests/exampleinit.expected
AllTests/exampleScope.c-
AllTests/exampleScope.expected
AllTests/examplestatic.c-
AllTests/examplestatic.expected
AllTests/examplewhile.c-
AllTests/examplewhile.expected
AllTests/exp.c-
AllTests/exp.expected
AllTests/exp2.c-
AllTests/exp2.expected
AllTests/exp3.c-
AllTests/exp3.expected
AllTests/f01.c-
AllTests/f01.expected
AllTests/f02.c-
AllTests/f02.expected
AllTests/f03.c-
AllTests/f03.expected
AllTests/f04.c-
AllTests/f04.expected
AllTests/f05.c-
AllTests/f05.expected
AllTests/f06.c-
AllTests/f06.expected
AllTests/f07.c-
AllTests/f07.expected
AllTests/f08.c-
AllTests/f08.expected
AllTests/f09.c-
AllTests/f09.expected
AllTests/f0a.c-
AllTests/f0a.expected
AllTests/f0b.c-
```

```
AllTests/f0b.expected
AllTests/f0c.c-
AllTests/f0c.expected
AllTests/f0d.c-
AllTests/f0d.expected
AllTests/factor.c-
AllTests/factor.expected
AllTests/factor.in
AllTests/factorial.c-
AllTests/factorial.expected
AllTests/factorial.in
AllTests/factorial2.c-
AllTests/factorial2.expected
AllTests/factorial2.in
AllTests/factorialr.c-
AllTests/factorialr.expected
AllTests/factorialr.in
AllTests/fractal.c-
AllTests/fractal.expected
AllTests/fractal.in
AllTests/func.c-
AllTests/func.expected
AllTests/funcaa.c-
AllTests/funcaa.expected
AllTests/funcdef.c-
AllTests/funcdef.expected
AllTests/g00.c-
AllTests/g00.expected
AllTests/g01.c-
AllTests/g01.expected
AllTests/g02.c-
AllTests/g02.expected
AllTests/g03.c-
AllTests/g03.expected
AllTests/g04.c-
AllTests/g04.expected
AllTests/g05.c-
AllTests/g05.expected
AllTests/g06.c-
AllTests/g06.expected
AllTests/g07.c-
AllTests/g07.expected
AllTests/g08.c-
AllTests/g08.expected
AllTests/g09.c-
AllTests/g09.expected
AllTests/g0a.c-
AllTests/g0a.expected
AllTests/g0b.c-
AllTests/g0b.expected
AllTests/g0c.c-
```

```
AllTests/g0c.expected
AllTests/g0d.c-
AllTests/g0d.expected
AllTests/g0e.c-
AllTests/g0e.expected
AllTests/g0f.c-
AllTests/g0f.expected
AllTests/gcd.c-
AllTests/gcd.expected
AllTests/gcd.in
AllTests/gcdsm.c-
AllTests/gcdsm.expected
AllTests/gcdsm.in
AllTests/global.c-
AllTests/global.expected
AllTests/globalArray.c-
AllTests/globalArray.expected
AllTests/globals.c-
AllTests/globals.expected
AllTests/h01.c-
AllTests/h01.expected
AllTests/h02.c-
AllTests/h02.expected
AllTests/h03.c-
AllTests/h03.expected
AllTests/h04.c-
AllTests/h04.expected
AllTests/h05.c-
AllTests/h05.expected
AllTests/h06.c-
AllTests/h06.expected
AllTests/h07.c-
AllTests/h07.expected
AllTests/i00.c-
AllTests/i00.expected
AllTests/i01.c-
AllTests/i01.expected
AllTests/i02.c-
AllTests/i02.expected
AllTests/i03.c-
AllTests/i03.expected
AllTests/i04.c-
AllTests/i04.expected
AllTests/i05.c-
AllTests/i05.expected
AllTests/i06.c-
AllTests/i06.expected
AllTests/i07.c-
AllTests/i07.expected
AllTests/i08.c-
AllTests/i08.expected
```

```
AllTests/i09.c-
AllTests/i09.expected
AllTests/i0a.c-
AllTests/i0a.expected
AllTests/i0b.c-
AllTests/i0b.expected
AllTests/i0c.c-
AllTests/i0c.expected
AllTests/if.c-
AllTests/if.expected
AllTests/inc.c-
AllTests/inc.expected
AllTests/init.c-
AllTests/init.expected
AllTests/io.c-
AllTests/io.expected
AllTests/io.in
AllTests/j00.c-
AllTests/j00.expected
AllTests/local.c-
AllTests/local.expected
AllTests/localArray.c-
AllTests/localArray.expected
AllTests/logic.c-
AllTests/logic.expected
AllTests/logic2.c-
AllTests/logic2.expected
AllTests/loop.c-
AllTests/loop.expected
AllTests/main.c-
AllTests/main.expected
AllTests/main2.c-
AllTests/main2.expected
AllTests/main2.in
AllTests/main3.c-
AllTests/main3.expected
AllTests/main4.c-
AllTests/main4.expected
AllTests/main5.c-
AllTests/main5.expected
AllTests/massign.c-
AllTests/massign.expected
AllTests/mastermind.c-
AllTests/mastermind.expected
AllTests/mastermind.in
AllTests/mem.c-
AllTests/mem.expected
AllTests/miller.c-
AllTests/miller.expected
AllTests/minesweeper.c-
AllTests/minesweeper.expected
```

```
AllTests/minesweeper.in
AllTests/mod.c-
AllTests/mod.expected
AllTests/negTest.c-
AllTests/negTest.expected
AllTests/negTest.in
AllTests/nest.c-
AllTests/nest.expected
AllTests/op1.c-
AllTests/op1.expected
AllTests/ops.c-
AllTests/ops.expected
AllTests/permlist.c-
AllTests/permlist.expected
AllTests/permlist.in
AllTests/pi.c-
AllTests/pi.expected
AllTests/pi.in
AllTests/poker.c-
AllTests/poker.expected
AllTests/poker.in
AllTests/polynum.c-
AllTests/polynum.expected
AllTests/proc.c-
AllTests/proc.expected
AllTests/procUndef.c-
AllTests/procUndef.expected
AllTests/procUndef.in
AllTests/ptriangle.c-
AllTests/ptriangle.expected
AllTests/ptriangle.in
AllTests/queens.c-
AllTests/queens.expected
AllTests/queens.in
AllTests/README
AllTests/recur.c-
AllTests/recur.expected
AllTests/recur.in
AllTests/relop.c-
AllTests/relop.expected
AllTests/relop.in
AllTests/return.c-
AllTests/return.expected
AllTests/return2.c-
AllTests/return2.expected
AllTests/righttri.c-
AllTests/righttri.expected
AllTests/righttri.in
AllTests/runExamples
AllTests/runExamples.in
AllTests/runExamples~
```

```
AllTests/s00.c-
AllTests/s00.expected
AllTests/s01.c-
AllTests/s01.expected
AllTests/s02.c-
AllTests/s02.expected
AllTests/s025.c-
AllTests/s025.expected
AllTests/s02e.c-
AllTests/s02e.expected
AllTests/s03.c-
AllTests/s03.expected
AllTests/s04.c-
AllTests/s04.expected
AllTests/s05.c-
AllTests/s05.expected
AllTests/s06.c-
AllTests/s06.expected
AllTests/scope.c-
AllTests/scope.expected
AllTests/scope2.c-
AllTests/scope2.expected
AllTests/sieve.c-
AllTests/sieve.expected
AllTests/sieve.in
AllTests/sort.c-
AllTests/sort.expected
AllTests/sort.in
AllTests/sudoku.c-
AllTests/sudoku.expected
AllTests/sudoku.in
AllTests/tictactoe.c-
AllTests/tictactoe.expected
AllTests/tictactoe.in
AllTests/tiny.c-
AllTests/tiny.expected
AllTests/tiny2.c-
AllTests/tiny2.expected
AllTests/tiny3.c-
AllTests/tiny3.expected
AllTests/tiny4.c-
AllTests/tiny4.expected
AllTests/tiny5.c-
AllTests/tiny5.expected
AllTests/types.c-
AllTests/types.expected
AllTests/types2.c-
AllTests/types2.expected
AllTests/types3.c-
AllTests/types3.expected
AllTests/typesUndef.c-
```

```
AllTests/typesUndef.expected
AllTests/typesUndef.in
AllTests/unary.c-
AllTests/unary.expected
AllTests/unarystar.c-
AllTests/unarystar.expected
AllTests/var.c-
AllTests/var.expected
AllTests/var2.c-
AllTests/var2.expected
AllTests/vararray.c-
AllTests/vararray.expected
AllTests/varnovoid.c-
AllTests/varnovoid.expected
AllTests/walsh.c-
AllTests/walsh.expected
AllTests/walsh.in
AllTests/while.c-
AllTests/while.expected
AllTests/whiletest.c-
AllTests/whiletest.expected
AllTests/whiletest.in
==================================================
Output of Testing
Limited to 20 seconds total run time and 10000 lines of output


/* ================================================ *
|       Tests for CS445 Assignment 5               |
|         Comparison with Expected Output          |
/* ================================================ *


/export/home/nibbler/TestWorld
/export/home/nibbler/TestWorld/AllTests
TM version 3.01 (enter h for help)...

Memory Configuration: Data Addresses: 0-9999  Instruction Addresses: 0-9999
Abort Limit: 50000
Enter command: Bye.
====================================
FILE: a00.c-
-rw-------. 1 nibbler nibbler   22 Dec  7 11:02 a00.c-
-rw-------. 1 nibbler nibbler  189 Dec 10 21:39 a00.expected
-rw-r--r--. 1 nibbler nibbler  189 Dec 14 16:52 a00.out
-rw-r--r--. 1 nibbler nibbler 2436 Dec 14 16:52 a00.tm
a00 (Output OK)
====================================
FILE: a001.c-
-rw-------. 1 nibbler nibbler   32 Dec  7 11:02 a001.c-
-rw-------. 1 nibbler nibbler  190 Dec 10 21:39 a001.expected
-rw-r--r--. 1 nibbler nibbler  190 Dec 14 16:52 a001.out
-rw-r--r--. 1 nibbler nibbler 2475 Dec 14 16:52 a001.tm
```

```
a001 (Output OK)
====================================
FILE: a002.c-
-rw-------. 1 nibbler nibbler   35 Dec  7 11:02 a002.c-
-rw-------. 1 nibbler nibbler  190 Dec 10 21:39 a002.expected
-rw-r--r--. 1 nibbler nibbler  190 Dec 14 16:52 a002.out
-rw-r--r--. 1 nibbler nibbler 2599 Dec 14 16:52 a002.tm
a002 (Output OK)
====================================
FILE: a009.c-
-rw-------. 1 nibbler nibbler   31 Dec  7 11:04 a009.c-
-rw-------. 1 nibbler nibbler  190 Dec 10 21:39 a009.expected
-rw-r--r--. 1 nibbler nibbler  190 Dec 14 16:52 a009.out
-rw-r--r--. 1 nibbler nibbler 2437 Dec 14 16:52 a009.tm
a009 (Output OK)
====================================
FILE: a01.c-
-rw-------. 1 nibbler nibbler   41 Dec  7 11:02 a01.c-
-rw-------. 1 nibbler nibbler  193 Dec 10 21:39 a01.expected
-rw-r--r--. 1 nibbler nibbler  193 Dec 14 16:52 a01.out
-rw-r--r--. 1 nibbler nibbler 2756 Dec 14 16:52 a01.tm
a01 (Output OK)
====================================
FILE: a02.c-
-rw-------. 1 nibbler nibbler   55 Dec  7 11:02 a02.c-
-rw-------. 1 nibbler nibbler  194 Dec 10 21:39 a02.expected
-rw-r--r--. 1 nibbler nibbler  194 Dec 14 16:52 a02.out
-rw-r--r--. 1 nibbler nibbler 2998 Dec 14 16:52 a02.tm
a02 (Output OK)
====================================
FILE: a03.c-
-rw-------. 1 nibbler nibbler   43 Dec  7 11:02 a03.c-
-rw-------. 1 nibbler nibbler  191 Dec 10 21:39 a03.expected
-rw-r--r--. 1 nibbler nibbler  191 Dec 14 16:52 a03.out
-rw-r--r--. 1 nibbler nibbler 2755 Dec 14 16:52 a03.tm
a03 (Output OK)
====================================
FILE: a04.c-
-rw-------. 1 nibbler nibbler   44 Dec  7 11:02 a04.c-
-rw-------. 1 nibbler nibbler  191 Dec 10 21:39 a04.expected
-rw-r--r--. 1 nibbler nibbler  191 Dec 14 16:52 a04.out
-rw-r--r--. 1 nibbler nibbler 2755 Dec 14 16:52 a04.tm
a04 (Output OK)
====================================
FILE: a045.c-
-rw-------. 1 nibbler nibbler   40 Dec  7 11:02 a045.c-
-rw-------. 1 nibbler nibbler  191 Dec 10 21:39 a045.expected
-rw-r--r--. 1 nibbler nibbler  191 Dec 14 16:52 a045.out
-rw-r--r--. 1 nibbler nibbler 2720 Dec 14 16:52 a045.tm
a045.out ztmp7922.txt differ: char 179, line 7
a045 (Output DIFF)
```

```
Number of warnings: 0                        Number of warnings: 0
Number of errors: 0                          Number of errors: 0
-------------------------------------           ------------------------
-----------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: a045.tm                         Loading file: a045.tm
5Halted                            |    YHalted
Bye.                                    Bye.
==================================
FILE: a05.c-
-rw-------. 1 nibbler nibbler   66 Dec  7 11:02 a05.c-
-rw-------. 1 nibbler nibbler  193 Dec 10 21:39 a05.expected
-rw-r--r--. 1 nibbler nibbler  193 Dec 14 16:52 a05.out
-rw-r--r--. 1 nibbler nibbler 2871 Dec 14 16:52 a05.tm
a05 (Output OK)
==================================
FILE: a06.c-
-rw-------. 1 nibbler nibbler   61 Dec  7 11:02 a06.c-
-rw-------. 1 nibbler nibbler  193 Dec 10 21:39 a06.expected
-rw-r--r--. 1 nibbler nibbler  193 Dec 14 16:52 a06.out
-rw-r--r--. 1 nibbler nibbler 3649 Dec 14 16:52 a06.tm
a06 (Output OK)
==================================
FILE: a07.c-
-rw-------. 1 nibbler nibbler  132 Dec  7 11:02 a07.c-
-rw-------. 1 nibbler nibbler  199 Dec 10 21:39 a07.expected
-rw-r--r--. 1 nibbler nibbler  199 Dec 14 16:52 a07.out
-rw-r--r--. 1 nibbler nibbler 5488 Dec 14 16:52 a07.tm
a07 (Output OK)
==================================
FILE: a08.c-
-rw-------. 1 nibbler nibbler  139 Dec  7 11:02 a08.c-
-rw-------. 1 nibbler nibbler  195 Dec 10 21:39 a08.expected
-rw-r--r--. 1 nibbler nibbler  195 Dec 14 16:52 a08.out
-rw-r--r--. 1 nibbler nibbler 5484 Dec 14 16:52 a08.tm
a08 (Output OK)
==================================
FILE: a09.c-
-rw-------. 1 nibbler nibbler  134 Dec 10 21:34 a09.c-
-rw-------. 1 nibbler nibbler  193 Dec 10 21:39 a09.expected
-rw-r--r--. 1 nibbler nibbler  193 Dec 14 16:52 a09.out
-rw-r--r--. 1 nibbler nibbler 5339 Dec 14 16:52 a09.tm
a09.out ztmp7922.txt differ: char 178, line 7
a09 (Output DIFF)
Number of warnings: 0                        Number of warnings: 0
Number of errors: 0                          Number of errors: 0
-------------------------------------           ------------------------
-----------
```

```
Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: a09.tm                        Loading file: a09.tm
h                                |     X
h                                |     Y
Halted                                Halted
Bye.                                Bye.
===================================
FILE: aamain.c-
-rw-------. 1 nibbler nibbler   57 Nov 20 21:16 aamain.c-
-rw-------. 1 nibbler nibbler  278 Dec 10 18:12 aamain.expected
-rw-r--r--. 1 nibbler nibbler  278 Dec 14 16:52 aamain.out
-rw-r--r--. 1 nibbler nibbler 2698 Dec 14 16:52 aamain.tm
aamain (Output OK)
===================================
FILE: aamain2.c-
-rw-------. 1 nibbler nibbler  121 Nov 20 21:16 aamain2.c-
-rw-------. 1 nibbler nibbler  224 Dec 10 18:12 aamain2.expected
-rw-------. 1 nibbler nibbler   20 Nov 21 11:33 aamain2.in
-rw-r--r--. 1 nibbler nibbler  224 Dec 14 16:52 aamain2.out
-rw-r--r--. 1 nibbler nibbler 3968 Dec 14 16:52 aamain2.tm
aamain2 (Output OK)
===================================
FILE: aamain3.c-
-rw-------. 1 nibbler nibbler   94 Nov 20 21:16 aamain3.c-
-rw-------. 1 nibbler nibbler  284 Dec 10 18:12 aamain3.expected
-rw-r--r--. 1 nibbler nibbler  403 Dec 14 16:52 aamain3.out
-rw-r--r--. 1 nibbler nibbler 3483 Dec 14 16:52 aamain3.tm
cmp: EOF on ztmp7922.txt
aamain3 (Output DIFF)
ERROR(5): Expecting type int in parameter 1 of call to '    ERROR(5):
Expecting type int in parameter 1 of call to '
ERROR(6): Expecting type bool in parameter 1 of call to     ERROR(6):
Expecting type bool in parameter 1 of call to
Number of warnings: 0                        Number of warnings: 0
Number of errors: 2                        Number of errors: 2
------------------------------------        ------------------------
------------
                              <
Memory Configuration: Data Addresses: 0-9999  Instructio  <
Loading file: aamain3.tm                <
1 T                                <
Halted                                <
Bye.                                <
===================================
FILE: aamain4.c-
-rw-------. 1 nibbler nibbler   33 Nov 20 21:16 aamain4.c-
-rw-------. 1 nibbler nibbler  279 Dec 10 18:12 aamain4.expected
-rw-r--r--. 1 nibbler nibbler  279 Dec 14 16:52 aamain4.out
-rw-r--r--. 1 nibbler nibbler 2440 Dec 14 16:52 aamain4.tm
aamain4 (Output OK)
```

```
====================================
FILE: aamain5.c-
./runExamples: line 11:  8073 Segmentation fault      ../c- $file.c- > $file
.out
-rw-------. 1 nibbler nibbler  87 Nov 20 21:16 aamain5.c-
-rw-------. 1 nibbler nibbler 125 Dec 10 18:12 aamain5.expected
-rw-r--r--. 1 nibbler nibbler 239 Dec 14 16:52 aamain5.out
-rw-r--r--. 1 nibbler nibbler   0 Dec 14 16:52 aamain5.tm
cmp: EOF on ztmp7922.txt
aamain5 (Output DIFF)
ERROR(LINKER): Procedure main is not defined.        ERROR(LINKER):
Procedure main is not defined.
Number of warnings: 0                        Number of warnings: 0
Number of errors: 1                        Number of errors: 1
------------------------------------        ------------------------
------------
                                  <
Memory Configuration: Data Addresses: 0-9999  Instructio  <
Loading file: aamain5.tm                     <
Halted                                   <
Bye.                                  <
====================================
FILE: aasmaller.c-
./runExamples: line 11:  8082 Segmentation fault      ../c- $file.c- > $file
.out
-rw-------. 1 nibbler nibbler  49 Dec  5 15:35 aasmaller.c-
-rw-------. 1 nibbler nibbler 125 Dec 10 18:12 aasmaller.expected
-rw-r--r--. 1 nibbler nibbler 241 Dec 14 16:52 aasmaller.out
-rw-r--r--. 1 nibbler nibbler   0 Dec 14 16:52 aasmaller.tm
cmp: EOF on ztmp7922.txt
aasmaller (Output DIFF)
ERROR(LINKER): Procedure main is not defined.        ERROR(LINKER):
Procedure main is not defined.
Number of warnings: 0                        Number of warnings: 0
Number of errors: 1                        Number of errors: 1
------------------------------------        ------------------------
------------
                                  <
Memory Configuration: Data Addresses: 0-9999  Instructio  <
Loading file: aasmaller.tm                     <
Halted                                   <
Bye.                                  <
====================================
FILE: all.c-
syntax error in line 5 in token ;
-rw-------. 1 nibbler nibbler  74 Nov 20 21:16 all.c-
-rw-------. 1 nibbler nibbler 322 Dec 10 18:12 all.expected
-rw-------. 1 nibbler nibbler   2 Nov 21 11:33 all.in
-rw-r--r--. 1 nibbler nibbler  37 Dec 14 16:52 all.out
all.out ztmp7922.txt differ: char 1, line 1
all (Output DIFF)
```

```
                                      >      ERROR(5): Syntax error.  Unexpected ';'.
  Expecting id.
                                      >      ERROR(6): Syntax error.  Unexpected '='.
                                      >      ERROR(7): Syntax error.  Unexpected int.
                                      >      ERROR(8): Syntax error.  Unexpected
number: 10.
                                      >      ERROR(8): Syntax error.  Unexpected ']'.
  Expecting ';'.
                                      >      Number of warnings: 0
                                      >      Number of errors: 5
------------------------------------            -----------------------
-----------
===================================
FILE: allErrors.c-
./runExamples: line 11:  8098 Segmentation fault     ../c- $file.c- > $file
.out
-rw-------. 1 nibbler nibbler 2556 Nov 20 21:16 allErrors.c-
-rw-------. 1 nibbler nibbler 2547 Dec 10 18:12 allErrors.expected
-rw-------. 1 nibbler nibbler    2 Nov 21 11:33 allErrors.in
-rw-r--r--. 1 nibbler nibbler  141 Dec 14 16:52 allErrors.out
-rw-r--r--. 1 nibbler nibbler 4096 Dec 14 16:52 allErrors.tm
allErrors.out ztmp7922.txt differ: char 1, line 1
allErrors (Output DIFF)
                                      >      ERROR(7): Function 'dog' at line 3 is
expecting to retur
                                      >      ERROR(14): Function 'cat' at line 10 is
expecting to ret
                                      >      ERROR(17): Symbol 'cat' is already
defined at line 10.
                                      >      ERROR(26): Function 'ox' at line 24 is
expecting no retu
                                      >      WARNING(29): Expecting to return type
int but function '
                                      >      ERROR(36): Symbol 'x' is already defined
at line 35.
                                      >      ERROR(44): Symbol 'v' is not defined.
                                      >      ERROR(46): Expecting Boolean test
condition in if statem
                                      >      ERROR(47): Expecting Boolean test
condition in while sta
                                      >      ERROR(49): Cannot use function 'cat' as
a simple variabl
                                      >      ERROR(50): '=' requires operands of the
same type but lh
                                      >      ERROR(51): '+=' requires operands of
type int but rhs is
                                      >      ERROR(52): '-=' requires operands of
type int but lhs is
                                      >      ERROR(54): Cannot use array as test
condition in if stat
                                      >      ERROR(55): Cannot use array as test
```

```
condition in while s
                                    >       ERROR(57): Cannot have a break statement
outside of loop
                                    >       ERROR(61): The operation '+' does not
work with arrays.
                                    >       ERROR(63): '==' requires operands of the
same type but l
                                    >       ERROR(65): '+' requires operands of type
int but lhs is
                                    >       ERROR(67): '*' requires operands of type
int but rhs is
                                    >       ERROR(69): Unary 'not' requires an
operand of type bool
                                    >       ERROR(71): Cannot index nonarray 'x'.
                                    >       ERROR(73): Array 'aa' should be indexed
by type int but
                                    >       ERROR(75): Symbol 'xyzzy' is not defined.
                                    >       ERROR(76): Symbol 'meerkat' is not
defined.
                                    >       ERROR(78): 'x' is a simple variable and
cannot be called
                                    >       ERROR(80): Too many parameters passed
for function 'dog'
                                    >       ERROR(81): Too few parameters passed for
function 'ibex'
                                    >       ERROR(83): Expecting type int in
parameter 1 of call to
                                    >       ERROR(85): Not expecting array in
parameter 1 of call to
                                    >       ERROR(87): Expecting array in parameter
1 of call to 'ib
                                    >       ERROR(88): Cannot use function 'ibex' as
a simple variab
                                    >       ERROR(90): Cannot use function 'ibex' as
a simple variab
                                    >       ERROR(90): '+' requires operands of type
int but lhs is
                                    >       ERROR(93): Array index is the unindexed
array 'zz'.
                                    >       ERROR(95): Cannot return an array.
                                    >       Number of warnings: 1
                                    >       Number of errors: 35
-----------------------------------                 ------------------------
------------
                                    <
Memory Configuration: Data Addresses: 0-9999  Instructio   <
Loading file: allErrors.tm                        <
===================================
FILE: allErrors2.c-
./runExamples: line 11:  8107 Segmentation fault      ../c- $file.c- > $file
.out
```

```
-rw-------. 1 nibbler nibbler 2996 Nov 21 12:43 allErrors2.c-
-rw-------. 1 nibbler nibbler 8389 Dec 10 18:12 allErrors2.expected
-rw-------. 1 nibbler nibbler    2 Nov 21 11:33 allErrors2.in
-rw-r--r--. 1 nibbler nibbler 8334 Dec 14 16:52 allErrors2.out
-rw-r--r--. 1 nibbler nibbler 8192 Dec 14 16:52 allErrors2.tm
allErrors2.out ztmp7922.txt differ: char 8193, line 109
allErrors2 (Output DIFF)
ERROR(6): Function 'dog' at line 2 is expecting to retur    ERROR(6):
Function 'dog' at line 2 is expecting to retur
ERROR(13): Function 'cat' at line 9 is expecting to retu    ERROR(13):
Function 'cat' at line 9 is expecting to retu
ERROR(16): Symbol 'cat' is already defined at line 9.       ERROR(16):
Symbol 'cat' is already defined at line 9.
ERROR(25): Function 'ox' at line 23 is expecting no retu    ERROR(25):
Function 'ox' at line 23 is expecting no retu
WARNING(28): Expecting to return type int but function '    WARNING(28):
Expecting to return type int but function '
ERROR(44): Expecting Boolean test condition in if statem    ERROR(44):
Expecting Boolean test condition in if statem
ERROR(45): Expecting Boolean test condition in while sta    ERROR(45):
Expecting Boolean test condition in while sta
ERROR(47): Cannot use function 'cat' as a simple variabl    ERROR(47):
Cannot use function 'cat' as a simple variabl
ERROR(48): '=' requires operands of the same type but lh    ERROR(48): '='
requires operands of the same type but lh
ERROR(49): '+=' requires operands of type int but rhs is    ERROR(49): '+='
requires operands of type int but rhs is
ERROR(50): '-=' requires operands of type int but lhs is    ERROR(50): '-='
requires operands of type int but lhs is
ERROR(52): Cannot use array as test condition in if stat    ERROR(52):
Cannot use array as test condition in if stat
ERROR(53): Cannot use array as test condition in while s    ERROR(53):
Cannot use array as test condition in while s
ERROR(58): Cannot have a break statement outside of loop    ERROR(58):
Cannot have a break statement outside of loop
ERROR(61): The operation '+' does not work with arrays.     ERROR(61):
The operation '+' does not work with arrays.
ERROR(62): The operation '-' does not work with arrays.     ERROR(62):
The operation '-' does not work with arrays.
ERROR(63): Unary 'not' requires an operand of type bool     ERROR(63): Unary
'not' requires an operand of type bool
ERROR(63): The operation 'not' does not work with arrays    ERROR(63): The
operation 'not' does not work with arrays
ERROR(65): '==' requires operands of the same type but l    ERROR(65): '=='
requires operands of the same type but l
ERROR(67): '+' requires operands of type int but lhs is     ERROR(67): '+'
requires operands of type int but lhs is
ERROR(69): '*' requires operands of type int but rhs is     ERROR(69): '*'
requires operands of type int but rhs is
ERROR(71): Unary 'not' requires an operand of type bool     ERROR(71): Unary
'not' requires an operand of type bool
```

```
ERROR(73): Cannot index nonarray 'x'.              ERROR(73): Cannot index
nonarray 'x'.
ERROR(75): Array 'aa' should be indexed by type int but    ERROR(75): Array
'aa' should be indexed by type int but
ERROR(77): Array index is the unindexed array 'zz'.        ERROR(77): Array
index is the unindexed array 'zz'.
ERROR(79): Symbol 'xyzzy' is not defined.          ERROR(79): Symbol '
xyzzy' is not defined.
ERROR(80): Symbol 'meerkat' is not defined.            ERROR(80): Symbol '
meerkat' is not defined.
ERROR(82): 'x' is a simple variable and cannot be called    ERROR(82): 'x'
is a simple variable and cannot be called
ERROR(84): Too many parameters passed for function 'dog'    ERROR(84): Too
many parameters passed for function 'dog'
ERROR(85): Too few parameters passed for function 'ibex'    ERROR(85): Too
few parameters passed for function 'ibex'
ERROR(87): Expecting type int in parameter 1 of call to     ERROR(87):
Expecting type int in parameter 1 of call to
ERROR(89): Not expecting array in parameter 1 of call to    ERROR(89): Not
expecting array in parameter 1 of call to
ERROR(90): Expecting type int in parameter 1 of call to     ERROR(90):
Expecting type int in parameter 1 of call to
ERROR(92): Expecting array in parameter 1 of call to 'ib    ERROR(92):
Expecting array in parameter 1 of call to 'ib
ERROR(93): Cannot use function 'ibex' as a simple variab    ERROR(93):
Cannot use function 'ibex' as a simple variab
ERROR(95): Cannot use function 'ibex' as a simple variab    ERROR(95):
Cannot use function 'ibex' as a simple variab
ERROR(95): '+' requires operands of type int but lhs is     ERROR(95): '+'
requires operands of type int but lhs is
ERROR(97): The operation '*' only works with arrays.        ERROR(97): The
operation '*' only works with arrays.
ERROR(99): '*' requires operands of type int but lhs is     ERROR(99): '*'
requires operands of type int but lhs is
ERROR(99): The operation '*' does not work with arrays.      ERROR(99):
The operation '*' does not work with arrays.
ERROR(99): '+' requires operands of type int but lhs is     ERROR(99): '+'
requires operands of type int but lhs is
ERROR(99): The operation '*' only works with arrays.        ERROR(99): The
operation '*' only works with arrays.
ERROR(99): The operation 'not' does not work with arrays    ERROR(99): The
operation 'not' does not work with arrays
ERROR(99): Unary 'not' requires an operand of type bool     ERROR(99): Unary
'not' requires an operand of type bool
ERROR(99): 'or' requires operands of type bool but lhs i    ERROR(99): 'or'
requires operands of type bool but lhs i
ERROR(99): Cannot have a break statement outside of loop    ERROR(99):
Cannot have a break statement outside of loop
ERROR(100): 'and' requires operands of type bool but lhs    ERROR(100): 'and
' requires operands of type bool but lhs
ERROR(100): 'and' requires operands of type bool but rhs    ERROR(100): 'and
```

' requires operands of type bool but rhs
ERROR(102): Cannot return an array.
ERROR(107): Symbol 'main' is already defined at line 32.
ERROR(121): '==' requires operands of the same type but
ERROR(126): '=' requires operands of the same type but l
ERROR(130): '!=' requires operands of the same type but
ERROR(136): Symbol 'z' is already defined at line 105.
ERROR(138): Variable 'a' is of type int but is being ini
ERROR(138): Variable 'b' is of type int but is being ini
ERROR(138): Variable 'zz' is of type int but is being in
ERROR(140): Initializer for variable 'd' is not a consta
ERROR(141): '*' requires operands of type int but rhs is
ERROR(142): Initializer for variable 'e' is not a consta
ERROR(143): Initializer for variable 'f' is not a consta
ERROR(145): Symbol 'main' is already defined at line 32.
ERROR(158): '==' requires operands of the same type but
ERROR(164): '=' requires operands of the same type but l
ERROR(182): In foreach statement the variable to the lef
ERROR(183): In foreach statement the variable to the lef
ERROR(183): Foreach requires operands of 'in' be the sam
ERROR(186): Foreach requires operands of 'in' be the sam
ERROR(188): If not an array, foreach requires rhs of 'in
ERROR(189): If not an array, foreach requires lhs of 'in
ERROR(195): Initializer for nonarray variable 'w' of typ
ERROR(196): Variable 'u' is of type int but is being ini
ERROR(196): Initializer for nonarray variable 'u' of typ

```
ERROR(197): Array 't' must be of type char to be initial    ERROR(197):
Array 't' must be of type char to be initial
ERROR(197): Initializer for array variable 't' must be a    ERROR(197):
Initializer for array variable 't' must be a
ERROR(198): Initializer for array variable 's' must be a    ERROR(198):
Initializer for array variable 's' must be a
ERROR(204): Symbol 'main' is already defined at line 32.    ERROR(204):
Symbol 'main' is already defined at line 32.
ERROR(206): Initializer for variable 'x' is not a consta    ERROR(206):
Initializer for variable 'x' is not a consta
ERROR(207): Initializer for nonarray variable 'c' of typ    ERROR(207):
Initializer for nonarray variable 'c' of typ
ERROR(208): Initializer for array variable 'd' must be a    ERROR(208):
Initializer for array variable 'd' must be a
ERROR(209): Variable 'e' is of type char but is being in    ERROR(209):
Variable 'e' is of type char but is being in
ERROR(210): Initializer for array variable 'f' must be a    ERROR(210):
Initializer for array variable 'f' must be a
ERROR(211): Array 'z' must be of type char to be initial    ERROR(211):
Array 'z' must be of type char to be initial
ERROR(213): '=' requires that if one operand is an array    ERROR(213): '='
requires that if one operand is an array
ERROR(214): '=' requires that if one operand is an array    ERROR(214): '='
requires that if one operand is an array
ERROR(215): '=' requires operands of the same type but l    ERROR(215): '='
requires operands of the same type but l
ERROR(216): '=' requires operands of the same type but l    ERROR(216): '='
requires operands of the same type but l
ERROR(216): '=' requires that if one operand is an array    ERROR(216): '='
requires that if one operand is an array
ERROR(217): '=' requires operands of the same type but l    ERROR(217): '='
requires operands of the same type but l
ERROR(219): '==' requires operands of the same type but     ERROR(219): '=='
requires operands of the same type but
ERROR(220): '>' requires operands of type char or type i    ERROR(220): '>'
requires operands of type char or type i
ERROR(221): '>' requires operands of type char or type i    ERROR(221): '>'
requires operands of type char or type i
ERROR(222): The operation '>' does not work with arrays.    ERROR(222): The
operation '>' does not work with arrays.
ERROR(223): The operation '>' does not work with arrays.    ERROR(223): The
operation '>' does not work with arrays.
ERROR(224): The operation '>' does not work with arrays.    ERROR(224): The
operation '>' does not work with arrays.
ERROR(226): Unary '-' requires an operand of type int bu    ERROR(226):
Unary '-' requires an operand of type int bu
ERROR(227): The operation '*' only works with arrays.      ERROR(227): The
operation '*' only works with arrays.
ERROR(228): The operation '-' does not work with arrays.    ERROR(228): The
operation '-' does not work with arrays.
ERROR(231): Unary '++' requires an operand of type int b    ERROR(231):
```

```
Unary '++' requires an operand of type int b
ERROR(231): The operation '++' does not work with arrays      ERROR(231): The
operation '++' does not work with arrays
ERROR(232): The operation '++' does not work with arrays      ERROR(232): The
operation '++' does not work with arrays
ERROR(233): Unary '--' requires an operand of type int b      ERROR(233):
Unary '--' requires an operand of type int b
ERROR(233): The operation '--' does not work with arrays      ERROR(233): The
operation '--' does not work with arrays
ERROR(234): The operation '--' does not work with arrays      ERROR(234): The
operation '--' does not work with arrays
WARNING(204): Expecting to return type int but functio      WARNING(204):
Expecting to return type int but function
ERROR(238): Symbol 'fred' is already defined at line 237      ERROR(238):
Symbol 'fred' is already defined at line 237
ERROR(240): Symbol 'fred' is already defined at line 239      ERROR(240):
Symbol 'fred' is already defined at line 239
ERROR(241): Symbol 'fred' is already defined at line 239      ERROR(241):
Symbol 'fred' is already defined at line 239
ERROR(242): Symbol 'fred' is a--------------------------   |     ERROR(242):
Symbol 'fred' is already defined at line 239
                                |     WARNING(238): Expecting to return type
int but function
Memory Configuration: Data Addresses: 0-9999  Instructio   |     Number of
warnings: 3
Loading file: allErrors2.tm                      |     Number of errors: 107
                                >     -----------------------------------
====================================
FILE: arglist.c-
./runExamples: line 11:  8116 Segmentation fault      ../c- $file.c- > $file
.out
-rw-------. 1 nibbler nibbler 190 Nov 20 21:16 arglist.c-
-rw-------. 1 nibbler nibbler 125 Dec 10 18:12 arglist.expected
-rw-r--r--. 1 nibbler nibbler 239 Dec 14 16:52 arglist.out
-rw-r--r--. 1 nibbler nibbler   0 Dec 14 16:52 arglist.tm
cmp: EOF on ztmp7922.txt
arglist (Output DIFF)
ERROR(LINKER): Procedure main is not defined.           ERROR(LINKER):
Procedure main is not defined.
Number of warnings: 0                          Number of warnings: 0
Number of errors: 1                            Number of errors: 1
-----------------------------------              -----------------------
-----------
                            <
Memory Configuration: Data Addresses: 0-9999  Instructio   <
Loading file: arglist.tm                  <
Halted                                 <
Bye.                                 <
====================================
FILE: arglist2.c-
./runExamples: line 11:  8125 Segmentation fault      ../c- $file.c- > $file
```

```
.out
-rw-------. 1 nibbler nibbler   787 Nov 20 21:16 arglist2.c-
-rw-------. 1 nibbler nibbler  2940 Dec 10 18:12 arglist2.expected
-rw-r--r--. 1 nibbler nibbler  3055 Dec 14 16:52 arglist2.out
-rw-r--r--. 1 nibbler nibbler 12288 Dec 14 16:52 arglist2.tm
arglist2.out ztmp7922.txt differ: char 2692, line 32
arglist2 (Output DIFF)
ERROR(13): Too few parameters passed for function 'kate'    ERROR(13): Too
few parameters passed for function 'kate'
ERROR(14): Too few parameters passed for function 'kate'    ERROR(14): Too
few parameters passed for function 'kate'
ERROR(15): Too few parameters passed for function 'kate'    ERROR(15): Too
few parameters passed for function 'kate'
ERROR(17): Too many parameters passed for function 'kate    ERROR(17): Too
many parameters passed for function 'kate
ERROR(18): Too many parameters passed for function 'kate    ERROR(18): Too
many parameters passed for function 'kate
ERROR(20): Expecting type int in parameter 1 of call to     ERROR(20):
Expecting type int in parameter 1 of call to
ERROR(20): Expecting type bool in parameter 2 of call to    ERROR(20):
Expecting type bool in parameter 2 of call to
ERROR(20): Not expecting array in parameter 2 of call to    ERROR(20): Not
expecting array in parameter 2 of call to
ERROR(20): Expecting type int in parameter 3 of call to     ERROR(20):
Expecting type int in parameter 3 of call to
ERROR(20): Expecting type bool in parameter 4 of call to    ERROR(20):
Expecting type bool in parameter 4 of call to
ERROR(20): Expecting array in parameter 4 of call to 'ka    ERROR(20):
Expecting array in parameter 4 of call to 'ka
ERROR(21): Not expecting array in parameter 1 of call to    ERROR(21): Not
expecting array in parameter 1 of call to
ERROR(21): Not expecting array in parameter 2 of call to    ERROR(21): Not
expecting array in parameter 2 of call to
ERROR(21): Expecting array in parameter 3 of call to 'ka    ERROR(21):
Expecting array in parameter 3 of call to 'ka
ERROR(21): Expecting array in parameter 4 of call to 'ka    ERROR(21):
Expecting array in parameter 4 of call to 'ka
ERROR(22): Expecting type int in parameter 1 of call to     ERROR(22):
Expecting type int in parameter 1 of call to
ERROR(22): Not expecting array in parameter 1 of call to    ERROR(22): Not
expecting array in parameter 1 of call to
ERROR(22): Expecting type bool in parameter 2 of call to    ERROR(22):
Expecting type bool in parameter 2 of call to
ERROR(22): Expecting type int in parameter 3 of call to     ERROR(22):
Expecting type int in parameter 3 of call to
ERROR(22): Expecting array in parameter 3 of call to 'ka    ERROR(22):
Expecting array in parameter 3 of call to 'ka
ERROR(22): Expecting type bool in parameter 4 of call to    ERROR(22):
Expecting type bool in parameter 4 of call to
ERROR(25): '+' requires operands of type int but rhs is     ERROR(25): '+'
requires operands of type int but rhs is
```

```
ERROR(32): Function 'abbey' at line 30 is expecting to r      ERROR(32):
Function 'abbey' at line 30 is expecting to r
ERROR(35): Symbol 'abbey' is already defined at line 30.      ERROR(35):
Symbol 'abbey' is already defined at line 30.
ERROR(37): Function 'abbey' at line 35 is expecting to r      ERROR(37):
Function 'abbey' at line 35 is expecting to r
ERROR(42): Function 'zena' at line 40 is expecting to re      ERROR(42):
Function 'zena' at line 40 is expecting to re
ERROR(47): Function 'zeus' at line 45 is expecting to re      ERROR(47):
Function 'zeus' at line 45 is expecting to re
ERROR(52): Function 'blackdog' at line 50 is expecting t      ERROR(52):
Function 'blackdog' at line 50 is expecting t
ERROR(59): Cannot return an array.                    ERROR(59): Cannot return
an array.
ERROR(64): Function 'quaoar' at line 62 is expecting no      ERROR(64):
Function 'quaoar' at line 62 is expecting no
ERROR(69): Function 'ixion' at line 67 is expecting no r      ERROR(69):
Function 'ixion' at line 67 is expecting no r
ERROR(75): Cannot return an array.                 <
ERROR(75): Function 'varuna' at line 72 is expecting no      ERROR(75):
Function 'varuna' at line 72 is expecting no
                                 >     ERROR(75): Cannot return an array.
ERROR(LINKER): Procedure main is not defined.         ERROR(LINKER):
Procedure main is not defined.
Number of warnings: 0                      Number of warnings: 0
Number of errors: 34                       Number of errors: 34
-------------------------------------         ------------------------
------------
                                 <
Memory Configuration: Data Addresses: 0-9999  Instructio   <
Loading file: arglist2.tm                    <
Halted                            <
Bye.                           <
=====================================
FILE: arglist3.c-
./runExamples: line 11:  8134 Segmentation fault      ../c- $file.c- > $file
.out
-rw-------. 1 nibbler nibbler 133 Nov 20 21:16 arglist3.c-
-rw-------. 1 nibbler nibbler 125 Dec 10 18:12 arglist3.expected
-rw-r--r--. 1 nibbler nibbler 240 Dec 14 16:52 arglist3.out
-rw-r--r--. 1 nibbler nibbler   0 Dec 14 16:52 arglist3.tm
cmp: EOF on ztmp7922.txt
arglist3 (Output DIFF)
ERROR(LINKER): Procedure main is not defined.         ERROR(LINKER):
Procedure main is not defined.
Number of warnings: 0                      Number of warnings: 0
Number of errors: 1                      Number of errors: 1
-------------------------------------         ------------------------
------------
                                 <
Memory Configuration: Data Addresses: 0-9999  Instructio   <
```

```
Loading file: arglist3.tm                    <
Halted                                   <
Bye.                                     <
===================================
FILE: array.c-
-rw-------. 1 nibbler nibbler   534 Nov 20 21:16 array.c-
-rw-------. 1 nibbler nibbler   232 Dec 10 18:12 array.expected
-rw-r--r--. 1 nibbler nibbler   232 Dec 14 16:52 array.out
-rw-r--r--. 1 nibbler nibbler 27070 Dec 14 16:52 array.tm
array (Output OK)
===================================
FILE: array0.c-
-rw-------. 1 nibbler nibbler   545 Nov 20 21:16 array0.c-
-rw-------. 1 nibbler nibbler   245 Dec 10 18:12 array0.expected
-rw-r--r--. 1 nibbler nibbler   245 Dec 14 16:52 array0.out
-rw-r--r--. 1 nibbler nibbler 21519 Dec 14 16:52 array0.tm
array0 (Output OK)
===================================
FILE: array1.c-
-rw-------. 1 nibbler nibbler   173 Nov 20 21:16 array1.c-
-rw-------. 1 nibbler nibbler   197 Dec 10 18:12 array1.expected
-rw-r--r--. 1 nibbler nibbler   197 Dec 14 16:52 array1.out
-rw-r--r--. 1 nibbler nibbler  5303 Dec 14 16:52 array1.tm
array1 (Output OK)
===================================
FILE: array2.c-
-rw-------. 1 nibbler nibbler   154 Nov 20 21:16 array2.c-
-rw-------. 1 nibbler nibbler   200 Dec 10 18:12 array2.expected
-rw-r--r--. 1 nibbler nibbler   200 Dec 14 16:52 array2.out
-rw-r--r--. 1 nibbler nibbler  5058 Dec 14 16:52 array2.tm
array2 (Output OK)
===================================
FILE: arraysize.c-
-rw-------. 1 nibbler nibbler   509 Nov 20 21:16 arraysize.c-
-rw-------. 1 nibbler nibbler   259 Dec 10 18:12 arraysize.expected
-rw-r--r--. 1 nibbler nibbler   261 Dec 14 16:52 arraysize.out
-rw-r--r--. 1 nibbler nibbler 27579 Dec 14 16:52 arraysize.tm
arraysize.out ztmp7922.txt differ: char 201, line 8
arraysize (Output DIFF)
Number of warnings: 0                        Number of warnings: 0
Number of errors: 0                          Number of errors: 0
-----------------------------------          ------------------------
-----------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: arraysize.tm                   Loading file: arraysize.tm
777 11 0 12                                  777 11 0 12
777 533 888 12                          |    777 11 888 12
666 13                                       666 13
888 540 888 12                          |    888 12 888 12
```

```
666 13                              666 13
132                                 132
Halted                               Halted
Bye.                                Bye.
====================================
FILE: arraysizeold.c-
-rw-------. 1 nibbler nibbler  192 Nov 20 21:16 arraysizeold.c-
-rw-------. 1 nibbler nibbler  198 Dec 10 18:12 arraysizeold.expected
-rw-r--r--. 1 nibbler nibbler  198 Dec 14 16:52 arraysizeold.out
-rw-r--r--. 1 nibbler nibbler 7265 Dec 14 16:52 arraysizeold.tm
arraysizeold (Output OK)
====================================
FILE: assign.c-
./runExamples: line 11:  8192 Segmentation fault      ../c- $file.c- > $file
.out
-rw-------. 1 nibbler nibbler  608 Nov 21 12:38 assign.c-
-rw-------. 1 nibbler nibbler 1979 Dec 10 18:12 assign.expected
-rw-r--r--. 1 nibbler nibbler  150 Dec 14 16:52 assign.out
-rw-r--r--. 1 nibbler nibbler 4096 Dec 14 16:52 assign.tm
assign.out ztmp7922.txt differ: char 1, line 1
assign (Output DIFF)
                                >     ERROR(19): '=' requires operands of the
same type but lh
                                >     ERROR(19): '=' requires operands of the
same type but lh
                                >     ERROR(20): '=' requires operands of the
same type but lh
                                >     ERROR(20): '=' requires operands of the
same type but lh
                                >     ERROR(21): Symbol 'p' is not defined.
                                >     ERROR(21): Symbol 'q' is not defined.
                                >     ERROR(21): Symbol 'r' is not defined.
                                >     ERROR(22): '+=' requires operands of
type int but rhs is
                                >     ERROR(25): Too many parameters passed
for function 'fred
                                >     ERROR(25): '+' requires operands of type
int but rhs is
                                >     ERROR(26): Symbol 'linda' is not defined.
                                >     ERROR(27): Symbol 'linda' is not defined.
                                >     ERROR(27): '+' requires operands of type
int but rhs is
                                >     ERROR(31): The operation '+' does not
work with arrays.
                                >     ERROR(32): The operation '+' does not
work with arrays.
                                >     ERROR(32): '=' requires operands of the
same type but lh
                                >     ERROR(33): 'and' requires operands of
type bool but lhs
                                >     ERROR(33): 'and' requires operands of
```

```
type bool but rhs
                                   >      ERROR(33): The operation 'and' does not
work with arrays
                                   >      ERROR(33): '=' requires operands of the
same type but lh
                                   >      ERROR(34): The operation '+' does not
work with arrays.
                                   >      ERROR(34): Symbol 'xylophone' is not
defined.
                                   >      ERROR(37): '+' requires operands of type
int but lhs is
                                   >      ERROR(38): '+' requires operands of type
int but rhs is
                                   >      ERROR(39): '+' requires operands of type
int but rhs is
                                   >      ERROR(41): '+' requires operands of type
int but rhs is
                                   >      ERROR(42): Too many parameters passed
for function 'anni
                                   >      WARNING(12): Expecting to return type
int but function '
                                   >      Number of warnings: 1
                                   >      Number of errors: 27
------------------------------------            ------------------------
------------
                                   <
Memory Configuration: Data Addresses: 0-9999  Instructio   <
Loading file: assign.tm                            <
Halted                                        <
Bye.                                 <
===================================
FILE: assign1.c-
-rw-------. 1 nibbler nibbler  519 Nov 20 21:16 assign1.c-
-rw-------. 1 nibbler nibbler  233 Dec 10 18:12 assign1.expected
-rw-r--r--. 1 nibbler nibbler  233 Dec 14 16:52 assign1.out
-rw-r--r--. 1 nibbler nibbler 8807 Dec 14 16:52 assign1.tm
assign1 (Output OK)
===================================
FILE: assign2.c-
-rw-------. 1 nibbler nibbler   627 Nov 20 21:16 assign2.c-
-rw-------. 1 nibbler nibbler   233 Dec 10 18:12 assign2.expected
-rw-r--r--. 1 nibbler nibbler   233 Dec 14 16:52 assign2.out
-rw-r--r--. 1 nibbler nibbler 14748 Dec 14 16:52 assign2.tm
assign2 (Output OK)
===================================
FILE: assign3.c-
-rw-------. 1 nibbler nibbler   648 Nov 20 21:16 assign3.c-
-rw-------. 1 nibbler nibbler   245 Dec 10 18:12 assign3.expected
-rw-r--r--. 1 nibbler nibbler   245 Dec 14 16:52 assign3.out
-rw-r--r--. 1 nibbler nibbler 16031 Dec 14 16:52 assign3.tm
assign3 (Output OK)
```

```
====================================
FILE: assign4.c-
-rw-------. 1 nibbler nibbler    552 Nov 20 21:16 assign4.c-
-rw-------. 1 nibbler nibbler    245 Dec 10 18:12 assign4.expected
-rw-r--r--. 1 nibbler nibbler    245 Dec 14 16:52 assign4.out
-rw-r--r--. 1 nibbler nibbler  10758 Dec 14 16:52 assign4.tm
assign4 (Output OK)
====================================
FILE: assign5.c-
-rw-------. 1 nibbler nibbler    598 Nov 20 21:16 assign5.c-
-rw-------. 1 nibbler nibbler    297 Dec 10 18:12 assign5.expected
-rw-r--r--. 1 nibbler nibbler    297 Dec 14 16:52 assign5.out
-rw-r--r--. 1 nibbler nibbler  14781 Dec 14 16:52 assign5.tm
assign5 (Output OK)
====================================
FILE: assign6.c-
-rw-------. 1 nibbler nibbler   1624 Nov 21 11:59 assign6.c-
-rw-------. 1 nibbler nibbler    421 Dec 10 18:12 assign6.expected
-rw-r--r--. 1 nibbler nibbler    414 Dec 14 16:52 assign6.out
-rw-r--r--. 1 nibbler nibbler  29829 Dec 14 16:52 assign6.tm
assign6.out ztmp7922.txt differ: char 351, line 14
assign6 (Output DIFF)
WARNING(4): Expecting to return type int but function 'd     WARNING(4):
Expecting to return type int but function 'd
Number of warnings: 1                         Number of warnings: 1
Number of errors: 0                           Number of errors: 0
--------------------------------------        ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio     Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: assign6.tm                      Loading file: assign6.tm
777 1443 777                                  777 1443 777
777 1443 777                                  777 1443 777
777 1443 777                                  777 1443 777
777 1443 777                                  777 1443 777
777 1443 777                                  777 1443 777
777 1443 777                                  777 1443 777
0 0 0                                    |     777 1443 777
777 1443 777                                  777 1443 777
777 1443 777                                  777 1443 777
604506                                        604506
888 777                                       888 777
Halted                                        Halted
Bye.                                          Bye.
====================================
FILE: assigna.c-
-rw-------. 1 nibbler nibbler    443 Nov 20 21:16 assigna.c-
-rw-------. 1 nibbler nibbler    193 Dec 10 18:12 assigna.expected
-rw-r--r--. 1 nibbler nibbler    193 Dec 14 16:52 assigna.out
-rw-r--r--. 1 nibbler nibbler   6614 Dec 14 16:52 assigna.tm
```

```
assigna (Output OK)
====================================
FILE: b01.c-
-rw-------. 1 nibbler nibbler   56 Dec  7 11:02 b01.c-
-rw-------. 1 nibbler nibbler  194 Dec 10 21:39 b01.expected
-rw-r--r--. 1 nibbler nibbler  194 Dec 14 16:52 b01.out
-rw-r--r--. 1 nibbler nibbler 3140 Dec 14 16:52 b01.tm
b01 (Output OK)
====================================
FILE: b02.c-
-rw-------. 1 nibbler nibbler   56 Dec  7 11:02 b02.c-
-rw-------. 1 nibbler nibbler  193 Dec 10 21:39 b02.expected
-rw-r--r--. 1 nibbler nibbler  193 Dec 14 16:52 b02.out
-rw-r--r--. 1 nibbler nibbler 3140 Dec 14 16:52 b02.tm
b02 (Output OK)
====================================
FILE: b03.c-
-rw-------. 1 nibbler nibbler   56 Dec  7 11:02 b03.c-
-rw-------. 1 nibbler nibbler  193 Dec 10 21:39 b03.expected
-rw-r--r--. 1 nibbler nibbler  193 Dec 14 16:52 b03.out
-rw-r--r--. 1 nibbler nibbler 3114 Dec 14 16:52 b03.tm
b03.out ztmp7922.txt differ: char 179, line 7
b03 (Output DIFF)
Number of warnings: 0                          Number of warnings: 0
Number of errors: 0                            Number of errors: 0
------------------------------------           ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: b03.tm                         Loading file: b03.tm
13                                   |    11
Halted                                 Halted
Bye.                                   Bye.
====================================
FILE: b04.c-
-rw-------. 1 nibbler nibbler   56 Dec  7 11:02 b04.c-
-rw-------. 1 nibbler nibbler  192 Dec 10 21:39 b04.expected
-rw-r--r--. 1 nibbler nibbler  192 Dec 14 16:52 b04.out
-rw-r--r--. 1 nibbler nibbler 3140 Dec 14 16:52 b04.tm
b04 (Output OK)
====================================
FILE: b05.c-
-rw-------. 1 nibbler nibbler   56 Dec  7 11:02 b05.c-
-rw-------. 1 nibbler nibbler  193 Dec 10 21:39 b05.expected
-rw-r--r--. 1 nibbler nibbler  193 Dec 14 16:52 b05.out
-rw-r--r--. 1 nibbler nibbler 3140 Dec 14 16:52 b05.tm
b05 (Output OK)
====================================
FILE: b06.c-
-rw-------. 1 nibbler nibbler   56 Dec  7 11:02 b06.c-
```

```
-rw-------. 1 nibbler nibbler  193 Dec 10 21:39 b06.expected
-rw-r--r--. 1 nibbler nibbler  193 Dec 14 16:52 b06.out
-rw-r--r--. 1 nibbler nibbler 3140 Dec 14 16:52 b06.tm
b06 (Output OK)
====================================
FILE: b07.c-
-rw-------. 1 nibbler nibbler   55 Dec  7 11:02 b07.c-
-rw-------. 1 nibbler nibbler  195 Dec 10 21:39 b07.expected
-rw-r--r--. 1 nibbler nibbler  195 Dec 14 16:52 b07.out
-rw-r--r--. 1 nibbler nibbler 3059 Dec 14 16:52 b07.tm
b07 (Output OK)
====================================
FILE: b08.c-
-rw-------. 1 nibbler nibbler   58 Dec  7 14:48 b08.c-
-rw-------. 1 nibbler nibbler  192 Dec 10 21:39 b08.expected
-rw-r--r--. 1 nibbler nibbler  192 Dec 14 16:52 b08.out
-rw-r--r--. 1 nibbler nibbler 2997 Dec 14 16:52 b08.tm
b08.out ztmp7922.txt differ: char 178, line 7
b08 (Output DIFF)
Number of warnings: 0                          Number of warnings: 0
Number of errors: 0                            Number of errors: 0
------------------------------------           ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: b08.tm                          Loading file: b08.tm
T                                    |    F
Halted                                    Halted
Bye.                                     Bye.
====================================
FILE: b09.c-
-rw-------. 1 nibbler nibbler   65 Dec 10 21:34 b09.c-
-rw-------. 1 nibbler nibbler  192 Dec 10 21:40 b09.expected
-rw-r--r--. 1 nibbler nibbler  192 Dec 14 16:52 b09.out
-rw-r--r--. 1 nibbler nibbler 3165 Dec 14 16:52 b09.tm
b09 (Output OK)
====================================
FILE: b0a.c-
-rw-------. 1 nibbler nibbler   62 Dec 10 21:35 b0a.c-
-rw-------. 1 nibbler nibbler  192 Dec 10 21:40 b0a.expected
-rw-r--r--. 1 nibbler nibbler  192 Dec 14 16:52 b0a.out
-rw-r--r--. 1 nibbler nibbler 3113 Dec 14 16:52 b0a.tm
b0a (Output OK)
====================================
FILE: b0b.c-
-rw-------. 1 nibbler nibbler  324 Dec  7 11:02 b0b.c-
-rw-------. 1 nibbler nibbler  210 Dec 10 21:40 b0b.expected
-rw-r--r--. 1 nibbler nibbler  210 Dec 14 16:52 b0b.out
-rw-r--r--. 1 nibbler nibbler 7010 Dec 14 16:52 b0b.tm
b0b.out ztmp7922.txt differ: char 182, line 7
```

```
b0b (Output DIFF)
Number of warnings: 0                        Number of warnings: 0
Number of errors: 0                          Number of errors: 0
------------------------------------         ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: b0b.tm                         Loading file: b0b.tm
F T F T F F F T F T                      |    F T T T F F F T T F
Halted                                   Halted
Bye.                                     Bye.
===================================
FILE: basicAll.c-
./runExamples: line 11:  8349 Segmentation fault      ../c- $file.c- > $file
.out
-rw-------. 1 nibbler nibbler  5183 Nov 21 12:41 basicAll.c-
-rw-------. 1 nibbler nibbler  7386 Dec 10 18:12 basicAll.expected
-rw-r--r--. 1 nibbler nibbler  4248 Dec 14 16:52 basicAll.out
-rw-r--r--. 1 nibbler nibbler 12288 Dec 14 16:52 basicAll.tm
basicAll.out ztmp7922.txt differ: char 4097, line 62
basicAll (Output DIFF)
ERROR(16): Symbol 'cat' is not defined.           ERROR(16): Symbol '
cat' is not defined.
ERROR(18): Function 'dog' at line 12 is expecting to ret    ERROR(18):
Function 'dog' at line 12 is expecting to ret
ERROR(25): Function 'cat' at line 21 is expecting to ret    ERROR(25):
Function 'cat' at line 21 is expecting to ret
ERROR(28): Symbol 'cat' is already defined at line 21.      ERROR(28):
Symbol 'cat' is already defined at line 21.
ERROR(39): Function 'ox' at line 37 is expecting no retu    ERROR(39):
Function 'ox' at line 37 is expecting no retu
WARNING(42): Expecting to return type int but function '    WARNING(42):
Expecting to return type int but function '
ERROR(53): Symbol 'x' is already defined at line 52.        ERROR(53):
Symbol 'x' is already defined at line 52.
ERROR(54): Symbol 'x' is already defined at line 52.        ERROR(54):
Symbol 'x' is already defined at line 52.
ERROR(62): Symbol 'v' is not defined.                ERROR(62): Symbol 'v'
is not defined.
ERROR(64): Expecting Boolean test condition in if statem    ERROR(64):
Expecting Boolean test condition in if statem
ERROR(65): Expecting Boolean test condition in while sta    ERROR(65):
Expecting Boolean test condition in while sta
ERROR(66): Expecting Boolean test condition in while sta    ERROR(66):
Expecting Boolean test condition in while sta
ERROR(68): Cannot use function 'cat' as a simple variabl    ERROR(68):
Cannot use function 'cat' as a simple variabl
ERROR(69): '=' requires operands of the same type but lh    ERROR(69): '='
requires operands of the same type but lh
ERROR(70): '+=' requires operands of type int but rhs is    ERROR(70): '+='
```

```
requires operands of type int but rhs is
ERROR(71): '-=' requires operands of type int but lhs is    ERROR(71): '-='
requires operands of type int but lhs is
ERROR(72): '>' requires operands of type char or type in    ERROR(72): '>'
requires operands of type char or type in
ERROR(73): Unary '++' requires an operand of type int bu    ERROR(73): Unary
'++' requires an operand of type int bu
ERROR(75): Cannot use array as test condition in if stat    ERROR(75):
Cannot use array as test condition in if stat
ERROR(76): Cannot use array as test condition in while s    ERROR(76):
Cannot use array as test condition in while s
ERROR(78): Cannot have a break statement outside of loop    ERROR(78):
Cannot have a break statement outside of loop
ERROR(82): The operation '+' does not work with arrays.       ERROR(82):
The operation '+' does not work with arrays.
ERROR(83): The operation '<' does not work with arrays.       ERROR(83):
The operation '<' does not work with arrays.
ERROR(84): '<' requires operands of type char or type in    ERROR(84): '<'
requires operands of type char or type in
ERROR(84): '<' requires operands of type char or type in    ERROR(84): '<'
requires operands of type char or type in
ERROR(84): The operation '<' does not work with arrays.       ERROR(84):
The operation '<' does not work with arrays.
ERROR(86): '==' requires operands of the same type but l    ERROR(86): '=='
requires operands of the same type but l
ERROR(90): '+' requires operands of type int but lhs is     ERROR(90): '+'
requires operands of type int but lhs is
ERROR(92): '*' requires operands of type int but rhs is     ERROR(92): '*'
requires operands of type int but rhs is
ERROR(94): Unary 'not' requires an operand of type bool     ERROR(94): Unary
'not' requires an operand of type bool
ERROR(95): '+' requires operands of type int but rhs is     ERROR(95): '+'
requires operands of type int but rhs is
ERROR(95): Unary 'not' requires an operand of type bool     ERROR(95): Unary
'not' requires an operand of type bool
ERROR(96): Unary '-' requires an operand of type int but    ERROR(96): Unary
'-' requires an operand of type int but
ERROR(98): Cannot index nonarray 'x'.                 ERROR(98): Cannot index
nonarray 'x'.
ERROR(99): 'and' requires operands of type bool but lhs     ERROR(99): 'and'
requires operands of type bool but lhs
ERROR(99): 'and' requires operands of type bool but rhs     ERROR(99): 'and'
requires operands of type bool but rhs
ERROR(99): '*' requires operands of type int but rhs is     ERROR(99): '*'
requires operands of type int but rhs is
ERROR(100): Symbol 'y' is not defined.                  ERROR(100): Symbol 'y'
is not defined.
ERROR(100): 'and' requires operands of type bool but lhs    ERROR(100): 'and
' requires operands of type bool but lhs
ERROR(100): '*' requires operands of type int but rhs is    ERROR(100): '*'
requires operands of type int but rhs is
```

```
ERROR(101): 'and' requires operands of type bool but lhs     ERROR(101): 'and
' requires operands of type bool but lhs
ERROR(101): 'and' requires operands of type bool but rhs     ERROR(101): 'and
' requires operands of type bool but rhs
ERROR(101): '*' requires operands of type int but rhs is     ERROR(101): '*'
requires operands of type int but rhs is
ERROR(101): 'or' requires operands of type bool but rhs     ERROR(101): 'or'
requires operands of type bool but rhs
ERROR(103): The operation '*' only works with arrays.       ERROR(103): The
operation '*' only works with arrays.
ERROR(104): 'and' requires operands of type bool but lhs     ERROR(104): 'and
' requires operands of type bool but lhs
ERROR(108): Array 'aa' should be indexed by type int but     ERROR(108):
Array 'aa' should be indexed by type int but
ERROR(110): Cannot use function 'cat' as a simple variab     ERROR(110):
Cannot use function 'cat' as a simple variab
ERROR(112): Array index is the unindexed array 'aa'.       ERROR(112):
Array index is the unindexed array 'aa'.
ERROR(113): Symbol 'AA' is not defined.                 ERROR(113): Symbol '
AA' is not defined.
ERROR(115): Symbol 'meerkat' is not defined.            ERROR(115): Symbol '
meerkat' is not defined.
ERROR(117): Symbol 'xyzzy' is not defined.              ERROR(117): Symbol '
xyzzy' is not defined.
ERROR(118): Symbol 'meerkat' is not defined.             ERROR(118): Symbol '
meerkat' is not defined.
ERROR(119): Symbol 'xyzzy' is not defined.              ERROR(119): Symbol '
xyzzy' is not defined.
ERROR(119): 'and' requires operands of type bool but rhs    ERROR(119): 'and
' requires operands of type bool but rhs
ERROR(121): Symbol 'flight' is not defined.              ERROR(121): Symbol '
flight' is not defined.
ERROR(121): Unary 'not' requires an operand of type bool    ERROR(121):
Unary 'not' requires an operand of type bool
ERROR(121): Unary '-' requires an operand of type int bu    ERROR(121):
Unary '-' requires an operand of type int bu
ERROR(121): Symbol 'uu' is not defined.                  ERROR(121): Symbol '
uu' is not defined.
ERROR(121): Symbol 'y' is not defined.                  ERROR(121): Symbol 'y'
is not defined.
ERROR(121): '*' requires operands of type int but rhs is    ERROR(121): '*'
requires operands of type int but rhs is
ERROR(123): 'x' is a simple variable and cannot be------   |     ERROR(123):
'x' is a simple variable and cannot be calle
                                    |     ERROR(125): Too many parameters passed
for function 'dog
Memory Configuration: Data Addresses: 0-9999  Instructio   |     ERROR(126):
Too few parameters passed for function 'ibex
Loading file: basicAll.tm                    |     ERROR(128): Expecting type
int in parameter 1 of call to
Halted                                  |     ERROR(130): Not expecting array in
```

```
parameter 1 of call t
Bye.                                        |    ERROR(132): Expecting array in
parameter 1 of call to 'i
                                    >    ERROR(133): Expecting type int in
parameter 1 of call to
                                    >    ERROR(134): Cannot use function 'ibex'
as a simple varia
                                    >    ERROR(136): Cannot use function 'ibex'
as a simple varia
                                    >    ERROR(136): '+' requires operands of
type int but lhs is
                                    >    ERROR(139): Array index is the unindexed
array 'zz'.
                                    >    ERROR(140): Expecting type int in
parameter 1 of call to
                                    >    ERROR(140): Array 'aa' should be indexed
by type int but
                                    >    ERROR(142): '=' requires operands of the
same type but l
                                    >    ERROR(143): '+' requires operands of
type int but rhs is
                                    >    ERROR(144): Expecting type int in
parameter 1 of call to
                                    >    ERROR(145): Expecting type int in
parameter 1 of call to
                                    >    ERROR(148): '=' requires operands of the
same type but l
                                    >    ERROR(149): '=' requires operands of the
same type but l
                                    >    ERROR(150): '=' requires operands of the
same type but l
                                    >    ERROR(150): '=' requires operands of the
same type but l
                                    >    ERROR(150): '=' requires operands of the
same type but l
                                    >    ERROR(152): '*' requires operands of
type int but rhs is
                                    >    ERROR(152): '*' requires operands of
type int but lhs is
                                    >    ERROR(152): 'and' requires operands of
type bool but lhs
                                    >    ERROR(152): 'and' requires operands of
type bool but rhs
                                    >    ERROR(154): '+' requires operands of
type int but rhs is
                                    >    ERROR(154): Symbol 'parrot' is not
defined.
                                    >    ERROR(154): 'and' requires operands of
type bool but rhs
                                    >    ERROR(154): Expecting type int in
parameter 3 of call to
```

```
                                        >       ERROR(155): Expecting type int in
parameter 1 of call to
                                        >       ERROR(155): '+' requires operands of
type int but rhs is
                                        >       ERROR(155): Symbol 'parrot' is not
defined.
                                        >       ERROR(155): 'and' requires operands of
type bool but rhs
                                        >       ERROR(155): Expecting type int in
parameter 3 of call to
                                        >       ERROR(155): 'and' requires operands of
type bool but rhs
                                        >       ERROR(155): Expecting type int in
parameter 2 of call to
                                        >       ERROR(155): Expecting type int in
parameter 3 of call to
                                        >       ERROR(155): Too many parameters passed
for function 'emu
                                        >       ERROR(155): '*' requires operands of
type int but rhs is
                                        >       ERROR(157): Cannot return an array.
                                        >       Number of warnings: 1
                                        >       Number of errors: 101
                                        >       ------------------------------------
====================================
FILE: battleship.c-
-rw-------. 1 nibbler nibbler  4582 Nov 20 21:16 battleship.c-
-rw-------. 1 nibbler nibbler  2735 Dec 10 18:12 battleship.expected
-rw-------. 1 nibbler nibbler    51 Nov 21 11:33 battleship.in
-rw-r--r--. 1 nibbler nibbler 11732 Dec 14 16:52 battleship.out
-rw-r--r--. 1 nibbler nibbler 36973 Dec 14 16:52 battleship.tm
battleship.out ztmp7922.txt differ: char 199, line 9
battleship (Output DIFF)
Number of warnings: 0                            Number of warnings: 0
Number of errors: 0                              Number of errors: 0
------------------------------------             ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: battleship.tm                      Loading file: battleship.tm
entered: 311                                     entered: 311

                                        |      10
                                        |      4 4 4 4 4 4 4 4 4 4
                                        >      4 4 4 4 4 4 4 4 4 4
                                        >      4 4 4 4 4 4 4 4 4 4
                                        >      4 4 4 4 4 4 4 4 4 4
                                        >      4 4 4 4 4 4 4 4 4 4
                                        >      4 4 4 4 4 4 4 4 4 4
                                        >      4 4 4 4 4 4 4 4 4 4
```

```
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     entered: 34
>
>
>     9
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 0 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     entered: 45
>
>
>     8
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 0 4 4 4 4 4
>     4 4 4 4 4 0 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     entered: 56
>
>
>     7
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 0 4 4 4 4 4
>     4 4 4 4 4 0 4 4 4 4
>     4 4 4 4 4 4 0 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     entered: 11
>
>
>     6
>     4 4 4 4 4 4 4 4 4 4
>     4 0 4 4 4 4 4 4 4 4
```

```
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 0 4 4 4 4 4
>      4 4 4 4 4 0 4 4 4 4
>      4 4 4 4 4 4 0 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      entered: 22
>
>
>      5
>      4 4 4 4 4 4 4 4 4 4
>      4 0 4 4 4 4 4 4 4 4
>      4 4 0 4 4 4 4 4 4 4
>      4 4 4 4 0 4 4 4 4 4
>      4 4 4 4 4 0 4 4 4 4
>      4 4 4 4 4 4 0 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      entered: 33
>
>
>      4
>      4 4 4 4 4 4 4 4 4 4
>      4 0 4 4 4 4 4 4 4 4
>      4 4 0 4 4 4 4 4 4 4
>      4 4 4 0 0 4 4 4 4 4
>      4 4 4 4 4 0 4 4 4 4
>      4 4 4 4 4 4 0 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      entered: 44
>
>
>      3
>      4 4 4 4 4 4 4 4 4 4
>      4 0 4 4 4 4 4 4 4 4
>      4 4 0 4 4 4 4 4 4 4
>      4 4 4 0 0 4 4 4 4 4
>      4 4 4 4 0 0 4 4 4 4
>      4 4 4 4 4 4 0 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      4 4 4 4 4 4 4 4 4 4
>      entered: 55
```

```
>
>
>     2
>     4 4 4 4 4 4 4 4 4 4
>     4 0 4 4 4 4 4 4 4 4
>     4 4 0 4 4 4 4 4 4 4
>     4 4 4 0 0 4 4 4 4 4
>     4 4 4 4 0 0 4 4 4 4
>     4 4 4 4 4 0 0 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     entered: 66
>
>
>     1
>     4 4 4 4 4 4 4 4 4 4
>     4 0 4 4 4 4 4 4 4 4
>     4 4 0 4 4 4 4 4 4 4
>     4 4 4 0 0 4 4 4 4 4
>     4 4 4 4 0 0 4 4 4 4
>     4 4 4 4 4 0 0 4 4 4
>     4 4 4 4 4 4 0 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     4 4 4 4 4 4 4 4 4 4
>     entered: 77
>
>
>     0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
>
>     2 2 2 2 2 2 2 2 2 2
>     2 0 2 2 2 2 2 2 2 2
>     2 2 0 2 2 2 2 2 2 2
>     2 2 2 0 0 2 2 2 2 2
>     2 2 2 2 0 0 2 2 2 2
>     2 2 2 2 2 0 0 2 2 2
>     2 2 2 2 2 2 0 2 7 2
>     2 2 2 2 2 2 2 0 7 2
>     2 2 2 2 2 2 2 2 7 2
>     2 2 2 2 2 2 2 2 7 2
```

```
Halted                        Halted
Command 3 unknown.                <
                              <
Commands are:                     <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m   <
c(lear           Reset simulator for new execution of     <
d(Mem <b <n>>    Print n dMem locations (counting down     <
e(xecStats       Print execution statistics since last    <
g(o              Execute TM instructions until HALT        <
```

```
i(Mem <b <n>>      Print n iMem locations (counting up)    <
l(oad filename     Load filename into memory (default is   <
p(rint             Toggle printing of total number instr   <
q(uit              Terminate the simulation                <
r(egs              Print the contents of the registers     <
s(tep <n>          Execute n (default 1) TM instructions   <
t(race             Toggle instruction tracing (printing)   <
u(nprompt)         Unprompted for script input             <
x(it               Terminate the simulation                <
= <r> <n>          Set register number r to value n (e.g   <
< <addr> <value>   Set dMem at addr to value               <
(empty line does a step)                                   <
Also a # character placed after input will cause TM to h   <
Command 4 unknown.                                         <
                                    <

Commands are:                                              <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m    <
c(lear             Reset simulator for new execution of    <
d(Mem <b <n>>      Print n dMem locations (counting down    <
e(xecStats         Print execution statistics since last   <
g(o                Execute TM instructions until HALT      <
i(Mem <b <n>>      Print n iMem locations (counting up)    <
l(oad filename     Load filename into memory (default is   <
p(rint             Toggle printing of total number instr   <
q(uit              Terminate the simulation                <
r(egs              Print the contents of the registers     <
s(tep <n>          Execute n (default 1) TM instructions   <
t(race             Toggle instruction tracing (printing)   <
u(nprompt)         Unprompted for script input             <
x(it               Terminate the simulation                <
= <r> <n>          Set register number r to value n (e.g   <
< <addr> <value>   Set dMem at addr to value               <
(empty line does a step)                                   <
Also a # character placed after input will cause TM to h   <
Command 5 unknown.                                         <
                                    <
Commands are:                                              <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m    <
c(lear             Reset simulator for new execution of    <
d(Mem <b <n>>      Print n dMem locations (counting down   <
e(xecStats         Print execution statistics since last   <
g(o                Execute TM instructions until HALT      <
i(Mem <b <n>>      Print n iMem locations (counting up)    <
l(oad filename     Load filename into memory (default is   <
p(rint             Toggle printing of total number instr   <
q(uit              Terminate the simulation                <
r(egs              Print the contents of the registers     <
s(tep <n>          Execute n (default 1) TM instructions   <
t(race             Toggle instruction tracing (printing)   <
u(nprompt)         Unprompted for script input             <
x(it               Terminate the simulation                <
```

```
= <r> <n>          Set register number r to value n (e.g   <
< <addr> <value>  Set dMem at addr to value               <
(empty line does a step)                          <
Also a # character placed after input will cause TM to h   <
Command 1 unknown.                                <
                                    <
Commands are:                                 <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m   <
c(lear            Reset simulator for new execution of    <
d(Mem <b <n>>     Print n dMem locations (counting down    <
e(xecStats        Print execution statistics since last   <
g(o               Execute TM instructions until HALT        <
i(Mem <b <n>>     Print n iMem locations (counting up)     <
l(oad filename    Load filename into memory (default is    <
p(rint            Toggle printing of total number instr    <
q(uit             Terminate the simulation                 <
r(egs             Print the contents of the registers       <
s(tep <n>         Execute n (default 1) TM instructions    <
t(race            Toggle instruction tracing (printing)    <
u(nprompt)        Unprompted for script input             <
x(it              Terminate the simulation                 <
= <r> <n>          Set register number r to value n (e.g   <
< <addr> <value>  Set dMem at addr to value               <
(empty line does a step)                          <
Also a # character placed after input will cause TM to h   <
Command 2 unknown.                                <
                                    <
Commands are:                                 <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m   <
c(lear            Reset simulator for new execution of    <
d(Mem <b <n>>     Print n dMem locations (counting down    <
e(xecStats        Print execution statistics since last   <
g(o               Execute TM instructions until HALT        <
i(Mem <b <n>>     Print n iMem locations (counting up)     <
l(oad filename    Load filename into memory (default is    <
p(rint            Toggle printing of total number instr    <
q(uit             Terminate the simulation                 <
r(egs             Print the contents of the registers       <
s(tep <n>         Execute n (default 1) TM instructions    <
t(race            Toggle instruction tracing (printing)    <
u(nprompt)        Unprompted for script input             <
x(it              Terminate the simulation                 <
= <r> <n>          Set register number r to value n (e.g   <
< <addr> <value>  Set dMem at addr to value               <
(empty line does a step)                          <
Also a # character placed after input will cause TM to h   <
Command 3 unknown.                                <
                                    <
Commands are:                                 <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m   <
c(lear            Reset simulator for new execution of    <
```

```
d(Mem <b <n>>      Print n dMem locations (counting down   <
e(xecStats         Print execution statistics since last   <
g(o                Execute TM instructions until HALT       <
i(Mem <b <n>>      Print n iMem locations (counting up)    <
l(oad filename     Load filename into memory (default is    <
p(rint             Toggle printing of total number instr    <
q(uit              Terminate the simulation                 <
r(egs              Print the contents of the registers       <
s(tep <n>          Execute n (default 1) TM instructions    <
t(race             Toggle instruction tracing (printing)    <
u(nprompt)         Unprompted for script input             <
x(it               Terminate the simulation                 <
= <r> <n>          Set register number r to value n (e.g   <
< <addr> <value>   Set dMem at addr to value                <
(empty line does a step)                               <
Also a # character placed after input will cause TM to h   <
Command 4 unknown.                                    <
                                                 <
Commands are:                                    <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m   <
c(lear             Reset simulator for new execution of    <
d(Mem <b <n>>      Print n dMem locations (counting down   <
e(xecStats         Print execution statistics since last   <
g(o                Execute TM instructions until HALT       <
i(Mem <b <n>>      Print n iMem locations (counting up)    <
l(oad filename     Load filename into memory (default is    <
p(rint             Toggle printing of total number instr    <
q(uit              Terminate the simulation                 <
r(egs              Print the contents of the registers       <
s(tep <n>          Execute n (default 1) TM instructions    <
t(race             Toggle instruction tracing (printing)    <
u(nprompt)         Unprompted for script input             <
x(it               Terminate the simulation                 <
= <r> <n>          Set register number r to value n (e.g   <
< <addr> <value>   Set dMem at addr to value                <
(empty line does a step)                               <
Also a # character placed after input will cause TM to h   <
Command 5 unknown.                                    <
                                                 <
Commands are:                                    <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m   <
c(lear             Reset simulator for new execution of    <
d(Mem <b <n>>      Print n dMem locations (counting down   <
e(xecStats         Print execution statistics since last   <
g(o                Execute TM instructions until HALT       <
i(Mem <b <n>>      Print n iMem locations (counting up)    <
l(oad filename     Load filename into memory (default is    <
p(rint             Toggle printing of total number instr    <
q(uit              Terminate the simulation                 <
r(egs              Print the contents of the registers       <
s(tep <n>          Execute n (default 1) TM instructions    <
```

```
t(race              Toggle instruction tracing (printing)   <
u(nprompt)          Unprompted for script input             <
x(it                Terminate the simulation                <
= <r> <n>           Set register number r to value n (e.g   <
< <addr> <value>  Set dMem at addr to value               <
(empty line does a step)                            <
Also a # character placed after input will cause TM to h   <
Command 6 unknown.                                  <
                                    <
Commands are:                                       <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m   <
c(lear              Reset simulator for new execution of   <
d(Mem <b <n>>     Print n dMem locations (counting down   <
e(xecStats          Print execution statistics since last   <
g(o                 Execute TM instructions until HALT       <
i(Mem <b <n>>     Print n iMem locations (counting up)    <
l(oad filename    Load filename into memory (default is   <
p(rint              Toggle printing of total number instr   <
q(uit               Terminate the simulation                <
r(egs               Print the contents of the registers      <
s(tep <n>         Execute n (default 1) TM instructions   <
t(race              Toggle instruction tracing (printing)   <
u(nprompt)          Unprompted for script input             <
x(it                Terminate the simulation                <
= <r> <n>           Set register number r to value n (e.g   <
< <addr> <value>  Set dMem at addr to value               <
(empty line does a step)                            <
Also a # character placed after input will cause TM to h   <
Command 7 unknown.                                  <
                                    <
Commands are:                                       <
b(reakpoint <<n>> Set a breakpoint for instr n.  No n m   <
c(lear              Reset simulator for new execution of   <
d(Mem <b <n>>     Print n dMem locations (counting down   <
e(xecStats          Print execution statistics since last   <
g(o                 Execute TM instructions until HALT       <
i(Mem <b <n>>     Print n iMem locations (counting up)    <
l(oad filename    Load filename into memory (default is   <
p(rint              Toggle printing of total number instr   <
q(uit               Terminate the simulation                <
r(egs               Print the contents of the registers      <
s(tep <n>         Execute n (default 1) TM instructions   <
t(race              Toggle instruction tracing (printing)   <
u(nprompt)          Unprompted for script input             <
x(it                Terminate the simulation                <
= <r> <n>           Set register number r to value n (e.g   <
< <addr> <value>  Set dMem at addr to value               <
(empty line does a step)                            <
Also a # character placed after input will cause TM to h   <
Bye.                                     Bye.
===================================
```

```
FILE: break.c-
./runExamples: line 11:  8367 Segmentation fault      ../c- $file.c- > $file
.out
-rw-------. 1 nibbler nibbler  360 Nov 20 21:16 break.c-
-rw-------. 1 nibbler nibbler  397 Dec 10 18:12 break.expected
-rw-r--r--. 1 nibbler nibbler  509 Dec 14 16:52 break.out
-rw-r--r--. 1 nibbler nibbler 4096 Dec 14 16:52 break.tm
break.out ztmp7922.txt differ: char 12, line 1
break (Output DIFF)
ERROR(20): Cannot have a break statement outside of loop   <
ERROR(20): Expecting Boolean test condition in if statem    ERROR(20):
Expecting Boolean test condition in if statem
ERROR(22): Cannot have a break statement outside of loop   |    ERROR(20):
Cannot have a break statement outside of loop
ERROR(21): Expecting Boolean test condition in if statem    ERROR(21):
Expecting Boolean test condition in if statem
                                   >      ERROR(22): Cannot have a break statement
outside of loop
ERROR(LINKER): Procedure main is not defined.           ERROR(LINKER):
Procedure main is not defined.
Number of warnings: 0                          Number of warnings: 0
Number of errors: 5                          Number of errors: 5
------------------------------------                 ------------------------
------------
                                   <
Memory Configuration: Data Addresses: 0-9999  Instructio   <
Loading file: break.tm                      <
Halted                              <
Bye.                          <
===================================
FILE: break2.c-
-rw-------. 1 nibbler nibbler  317 Nov 20 21:16 break2.c-
-rw-------. 1 nibbler nibbler  222 Dec 10 18:12 break2.expected
-rw-r--r--. 1 nibbler nibbler  192 Dec 14 16:52 break2.out
-rw-r--r--. 1 nibbler nibbler 5989 Dec 14 16:52 break2.tm
break2.out ztmp7922.txt differ: char 181, line 7
break2 (Output DIFF)
Number of warnings: 0                          Number of warnings: 0
Number of errors: 0                          Number of errors: 0
------------------------------------                 ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: break2.tm                        Loading file: break2.tm
                                   >      0 0
                                   >      0 1
                                   >      0 2
                                   >      0 3
                                   >      0 4
                                   >      0 5
```

```
Halted                                 Halted
Bye.                                   Bye.
=====================================
FILE: c01.c-
-rw-------. 1 nibbler nibbler  100 Dec  7 11:02 c01.c-
-rw-------. 1 nibbler nibbler  194 Dec 10 21:40 c01.expected
-rw-r--r--. 1 nibbler nibbler  194 Dec 14 16:52 c01.out
-rw-r--r--. 1 nibbler nibbler 3371 Dec 14 16:52 c01.tm
c01 (Output OK)
=====================================
FILE: c02.c-
-rw-------. 1 nibbler nibbler  111 Dec  7 11:02 c02.c-
-rw-------. 1 nibbler nibbler  192 Dec 10 21:40 c02.expected
-rw-r--r--. 1 nibbler nibbler  192 Dec 14 16:52 c02.out
-rw-r--r--. 1 nibbler nibbler 3395 Dec 14 16:52 c02.tm
c02 (Output OK)
=====================================
FILE: c03.c-
-rw-------. 1 nibbler nibbler  103 Dec  7 11:02 c03.c-
-rw-------. 1 nibbler nibbler  192 Dec 10 21:40 c03.expected
-rw-r--r--. 1 nibbler nibbler  192 Dec 14 16:52 c03.out
-rw-r--r--. 1 nibbler nibbler 3394 Dec 14 16:52 c03.tm
c03 (Output OK)
=====================================
FILE: c04.c-
-rw-------. 1 nibbler nibbler   92 Dec  7 11:02 c04.c-
-rw-------. 1 nibbler nibbler  194 Dec 10 21:40 c04.expected
-rw-r--r--. 1 nibbler nibbler  194 Dec 14 16:52 c04.out
-rw-r--r--. 1 nibbler nibbler 3370 Dec 14 16:52 c04.tm
c04 (Output OK)
=====================================
FILE: c05.c-
-rw-------. 1 nibbler nibbler  110 Dec  7 11:02 c05.c-
-rw-------. 1 nibbler nibbler  194 Dec 10 21:40 c05.expected
-rw-r--r--. 1 nibbler nibbler  194 Dec 14 16:52 c05.out
-rw-r--r--. 1 nibbler nibbler 4440 Dec 14 16:52 c05.tm
c05 (Output OK)
=====================================
FILE: c06.c-
-rw-------. 1 nibbler nibbler  118 Dec  7 11:02 c06.c-
-rw-------. 1 nibbler nibbler  194 Dec 10 21:40 c06.expected
-rw-r--r--. 1 nibbler nibbler  194 Dec 14 16:52 c06.out
-rw-r--r--. 1 nibbler nibbler 4232 Dec 14 16:52 c06.tm
c06 (Output OK)
=====================================
FILE: c07.c-
-rw-------. 1 nibbler nibbler  128 Dec  7 11:02 c07.c-
-rw-------. 1 nibbler nibbler  192 Dec 10 21:40 c07.expected
-rw-r--r--. 1 nibbler nibbler  192 Dec 14 16:52 c07.out
-rw-r--r--. 1 nibbler nibbler 4204 Dec 14 16:52 c07.tm
c07.out ztmp7922.txt differ: char 178, line 7
```

```
c07 (Output DIFF)
Number of warnings: 0                            Number of warnings: 0
Number of errors: 0                              Number of errors: 0
------------------------------------             ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio   Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: c07.tm                             Loading file: c07.tm
F                                      |    T
Halted                                           Halted
Bye.                                          Bye.
===================================
FILE: c08.c-
-rw-------. 1 nibbler nibbler  120 Dec  7 11:02 c08.c-
-rw-------. 1 nibbler nibbler  192 Dec 10 21:40 c08.expected
-rw-r--r--. 1 nibbler nibbler  192 Dec 14 16:52 c08.out
-rw-r--r--. 1 nibbler nibbler 4412 Dec 14 16:52 c08.tm
c08.out ztmp7922.txt differ: char 178, line 7
c08 (Output DIFF)
Number of warnings: 0                            Number of warnings: 0
Number of errors: 0                              Number of errors: 0
------------------------------------             ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio   Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: c08.tm                             Loading file: c08.tm
F                                      |    T
Halted                                           Halted
Bye.                                          Bye.
===================================
FILE: c09.c-
-rw-------. 1 nibbler nibbler  130 Dec  7 11:02 c09.c-
-rw-------. 1 nibbler nibbler  200 Dec 10 21:40 c09.expected
-rw-r--r--. 1 nibbler nibbler  200 Dec 14 16:52 c09.out
-rw-r--r--. 1 nibbler nibbler 3938 Dec 14 16:52 c09.tm
c09 (Output OK)
===================================
FILE: c0a.c-
-rw-------. 1 nibbler nibbler  116 Dec  7 11:02 c0a.c-
-rw-------. 1 nibbler nibbler  200 Dec 10 21:40 c0a.expected
-rw-r--r--. 1 nibbler nibbler  200 Dec 14 16:52 c0a.out
-rw-r--r--. 1 nibbler nibbler 3863 Dec 14 16:52 c0a.tm
c0a (Output OK)
===================================
FILE: c0b.c-
-rw-------. 1 nibbler nibbler   95 Dec  7 11:02 c0b.c-
-rw-------. 1 nibbler nibbler  194 Dec 10 21:40 c0b.expected
-rw-r--r--. 1 nibbler nibbler  194 Dec 14 16:52 c0b.out
-rw-r--r--. 1 nibbler nibbler 3304 Dec 14 16:52 c0b.tm
```

```
c0b (Output OK)
===================================
FILE: c0c.c-
-rw-------. 1 nibbler nibbler  119 Dec  7 11:02 c0c.c-
-rw-------. 1 nibbler nibbler  194 Dec 10 21:40 c0c.expected
-rw-r--r--. 1 nibbler nibbler  194 Dec 14 16:52 c0c.out
-rw-r--r--. 1 nibbler nibbler 3382 Dec 14 16:52 c0c.tm
c0c (Output OK)
===================================
FILE: c0c2.c-
-rw-------. 1 nibbler nibbler  203 Dec  7 14:39 c0c2.c-
-rw-------. 1 nibbler nibbler  197 Dec 10 21:40 c0c2.expected
-rw-r--r--. 1 nibbler nibbler  197 Dec 14 16:52 c0c2.out
-rw-r--r--. 1 nibbler nibbler 4913 Dec 14 16:52 c0c2.tm
c0c2.out ztmp7922.txt differ: char 179, line 7
c0c2 (Output DIFF)
Number of warnings: 0                          Number of warnings: 0
Number of errors: 0                            Number of errors: 0
------------------------------------           ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: c0c2.tm                          Loading file: c0c2.tm
bbbbbb                              |      ABBBBB
Halted                                  Halted
Bye.                                 Bye.
===================================
FILE: c0d.c-
-rw-------. 1 nibbler nibbler  134 Dec  7 11:02 c0d.c-
-rw-------. 1 nibbler nibbler  194 Dec 10 21:40 c0d.expected
-rw-r--r--. 1 nibbler nibbler  194 Dec 14 16:52 c0d.out
-rw-r--r--. 1 nibbler nibbler 3661 Dec 14 16:52 c0d.tm
c0d (Output OK)
===================================
FILE: c0e.c-
-rw-------. 1 nibbler nibbler  166 Dec  7 11:02 c0e.c-
-rw-------. 1 nibbler nibbler  213 Dec 10 21:40 c0e.expected
-rw-r--r--. 1 nibbler nibbler  213 Dec 14 16:52 c0e.out
-rw-r--r--. 1 nibbler nibbler 5077 Dec 14 16:52 c0e.tm
c0e (Output OK)
===================================
FILE: c0f.c-
-rw-------. 1 nibbler nibbler  184 Dec  7 11:02 c0f.c-
-rw-------. 1 nibbler nibbler  213 Dec 10 21:40 c0f.expected
-rw-r--r--. 1 nibbler nibbler  207 Dec 14 16:52 c0f.out
-rw-r--r--. 1 nibbler nibbler 6007 Dec 14 16:52 c0f.tm
c0f.out ztmp7922.txt differ: char 179, line 7
c0f (Output DIFF)
Number of warnings: 0                          Number of warnings: 0
Number of errors: 0                            Number of errors: 0
```

```
------------------------------------                 ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: c0f.tm                          Loading file: c0f.tm
1                                     |    1024
                                   >    1024
1023                                   1023
0                                     <
1023                                   1023
Halted                                 Halted
Bye.                                   Bye.
===================================
FILE: c0g.c-
-rw-------. 1 nibbler nibbler  179 Dec  7 11:02 c0g.c-
-rw-------. 1 nibbler nibbler  213 Dec 10 21:40 c0g.expected
-rw-r--r--. 1 nibbler nibbler  207 Dec 14 16:52 c0g.out
-rw-r--r--. 1 nibbler nibbler 9861 Dec 14 16:52 c0g.tm
c0g.out ztmp7922.txt differ: char 179, line 7
c0g (Output DIFF)
Number of warnings: 0                      Number of warnings: 0
Number of errors: 0                        Number of errors: 0
------------------------------------                 ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: c0g.tm                          Loading file: c0g.tm
1                                     |    1024
                                   >    1024
1023                                   1023
0                                     <
1023                                   1023
Halted                                 Halted
Bye.                                   Bye.
===================================
FILE: c0h.c-
-rw-------. 1 nibbler nibbler  233 Dec  7 11:02 c0h.c-
-rw-------. 1 nibbler nibbler  218 Dec 10 21:40 c0h.expected
-rw-r--r--. 1 nibbler nibbler  215 Dec 14 16:52 c0h.out
-rw-r--r--. 1 nibbler nibbler 7150 Dec 14 16:52 c0h.tm
c0h.out ztmp7922.txt differ: char 178, line 7
c0h (Output DIFF)
Number of warnings: 0                      Number of warnings: 0
Number of errors: 0                        Number of errors: 0
------------------------------------                 ------------------------
------------

Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
```

```
Loading file: c0h.tm                        Loading file: c0h.tm
9997                              |    1024
0                                |    1024
9996                             |      1023
1023                             1023
1023 Halted                       1023 Halted
Bye.                             Bye.
===================================
FILE: c13.c-
-rw-------. 1 nibbler nibbler   605 Dec  7 11:02 c13.c-
-rw-------. 1 nibbler nibbler   228 Dec 10 21:40 c13.expected
-rw-r--r--. 1 nibbler nibbler   228 Dec 14 16:52 c13.out
-rw-r--r--. 1 nibbler nibbler 17854 Dec 14 16:52 c13.tm
c13 (Output OK)
===================================
FILE: c14.c-
-rw-------. 1 nibbler nibbler   159 Dec  7 11:02 c14.c-
-rw-------. 1 nibbler nibbler   194 Dec 10 21:40 c14.expected
-rw-r--r--. 1 nibbler nibbler   194 Dec 14 16:52 c14.out
-rw-r--r--. 1 nibbler nibbler  4475 Dec 14 16:52 c14.tm
c14 (Output OK)
===================================
FILE: c15.c-
-rw-------. 1 nibbler nibbler   152 Dec  7 11:02 c15.c-
-rw-------. 1 nibbler nibbler   194 Dec 10 21:40 c15.expected
-rw-r--r--. 1 nibbler nibbler   194 Dec 14 16:52 c15.out
-rw-r--r--. 1 nibbler nibbler  4677 Dec 14 16:52 c15.tm
c15 (Output OK)
===================================
FILE: c16.c-
-rw-------. 1 nibbler nibbler   168 Dec  7 11:02 c16.c-
-rw-------. 1 nibbler nibbler   194 Dec 10 21:40 c16.expected
-rw-r--r--. 1 nibbler nibbler   194 Dec 14 16:52 c16.out
-rw-r--r--. 1 nibbler nibbler  5107 Dec 14 16:52 c16.tm
c16 (Output OK)
===================================
FILE: c17.c-
-rw-------. 1 nibbler nibbler   160 Dec  7 11:02 c17.c-
-rw-------. 1 nibbler nibbler   199 Dec 10 21:40 c17.expected
-rw-r--r--. 1 nibbler nibbler   199 Dec 14 16:52 c17.out
-rw-r--r--. 1 nibbler nibbler  5689 Dec 14 16:52 c17.tm
c17 (Output OK)
===================================
FILE: c18.c-
-rw-------. 1 nibbler nibbler   168 Dec  7 11:02 c18.c-
-rw-------. 1 nibbler nibbler   199 Dec 10 21:40 c18.expected
-rw-r--r--. 1 nibbler nibbler   199 Dec 14 16:52 c18.out
-rw-r--r--. 1 nibbler nibbler  5492 Dec 14 16:52 c18.tm
c18 (Output OK)
===================================
FILE: call.c-
```

```
-rw-------. 1 nibbler nibbler  1380 Nov 20 21:16 call.c-
-rw-------. 1 nibbler nibbler   556 Dec 10 18:12 call.expected
-rw-r--r--. 1 nibbler nibbler   535 Dec 14 16:52 call.out
-rw-r--r--. 1 nibbler nibbler 46731 Dec 14 16:52 call.tm
call.out ztmp7922.txt differ: char 458, line 11
call (Output DIFF)
WARNING(3): Expecting to return type int but function 's    WARNING(3):
Expecting to return type int but function 's
WARNING(9): Expecting to return type int but function 's    WARNING(9):
Expecting to return type int but function 's
WARNING(20): Expecting to return type int but function '    WARNING(20):
Expecting to return type int but function '
Number of warnings: 3                           Number of warnings: 3
Number of errors: 0                             Number of errors: 0
-------------------------------------              ------------------------
------------


Memory Configuration: Data Addresses: 0-9999  Instructio    Memory
Configuration: Data Addresses: 0-9999  Instructio
Loading file: call.tm                           Loading file: call.tm
111                                 111
                                    | 0 1 2 3 4 5 6 333 8 9 |
T                                   T
111                                 111
0 T                                 0 T
0 12321                             0 12321
110889                                110889
443556                                443556
603729                                603729
24975                                 24975
333
```

Chapter 13

简化数据

261 个 test 文件：

完全正确的测试文件 117 个，占 44.8%；完全没做的测试文件 19 个，占 7.3%；其余半对的不对的，我自己也没时间去数就让同专业的小伙伴们帮忙来数、来作鉴定、指导我吧。compiler 框架搭起来，多少也该给些分的吧 ~

我不认为难，但我真的是没有足够的时间，实在是写不完这牛毛一样多的测试 ~ *_^

上一贴最后总结部分重贴如下 (不同专业的读者可以完全忽略上一贴)：

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Chapter 14

要不要选 EC 课

14.1　要不要选 EC 课 (1)

春天的课，上学期那个另一个 campus 里统计相关课的老师，这学期还会教一门 Neural Network 课，但我已经不敢再去选了。编译课得 C 之后，我对选课非常缺乏安全感。选外校老师的课，apply 天下乌鸦一般黑的理论，我担心自己会下场很惨淡、会死得不明不白！外加从编译课反映出的、当我学习上有困难的时候，我对代课老师的依赖性，我就会担心因为距离的关系，同代课老师没办法有效沟通。

接下来的学期，如果我真还有奖学金，我最感兴趣的是 AI 老师的 Evolutionary Computation 课。我有统计背景，在放弃 Neural Network 课后，帮助自己 combine majors、锻炼编程，EC 课都可以成 NN 课一个很好的替代。

这门课，几个中国学生里就只有板块上过。

当我问及板块他 EC 课的上课内容、上课效果时，他说当年他选的那门 EC 课是我编译课代课老师教的；而且他选 EC 课时是与编译课一起选的（他的编译课老师是我 cs210 的老师，也与他 game theory 老师同一人。他告诉我说，一方面 EC 课的内容太难，根本听不懂老师在讲什么，一方面他两门大课是同一学期一起选的，根本就没时间能写完作业。他的 EC 课要求三个项目，他只有第一个项目写得很不错、达到要求；第二个项目离想要的结果还差一个什么关键步骤他还没弄懂；第三个项目是抄的一个上（上上？）届美国学生的 (这个项目是从闺密手上拷过去的，是闺密另一门课的美国同学的，被闺密不小心拷了过来的)，所以学得极差。我也非常好奇他居然会这样，便也就问了他这两门课的成绩。他说他就只有时间、认真去写了编译课的作业，EC 课既没时间写、也没怎么下功夫，结果是编译课老师给了 A，EC 课老师给了 B。

14.2　要不要选 EC 课 (2)

我也直接问过板块，我适不适合去上这门课。他给我的答案是否定的。他说上这门课根本就没什么用。因为很难，老师上课讲的内容根本就听不懂 (看来同一个老师的代课风格给学生带来的感受是相似的 ~)，写起作业来就特别麻烦；而且学了这门课之后，找工作还根本就用不到它！

我也自己去问过 AI 老师，代课老师所表现出的欢喜、欣然向往让我能清楚地辨认 EC 老师是希望我选这门课的。但是有编译课的痛苦教训在前，看着 AI 老师那么真诚地希望我选这门课，我的戒备心这个时候也有之前几倍大！我怕呀，板块说这门课的授课内容这么难，我怕我会被拍死在这门课的沙滩上——毫无悬念、轻松写意无压力，最终直接导致自己毕不了业 ~ !!

老师看得出我的担心和犹豫，而且仿佛他也正有此心、并不避讳，所以也不会去强迫我选，建议我去问他的一个美国 ph.D 学生他的上课体验。但那毕竟是美国学生，而且别人是 ph.d 学生本身就已经说明别人是热爱学习、酷爱钻研，从来就是属于学习最好的一类呀。他当然会说那课极其简单，问题是这话我能信吗？

从板块的建议来看，似乎，我应该放弃。但是，我上过 EC 老师的 AI 课，我上学期也上过他的 EC 老师代的编译课，虽然我前导师的 industry 工作经验、编程能力都还是很强大的，但他没有 AI 老师那种分析问题的直觉能力，所以他的课讲就并没有 AI 老师来得透彻。接下来学期的 EC 是 AI 老师代的，我应该听课效果一定会比编译课好。但是，老师授课内容的难易程度我就不知道了。

从什么时候起，选一门本校老师的课也变得这么困难了？

就这门接下来的 EC 课，我给板块打过至少三次电话，反复同他确认，他上课的感受、体验和难易程度；我也找 AI 老师谈过两三次，或许也为配合我的心理需求，那个寒假，EC 老师和他的 ph.d 美国学生常常呆在、往返于他们的项目 office 一一就在我的学生 office 斜对面，这在平时、甚至学期中都是不常见的。但是，我内心极其挣扎，迟迟下不了决心。

14.3 要不要选 EC 课 (3)

高中物理早就学过，力的作用是相互的。面对编译课 C 的成绩，同代课老师一样，内心里，此时的自己也同样是这样一匹桀骜不训的野马（绝大部分时间，偶实际上是是羔羊的!!），我又如何能屈服在这种压力下？

虽然转专业后第一年的圣诞节我还哭过，但我不记得那时候的自己究竟去干嘛了。这么些年来，专业领域里，编译课得了 C 之后，我第一次有了自发的愿望想要去学习，想让自己就像小时候盼望家里养着的小猪吃得多点儿、长得肥点儿壮点儿一样，我多么希望自己能够快快地长膘长肥长壮、增加防御力，以盼望来年在与代课老师的交峰中得以生存下来！于是，这个寒假，我默默地努力、悲愤地学习，虽然学习的目的仿佛是为了报仇，自己还委屈得像个孩子！

leetcode 的那些题对那时的自己似乎还太难了 (几乎是从来没有作为算法题，连算法课都是旁听的)，那时我去试过一两个题目，感觉一点儿也不舒服，完全没有一点儿希望和满足感。后来，从网上搜到 cc150，搜到一个谁的 blog 里还有稍微有些中文提示和请解，便就开始了差不多一天一章的节奏地啃那些题目。我的 cs120、cs121 基本就只完成了完成了老师布置的作业，编译课的老师的评价是对的，我绝对欠缺 programming skills。等把这些题目都做完，就真的感觉自己 manage program 的 power，嘿嘿，又增强了一点儿！现在回想起来，付出努力总是会有收获的。如果那个寒假没有这样一个过程，我又如何保证在接下来一个学期中我就真能胜任存活呢？

鲁迅先生说，沉默啊沉默，不在沉默中暴发，就在沉默中消亡。我后知后觉、不明不白、不明觉厉地死在了 compiler 课上；如果还有来生，如果我还有再选大课的机会，我愿意直面这惨淡的人生，要么编程能力在 EC 课上升华，要么死在这门课上死个理直气壮、心悦诚服 ~ 能心服口服地死在这门课上，谁又能否认这是对我这个强大、桀骜不驯的灵魂的一种解脱呢 ~ *_^

Chapter 15

灰蒙蒙的寒假

成也潇何、败也潇何，风潇潇兮易水寒，壮士一去兮不复还。我稍显安稳满足、潜心深入学习的心境，伴随着编译课 C 的到来，就一去再也不复返了。

如果说知道期末成绩前的自己，还有着邻家女孩般的纯真，还能够愉快地玩耍，那编译课 C 这个成绩就把自己直接变成了一个兵、一个随时准备上前线打仗的战斗兵。

高二暑假算命先生占卜说我将来会很有名时，我一脸茫然。我一普天下最普通平凡不过的草根，会去成名，无异于黄梁美梦般春秋大梦一场。大二还是大三 (应该是、极有可能是大三，记不清了) 上的 11 月 19 日，专业课老师带领我们 (这一专业这一年级的学生，还是整个学院三个专业这一年级的学生我也不记得了) 去黄铍参观温室无公害蔬菜种植园。借着一场大雨浇灌洗涤带来的" 清纯"，和着这颗善于思考、敢于发问的脑袋、孜孜以求的气质，虽然我的某些问题也难免幼稚稚嫩，再外借回答我们问题学长前辈的一点儿欣赏、提携，我已经在校园里小有名气。

近十年后，一场意外最终导致自己被人肉、从海底打捞。但我还是那个最为普通的小人物，在样一个小学校里还受着老师们的种种摆布。

亲爱的读者，写到这里，我就不得不多说几句真心话了。秋天学校里的策略、我的考试结果已经给打到那个份上，我又一次被迫站在了人生的十字路口。那时，人们想要了解我这个草根的热潮早已退去，我的命运在这一刻随时都可以被改写。此刻，我愿借这次出来写的机会，真诚地对这个网站这两年里对我默默的看顾表达自己由衷的感谢。没有这份恩惠、没有这份萦绕、旋转在我破烂小学校上空的监督力量，我春天两学分后现在应该已经滚回国了 ~ 但正是这份影响力的存在，系里老师们惊诧，但他们也不敢大意、保留了我的奖学金，我才能够在春天里还有再选课的机会。这也是自己这次再次站出来写——把自己的经历写出来供华人同胞借鉴参考——的主要动力来源之一。

Chapter 16

与室友的邮件

16.1   Internet

(roommate) You replied on 11/19/2013 7:45 AM. Sent: Thursday, October 31, 2013 6:12 PM To: (me~) Attachments: 2013-10-24.pdf? (996 KB?)[Preview on web]; Time Warner10:31:13.tiff? (375 KB?)

The Time Warner bill has been payed for the last two months. When you can, could you please get me your half of the bill?

If you have any questions, give me a call.

Thanks,

(roommate)

16.2   Changing Roommate

(me~) ((me~)@XX.XXXXXX.edu) Sent: Tuesday, November 19, 2013 7:45 AM To: (roommate)

Hi (roommate),

I have left two voice messages for you recently. My chinese friends downstairs are looking for a female roommate, but they found a male. And they are thinking I move downstairs so that the male they found can move upstairs living with you. I am not sure if you are ok with you, so I want to get your answer.

When you get this message, please reply or give me a call as soon as possible. They are waiting for the answer the whole day.

Thanks, (me~)

16.3   Internet Bill

(roommate) [(室友)@gmail.com] Sent: Sunday, January 05, 2014 12:35 AM To: (me~) ((me~)@XX.XXXXXX
Attachments: Timewarner Dec.tiff? (202 KB?)

Hello,

This is the Internet bill from the last 2 months. Your Portion of the bill is $56.

I will get the Avista Power bill sent to you once the receipt is sent to me.

Thanks,

(roommate)

16.4   Avista

(roommate) (smit4967@XX.XXXXXX.edu) You replied on 1/13/2014 9:20 AM. Sent: Sunday, January 05, 2014 12:52 AM To: (me~) ((me~)@XX.XXXXXX.edu) Attachments: Avista jan.tiff? (225 KB?)

Hey,

This is the powerbill. Your portion is $94.37.

Thanks,

(roommate)

16.5   RE: Avista

(me~) ((me~)@XX.XXXXXX.edu) Sent: Sunday, January 05, 2014 8:28 PM To: (roommate) ((roommate)@XX.XXXXXX.edu)

hi, (室友),

I have got your email, and I will write a check to you to pay all of the bills when you come back and move.

But one thing I am not sure about the internet. Have you changed the password recently? I am not able to use it since probably last night. And still, would it be possible for you to call and help change the internet to be cheaper one before you move out? since I am in town, if you help make the telephone call, I can be stay at home and waiting for the service man to come if needed. I just don't feel that confident that after you leave my new homie and I can get this fixed at all.

thanks, (me~)

16.6   RE: Avista

(me~) ((me~)@XX.XXXXXX.edu) You replied on 1/14/2014 5:20 AM. Sent: Monday, January 13, 2014 9:20 AM To: (roommate) ((roommate)@XX.XXXXXX.edu)

hi (roommate),

Sorry I have to write to you to make things clear.

First of all, I own you some money for internet and powerbill, please don't worry about them, and I will pay you as soon as you want.

The other part is, I have not received the history you mentioned yet. I mean I will need the evidence where we are for the bills. For example, the internet bill we paid is up to 12/4/13 or 1/4/14, power bill is up to 12/15/13, I want evidence so that we can get all these clear and I can explain to my new homie as well.

I appreciate that you have helped pay all these bills for me. I haven't been trouble with those things at all. But I would also need you to help set up my accounts so that we can continue paying them later on.

Please help us get these all fixed and set before I sign the transfer docus for you tomorrow.

Please also understand that I don't have any bad impression on you at all. The way and reason I need you to help us get all these clear before I sign docus for you is that it is the only way as an international I can do to protect myself and new homie from suffering. It may feel wired but please help understand and be considerate. I will call you tomorrow between 1 & 2 after I having received bill statements and get my department-related things done.

hopefully we can get the things done smoothly today.

thanks, (me~)

16.7   RE: Avista

(me~) ((me~)@XX.XXXXXX.edu) Sent: Tuesday, January 14, 2014 5:20 AM To: (roommate)@XX.XXXXX
hi (室友),

Today when we tried to clear out things, I did not realize that you were taking the internet box away with you, and you never mentioned that to me before the last moment. And I remembered that we have payed \$50 for the rent which supposed to return to us(刚装网那天他说总账单是 110，我付了他 \$55，他说有这么多是因为要负 \$50 rent). Would you please return my part that \$25 to me personally by calling me to meet somewhere on campus?

I have left two voice message in your phone today already. I have always been responsible for all your requirements, and I hope you can behavior the same for me.

Ooh by the way, I am writing stories online publicly about my life on bbs, hopefully later on when I continue to write, you as my homie in U of X will be part of the story, and I promise I can help make(promote) you famous in US if you want.

thanks, (me~)

Chapter 17

与室友

17.1　与室友 (1)

其实原本不想写这一环节的，但因为之前有气的时候提到过一种处理方式。就当是对当时气话的反思吧。

这一年里，我基本就只精中集力在自己的学习，其它的事进不了我心里，仿佛他们与我无关。我也就九月份家里安装网后付了室友 $55 网费；后来 10 月底付过他个 $25 还是 $35 记不清了。后来就再也没有付过什么钱。

期间，我楼下有个中国访问学者的姐姐下学期会搬走，二月分找室友不太好找。大家都是中国人，所以大家就商量着说，他们如果找到个男生，就看能不能让男生搬上来与我室友住，我搬楼下去与那个中国女孩子住。学者姐姐急着等答复，我打室友电话不通之后，就给他写了邮件，想知道他的想法。后来晚上他回去后，不知道是因为我的口音还是什么原因，不知道他到底听明白没有，还是我给他留下了我觉得他作为室友不够好的假印象。但实际上我并没有那个意思啊。有一次在楼下吃饭，我还与饭桌上的小伙伴们分享观点说，最开始我还在作梦想着两人一人一次公平地打扫卫生，后来想想，人家一个二十岁的小年青，我要人家打扫卫生好像也太不人道、太委屈人家年轻人了! 后来就看着脏了实在忍不下去了就自己打扫一下。我还在对小伙伴们说，他就提了两次网费啊钱的事儿，我不提这个话题，别人也不问，就只默默地把那些该交的钱全交了! 小伙伴们也分享着他们交钱的方式，我真心觉得在交各种费用这事儿，有这样的室友，上我实在是太省心了。

后来寒假 1 月 4 日他给我打电话说他想节约 expense，要搬去与他女朋友住，我当然很理解、很支持，搬走就搬走嘛，人家的 life 要 move on，难道我要把别人拴在这里不成? (那时候的我对他还基本没有任何成见，邮件里还很真诚地提出他能不能帮家里的网换一下。如果有成见，应该也不会说那样的话了。)

17.2　与室友 (2)

他原本说马上就搬家，但是他左等右等到了一个搬走时还要借外界舆论黑一下我的日子 (具体原因我也不记得了，只是感觉很不舒服)。后来搬家当天，签各种账单的时候，来的人有我新室友，他一个男性朋友 (后来听我室友说，那个就是他新室友，我就不明白他有什么必要要骗我? 善意的谎言? 不过也不是什么大不了的欺骗，没必要在意) 我们总共四个人在场。我给他写 check 的时候还问他，平均分账单的话，他就出了我们这新一个月的网费的一半，但实际上他要搬走不再用这个月的网了，所以我应该自己出这个月网费的 $55 块，我应该不需要他出这 $27 的；他坚持说我只出一半就可以了，我也就顺了他。

别人已经这么体谅了，而实际上他在家里做饭很少，我无论如何也需要把这个礼还回去。虽然九月份不用暖气的时候我们家电费一个月总共也就不到 $20 块钱，整个费用里我还是自愿比他多出了接近 $30 作为我自己在家做饭多用电应该付出的部分。

他那最后一次回去，我们把这一切都算好了，我写好了支票给了他。后来，他把我们家里的网、那个什么盒子撤走了，但当时我没有反应过来。我的新室友似乎是他的死党，也没有提醒过我。我们还去租房的 office 帮他们签好字，回想起来还觉得稍有不平：我要签字的时候我把表格带回家，请他帮签，再送回去；轮到他们的时候就变了我去 office 里帮他们签，不过也不是什么大事。

倒是回想起那个 $27 的网费，和九月初 $50 的租金，在我已经多付了 $30 的情况下，我的前室友还以那种欺骗的形式对我，回想起来还是很伤人了一阵子，也不怪乎当时还给他写过邮件、说过气话 (实际上，我也没有能力可以让他出名呀 ~ *_^)。

不过后来春天，我在各种压力、环境影响下，常常晚上睡不着的时候，回想起这个室友曾经帮我交过几乎所有的账单，至少也没怎么吵到我休息的时候，这个前室友还是最终转化成为一股强大的治愈力量促使我去忘掉过去。现在想起来，可能别人担心我一分钱都不会多出，才作出前面的决定吧，还觉得自己不够自知之明，应该一开始就提出自己多出，好方便解决问题的。

Chapter 18

冒牌医生与假想病人

18.1 冒牌医生与假想病人 (1)

其实从春天上 RTOS 课的时候，就认识了底层自己 OFFICE 层有一个老美学生。同这个人了解的多一点儿，就发生些相对好玩儿的事。

他个头不高，人墨西哥人血统，留着葫子和辫子，是我后来导师的 ph.D 学生。

那是我刚上 RTOS 课不久，老师居然还给了我们 graduate student 每人一块 ATmega32A 的 processor，和一根 serial USB 线。那时的自己很水，什么也不懂，还没办法把这一套编译流程成功地安装到自己的 Ubuntu Linux 系统 (汗，后来是在夏天在使用 emacs 的启发下，才对语言配置、这些软件的安装、各种 shell 命令的使用才慢慢开始 make sense)。

那时，导师推荐他的一个学生、也是一个 EECS 的我的同学帮我装，据说他对这个方向特别有兴趣，是给系里的 IT service 打工帮忙的人，但不知道是他受老师启发并不诚心帮我装还是怎么的，居然 linux 下还是不 work。后来，无奈之下，我就去找到了这个大胡子老美，以后暂且叫他大胡子吧。

大胡子直接说 linux 下的这套东西太麻烦，他自己就根本不用，他用 Visual Studio，建议我也用这个。没办法，我这是我唯一还没试过的 solution 了，用也得用、不试也得试，就只能硬着头皮往前走啊。后来，检查出来是老师给我的那根线不能用，我们试过好几次的；后来，他推荐说 Radio Shack 有这种线卖，他从网上买过一根，大概 $27；他把他自己的线拿给我看，我这人也是奇懒吧，虽然我已经记下了这根线的所有参考指标，但还是说说我怕我找到的还是不对啊，要不，你帮我找吧，我到时把钱给你。他思考过一番后，从他 office 里拿出一根新的未开封的线给我，说这原本是他的备份，我若要用，先拿去用，他回头再买! 见别人这么帮忙，后来我就给了他 $30，很感激他的帮忙，虽然不是我想用的 linux，好歹这个环境已经可以运行了，我可以写我的作业啦～

18.2 冒牌医生与假想病人 (2)

春天的联系就仅限于这门课上、学习相关的联系。后来到了秋天，联系就多了起来。

秋天回去，因为我们同上编译课，加上刚从加州回去，我比同班小伙伴已经晚了一个周，也需要补果，也怀念小伙伴、也需要朋友，也不记得当时怎么说的了，我就直接坐到了他的 office 里学习。他的 office 很大，是一个原本比较大的实验室改装成了四壁桌椅的 office，所以有很多座位。

认识他的时候我并不知道他有多大，后来了解多一点儿，听他说三十多岁。同自己一样，这又是一个辗转反侧的人生。

他是双鱼座的男生，纯真可爱，也很善良。那阵儿我 Mountain biking 的时候，从 ebay 上买了件大陆的骑行短裤、背上水袋包和一把他推荐的防身随身用的军刀，但我没有账户 (实际上我有账户，但是太久没有用过了，密码我就全忘了)。他仿佛是个百事通，这种网站的账户、信用卡绑定，他似乎从来都一应俱全的。他就帮我先付上了这所有的账单。

因为在同一个 office，后来他意识到我用 $230 买闺密的二手笔记本电脑 CPU 只有 2.28 G 的时候，就自己默默地从 ebay 上买了个 2.8 G 的 CPU，等货到手之后才战战兢兢地对我说，他不能保证他一定能帮我换得好，"手术"有风险，"签字"需谨慎! 他的 office 里各种各样的二手笔记本、三四个宽屏显示器，曾经用过、更新换代淘汰下来的 CPU、内存卡条、硬盘等像陈列在博物馆里一样摆放出一个气势恢弘的警卫队阵列来!

18.3　冒牌医生与假想病人 (3)

我就对他说，没问题的，我相信你有这个能力! 万一换了不 work(新到手的二手 2.8 G 双核 CPU 不 work 的话)，我们再把它换回去! 万一万一笔记本寿终正寝死翘翘了，他随便给我个他 office 里的笔记本让我能将就着用到毕业就可以了 (我不是闺密或 A 那样的显示屏审美艺术家，对这些东西，仿佛我从来就没什么陶醉与向往，汗)~ *_^

虽然我是学计算机专业的，但我是个"如假包换"的，对计算机的这些内部部件构成及其功用完全就不真正理解的呀 ~ 对大神的景仰之情就如同滔滔江水般滚滚袭来，我不想扫了大家的兴致，虽然半小时后就是 compiler 课，难得大家这么默契地有了共同的向往，此时此刻、说换就换! 我从来没见过折开过的笔记本，至于怎么拆开键盘、拔开各种接头等等等等，我一头雾水、眼睛原本不大却睁得特别大，就像刘姥姥进大观园般亲眼谨慎地目睹着这一切的发生，仿佛此刻，我正在经历、咀嚼着自己生命的奇迹 ~ 大胡子也还是很谨慎的，大概我笔记本 CPU 那片儿的结构他也还不是很熟悉吧，在拆某些重要部件前，为防止我们会忘记它们的身材、长相和舞姿，还特意要我用手机拍照留恋一番 ~ !! 大概大半个小时后，重要部件就连好了，重启一遍，没有任何问题，PASS!!! 然后我们把所有部件归位，上螺蛳 ~ 那天的编译课我迟到了一刻钟，但迟到得底气十足 ~

他告诉我这块芯片的价格只有 $36.5，但亲眼目睹了这里面的时间、工作和风险成本，同他商量说我只出得起穷人的成本，大家同意说 $40，好说好商量 ~ !! 我答应他，到时我欠他的钱等那些从大陆来的物品到齐后我一起给他，他也是好说话的人，不以为意，并没什么意见。

18.4　冒牌医生与假想病人 (4)

后来，我的导师从他研究课题上 push 他，他把编译课 drop 掉了，我们共同学习似乎也没有了必要。现在想来，导师应该是非常清楚那学期的编译课要打战场刷人，大胡子是凭兴趣学习的人，几乎完全没有耐性，先前板块上过的那门游戏课他都选了两次才过，势必会在这门课中被废掉。其实大概应该是导师帮他规避了这种风险。

那学期我迟到了开学第一周，要补的课很多，compiler 的作业也是逻辑相当混乱、一头雾水，所以那学期的学习也相当努力。而他还时不时地、四平八稳地沉浸在他的游戏世界里。

这是一个三十多岁的年青人，同自己一样或是更甚，生长在一个残缺不全的家庭里，实现了我高三时曾经的梦想——四处流浪，二十来岁的年龄里也颇有一番波折动荡。近几年来，回到校园，读硕读博，似乎一切都已然归位、风平浪静、云淡风轻。

他是美国学生，大概不需要交外州费，但据他说他的账户里还有好几万的联邦 (银行) 代款。花钱也是大手大脚，任何时候，绿色瓶装的苏打水 (？) 就像我喝凉温了的白开水一样毫不在意。office 里还有超过 $200 的咖啡机、新买的全新的小冰霜 ~

和着他打的游戏里的刀剑声响，我看见的就更多的是延迟在这里、如哗哗流水般浪费着如同我自己一样剩下不多的年华和人生。

于是，潜意识里、下意识地，我总想 push 他两下。

18.5　冒牌医生与假想病人 (5)

　　有一次吃完晚饭过来，就看见他又在打游戏，我就不理他，不同他说话，只默默地在旁边写自己的作业。

　　是我对他的态度太冷淡了吗？第二天中午，他居然对我发火说，我欠他的那些钱都还没有还，我到底什么时候才能还他的那些钱？！说话的证据仿佛我故意耐着不还他。这对我来说，太意外了，感觉自己也很受伤害，也似乎有意想要搬回自己的 office 里去。而我对他也充满了怀疑，不敢相信他会把我想像成那个样子的人！问题是到这时候，事情的进展已经完全不受人为控制，他已然说出把我正在用着的电脑给另一个印度人用的话！

　　话已至此，说搬就搬！当晚我就搬回了自己 office；第二天，把他要的现金从银行取了一一点数还给他。钱还完了，我问了他，我们上学期有一根线的交易；这学期有 ebay 上中国来物品的交易、有CPU 芯片的交易。就像做生意的人三笔交易下来，怎么也该有点儿起码的信任了吗？我问他，何至于说出怀疑我不还他钱的话？

　　他说，他怕我要搬走，他会很没面子，才说出那样的话的！所以，实际上，他的小小心思，每一步居然都是走在我前面的 ~!!

　　我理解，当然理解！我先前用过的电脑，为了成全他的面子，已经免费给印度男生在用了。而我，还真的想用他的笔记本。

　　于是，我们继续好说好商量，最终的协议是，我出 \$50 租他的三星宽屏显示器、和他打游戏用的笔记本，租一年，租到来年五月我毕业为止；如果我春天有奖学金，我就再多加 \$30(这样差不多每个月 \$10 的月租，后来我的确这么做了)。这对我们双方都是极好的一一我需要用大电脑、宽显示器提高学习效率，他需要以租的形式 (相比于他同 office 里的印度男生) 给我用，显示他对我没任何其它感情意思，两全其美 ~!! (后来，我因为不能毕业，他也从来不是坏人，答应租期 0 租金延长一年，所以现在此时此刻我在 type 着的笔记本就还是他的!)

18.6　冒牌医生与假想病人 (6)

　　后来，寒假里，期末考试后，知道成绩前，一个学期的努力学习下来，我们也需要、很想要稍微娱乐一下。于是，我们三个活宝某天下午就又一次地聚在他们的 office 里。

　　我们玩儿 Wii。三个控制器，一人抱一个，三个人一字排开并排坐在扶摇椅里玩闹着。我们两个international 对游戏知之甚少，他倒是个游戏通。他花钱总是很大方，我们觉得这些游戏好像不好玩儿时，他自己自动从网上查搜游戏，自己没有，现场从网上花 \$10 买一个他觉得好玩儿给我们玩，不带一点儿犹豫。游戏里，我们在那个光滑的星球上使劲地挤，免得自己掉下去；我们对游戏的了解越来越多、越来越好玩儿时候，大概打了两个小时左右，他说，他要学习了！呼之欲出的游戏高潮就在这一刻嘎然而止，留下我们两个小伙伴一脸惊诧！他一一是在报复当年、当初，我反感他打游戏么？这报复还真刻骨铭心，一辈子也不会忘记！

　　后来某天，是这个印度学生问起我的 compiler 成绩，我如实禀报。我是个悲观主议者，罗列着潜在的所有接下来的可能性，从好到最坏！

　　小伙伴们同情着我的遭遇，印度学生没说什么话；他从来都是好心肠的，"If you need any help, like moving desk or boxes, just let me know!" 他的小脑袋里想的真的是我下学期、接下来马上就要回国了！我接下来某次 EC 课的某个项目写得晚一点儿，我的二十多岁的小伙伴都会坚定地站在我一侧安慰我说，他相信我一定写得出来的；他一一一个三十多岁的人，说出的还是这么单纯"幼稚"的话。

　　这一次，我终于明白，有些人，不经历生活足够的打磨、改造，是没办法拔苗助长的，一如我push 不了他的成长和成熟。

　　后来，系里一个美国人小伙伴帮他介绍了个略有点儿肉的美国女孩。女孩对他兴趣很大，来会他office 里好多次，常常从走道里传出他们一起看电影时发出的女孩子清脆的哈哈大笑声。我在心里默默期待着，或许，这一次，他有机会真的成长了!!

后来，女孩子的笑声不见了。他还是一如既往的样子，我的眼睛挑不出异样。或许，他还没有遇到一个真正让他心动的人吧。

电影里不都是这么说的么——那天才数学家! 失去一个人、一份爱，他没有任何变化，那一定是内心经历的伤害力量尚不够大。若是真心在意、喜欢，那失去后，就必定会有一股愿望、想往和力量，促使他去改变、去变成一个更好的人、一个真正的男人，刻下曾经爱恋过那个人的神韵和影子。

现在，他还没有遇见那个人。像他这么好心肠的人，终有一天，他一定会遇见那个人的，我相信。

Chapter 19

确认选课

19.1　确认选课 (1)

开学前一周时，系里发来了 CSAC 的时间表，到这一刻，我终于相信，我春天的奖学金不会因为编译课的 C 而废掉，我还可以选一个学期的课 ~！

开学前一天的晚上，我在床上辗转反侧。

想着自己编译课为什么会得 C，想着导师几次来到大胡子的 office 里 push 他的课题 (那段时间他近乎悲愤，当然后来 drop 掉 compiler 课的安慰品是一台苹果台式机 (显示器？导师买了放在 office 里还没有用，他向导师要，导师就给他用了))，想到大胡子自己花钱从 amazon 上买他飞行课题需要的许多个部件 (据他讲，可能花了几百美刀)，然后那晚就一直心思辗转着 ~

我为什么不敢选 EC 课？

是因为代课老师对我的恐惧所表现出的默认态度 (真要杀人)？我真的怕自己会从 technical 上败下阵来吗？不，我怕的是人际关系，我怕这次会死在同上学期一样死得不明不白、不明就里 ~

上学期的自己又何尝没有从一开始代课老师鄙视打击我时就出手反击，但别人手段高压、花样众多，在那美伦美幻的莫测变换里，我的反抗无疑成了水中月、镜中花 ~！

若接下来 EC 老师真心要杀人，我一一挡得住吗？我一一躲得掉吗？他是会把我拍成肉饼，还是把我剁成肉末？我可还想保留全尸呀 ~！！

19.2　确认选课 (2)

就像爱情里，大学时，曾经的情敌一次次地站出来，一次次地将她的长发挽起 (是谁将你的长发盘起，又是谁为你做的嫁衣？)，在别人一而再、再而三的拒绝里，她的尊言一次次被撕裂粉碎、却还爱得主动、执着如夏花般绚烂绽放又如何？她如此鲜明、死死坚守、最终也不过是成全了那个最为世俗的她自己。

忆往昔，情敌试探我是否退出时，我对她说过，哪怕她得 99 分、我得 1 分，只要这 1 分是那个他真心在意的，我就绝不退出 ~！到如今，当我再回忆这件事的时候，我绝对相信水瓶 (他) 与狮子的两极对立绝对有真心欣赏的成分 (属于星座上的两极对立)，但我仅有的 1 分愿意再分 95% 给情敌，是情敌那个白羊座意气风发的个性吸引了自己、造成通感和移情 ~！！当年的她没能改造我，十年后，她做到了 (半年前的夏天终于去锻炼身体了)~

而我，到如今，这门 EC 课上，明知山有虎、偏向虎山行，让暴风雨来得再猛烈些吧！我在执着、坚守的又是什么？

不知不觉间，已然天明。这是架在我脖子上的刺刀，越早拿掉越好，我要去学校找导师把它说个清楚明白。

19.3   确认选课 (3)

导师的 office 里，我向老师讲述了当年我选择他作 non-thesis research option 的导师，是因为当时的导师让自己选 research fundamental，把我往 research 上推，这不是我想要的，所以选择他来避开这切的发生。

但是我还是想选 EC 课，因为上过 AI 课，知道这个老师算系里讲课最优秀、最透彻的老师了。我想借助这门课 combine majors，我想通过上课知道自己对这一版块是否真的有兴趣。

我陈列了 compiler 课的成绩，告诉老师说，我现在不敢选这门课，不知道自己能不能胜任？！憋在肚子里一个寒假的委屈就在这一刻失控崩溃，眼泪扑簌而下 ~ 老师安慰我说，他猜测我的自信心一定因为编译课的成绩受到了打击；他建议我说，往回看，看看这一两年里你已经取得了怎样的进步，这不是可喜可贺的事吗？"you know what, compiler is the most challenged course in this department!" 并给我举了个他一个学习很好的学生这门课上 fail 掉的例子；并且他说，"I think you will probably be ok, but still, you can check with the instrctor first."

我哭，不也是要得到老师的鼓励吗？这课是我钟意、推敲了整整一个寒假的，我当然选! 还选了一门分布式系统课和导师名下的 directed study。directed study，我原本想选 1 学分的，但导师嫌麻烦不想去改，我就听他的选了 2 个学分。

Chapter 20

新学期第一周

开学第一周我就遇到了一场意外，我不能打超过 20 小时的工每个星期。但我是开学第一天真正确定我能拿到系里奖学金之后才给出原来食堂工作的 two weeks notice。很是尴尬，可是在这个孩子的心里，面对上学期编编译课老师的各种神插曲，我又如何才能真正有安全感、能鼓起勇气对他们说 oh, two weeks notice period now？我这么穷，难道我对这开学第一周完全不用干事、开学第二周轻松愉悦（因为大家都刚开学，基本没有谁会有问题啊）随手轻易可得的几百美刀有仇么？

后来的解决办法是，食堂里帮忙给转换成一个周的 notice period，系里帮调配成我第一个还没有入职，这样不会有法律上的问题，只是我原本只有 \$4000（除了 BESXXES 免外注洲费外）奖学金又给减掉了 \$200 左右，连交春季学期的内州学费（\$3900 左右）都不够！这样自己原本从小伙伴那里借着外债、并不温饱的日子就变得餐风宿露、瓦上结霜了～

Chapter 21

十年 * 如果

曾经，受高三班长一个同学的影响，我也跟风写过一个十年。

那时候，十年很短，短到可以细数每一年的大事件、每一季度的大事伯，一如九八年高考、大三下的浮躁和考 T 考研的痛苦决择、一场手术、零壹年考研、考研后度日如年的等待、零五年春夏"瘦得这么干净"和零六年出国，那一年，我二十七岁。

一如星座上所说，我二十六岁前的生活过得很随心、随意，我不 care 自己没有男朋友、我不 care 别人的看法，因为我是一个追梦的人。

当九年前舅舅给植入的愿望真正成为现实的时候，在从导师那里刚刚逃离的情伤里，我迷惑了，不知道该怎么生活，不去问自己梦想是什么，每天得过且过。

那时候，十年，有什么？我也可以写一个！那时的自己，写起来，手起刀落，云淡风轻。

这次，当自己不得不再次踏入校园的时候，十年，是自己头上偶尔惊现的华发，如果我能把它黑回去，多好？！

Chapter 22

我的悲催十年

22.1　我的悲催十年 (1)

一如大家所知道的，我是被妈妈武力降服后，勉强才进了高考的考场。那时候，就真有一个或许对自己有着丁点儿意思的男生从原本该进的考场溜走了。

高考结束后，亲人的策略是不惊扰我，不需要我像中学或小学时再去放牛，只每天一日三餐吃喝拉撒地呆在家里静养。

一两个月后，我对爸爸说出若没能考上，我还想要复读一年的话，爸爸眼中有泪～

后来，拿到录取通知书，爸爸听了大姐夫的意见说，高三那年我已经分心成那样了，有个学校可以读书就可以了。家里条件有限，再供我复读一年，也未必能考到更好的学校。爸爸也鼓励我说，"三百六十行，行行出状元！"

大病初愈，爸爸的话我一定听的。然后，本科四年，硕士三年，我也不懂为什么当初就决定硕士毕业再等一年 (疗情伤？)。国内八年，这边博士研究生一年后，舅舅要我再给老板干一年活，终于是半年后，转专业——9.5 年，这耗尽十年的这一专业，我想我以后应该再也用不着了～!!

此刻，再来回忆这一段，我也已经情不自禁、眼中有泪～

22.2　我的悲催十年 (2)

到了如今的年龄，我非常清楚，对自己来说，真正的绝望只有高考那一次。后来我蹉跎岁月、折磨年华，但我一直都活蹦乱跳地活着，只有那一次，我是想死的!

那一次，也是累积了五六年的心理压力。

如果，之前，我有更好的心理建设，我或许不至于考得那么惨，只上了个三本；如果，之后，我家亲戚间能有人帮我做好心理建设 (这个对爸妈、姐姐、姐夫来说，都难度太大，五姨和五姨父大概可以胜任)，我重新回到高三的课堂，若我能拿出现在与系里老师对干的劲头儿来，此时的我或许顺了自己的个性正教书育人，也或许顺了自己曾经的愿望，当了妇科医生，去从科学上根除、钻研和拓展自己青春期有过的生理上的疑虑和担忧。

但可惜，生长在这样的一个略有缺失的家庭里，我从来不曾有过这样的心理建设。就连高考重灾过后，来到大学校园，我也用了大半年的时间作灾后心理重建，才最终说出想让白了头发黑回去的话。我就是这样一个从来都是自己摸索着成长的孩子，回望这个过程，我都想回去心疼一下当年的自己。

这十年，我就只得了一块跳上美利坚这一国度的跳板而已。

Chapter 23

同桌的你

23.1 同桌的你（1）

开学后，最开始的时候，我也有稍微去听一下其它老师的课。不怕一万，就怕万一，万一万一我不行了，"W"写到成绩单上也还是会优先考虑毕业的呀 ~

这不去听课不打紧，一去听，却听出一个先前不知道的秘密来！

我这学期的同桌是编译课期末考试陪我考试考到最后的 Ryan，他坐我左边。同排坐他左边的还有上次那吃中国饭的美国男生、cs210 课与我分别都写出 tictactoe 的小伙伴。我坚绝相信，他们三个，学习都是极好的！上学期一起写过作业和邮件的小伙伴没选 EC 课，但 graphics 课上我见了他，那门课据说需要 java 编程；他们几个总是一起上课、上上学期春天里还一起上算法课，再早之前，可能还一起上过 cs270 system software 课，这连续三学期这些课程都是我前导师代，可是，我上学期一一编译课的同桌小伙伴在哪里？

后来，我去听系里的各门课堂上去找，在 network communcation 老师的课堂里找到了他！可是，为什么他这学期脱离了他们小伙伴们的队伍了？后来观察到，他也几乎只和那个选了两次编译课的美国女生聊得、走得比较近。

我最亲爱的小伙伴们，回忆起来都是泪啊 ~！

23.2 同桌的你（2）

我曾经的小伙伴们，你们都在哪里？

那个家在外村，班主任没能照看好的高三同学，因为家里经济条件有限，后来也没有再复读，他接下来的命运会是怎样？

我大学室友情敌，当年一次次地逼问我要不要退出，在对方 (班长) 从来不曾有明确表示时，一次次地站出来，一次次地将她的长发挽起，后来，在大三还是大四自己坚持不下去时，蓦然回首，与班团支书成为男女朋友。团支书是矮小精干的男人，情敌是婀娜纤细、柳眉大眼、身姿娇俏的女孩儿，那时的我们真想感叹，这姑娘是哪根神经搭错了，找上这么个人，实实在在一朵鲜花插在 XX 上。不过，她的平衡点应该是这个是班上、系里最会挣钱的男人，大四时他跑去北京做一个什么实习，挣了好几千，小伙伴打趣说他应该把工资如数上交给他领导。毕业后情敌就嫁了他。后来，几年后，她老公出轨，这边是一个自尊心特强的女子，她怎么可能忍受得了这个，一场相片几年的婚姻就这样结束了。后来，据说，她回到了她的家乡一一家还是那个永远会带给我们温暖和甜蜜的地方，我们就再也没有了关于她的任何消息。

那个男生，大学四年，没有任何确认过的女朋友；毕业一年后，小我们一级的同专业小师妹成了他女朋友；两个人在一起很多年，后来，女朋友出国到澳大利亚后，这段感情大概也结束了。再后来，这个男生找了个身材、相貌均还不错的（其它指标无从考量，只见过照片）家乡的女孩结婚了。

　　那天，那堂课上，我找到了那个曾经的小伙伴，我惊喜、疑惑、却也难受；他也惊奇，大家的眼神、表情都很复杂。

23.3　同桌的你（3）

　　他们几个小伙伴，是上前导师的课一路上过来的。如果系里老师们之间的矛盾是真的，那他和他曾经的小伙伴队伍应该是属于前导师这一系的 (也比较重视 programming skills)。但是什么原因，让他从小伙伴们的队伍中走散了？这一定与上学期的编译课成绩相关。

　　上学期最后一次作业到底是怎么回事？他是和我一样得了 C，还是，最后一次作业他的架构还没能搭起来？如果前几次作业的成绩也不理想的话，应该会 Fail 掉的。别的学生我不知道，但那个期中考试时主动提议老师 review for exam 的那个后排男生 fail 了，期末考试前同小伙伴们一起复习的时候就听他们提过他作业写不出来。

　　我那个同桌，我最后一次回答问题，他难道当时真的还没有听懂吗？可他也是那么聪明 (算法课上装傻问老师第二个问题)，而且一起同小伙伴们走了那么远、那么久。同代课老师没有恩情也该有点儿起码的师生情谊啊。

　　若是，他做得还不错，架构出来了，只是测试同自己类似，过得不够多，情不致死，但是只是因为老师要给我颜色看而不得不顺带打压他，那他一定是委屈的。回想这一个学期我们三个人坐一桌，我因为早前我们同学时我 cs336 得 C 对她不是很舒服，所以一直同自己右边的同桌同学关系更显亲和、亲密一点儿。如果是我那一丁点儿的情愫防碍了他、防碍了代课老师的公正性，那我真是罪该万死～!!

　　这个春天的学期，他没有选 EC 课；Graphics 课我去听过三四次，我只看见过一次他到课堂，而且他个头不高，还坐在这堂课的最后，这门课他到底选了没选？补一句，这门课是后来第四次时代课老师讲了一堂课的数学、统计 vectors 之后，我感觉代课老师不希望我去旁听他这门课，(那时我已经了解一个大致的概念) 之后我就不再去听了。

　　不管我多么不愿意接受这样的事实，现在，他已经同小伙伴们分开了! 感觉他自信心很受打击的样子。若是他真没有做出最后那一个架构，那接下来该怎么办呢？

　　看着自己曾经的同桌经受、面对这样的挫败，回想自己这一个寒假的战斗兵状态，一阵子的难受和悲愤涌上心头，打击别人的自信心，就这么好玩儿么？

23.4　同桌的你（4）

　　就像大学时的自己，上学期期末上机考试时，因为操作不够熟练，下学期的课堂我是同几个男生小伙伴上课抢着回答问题的 (最终考得还很不错的成绩)，因为我需要给自己一个交代，我是有能力学好的，只是上学期的疏忽而已!

　　就像后来我所在 QQ 群有小伙伴气质姣好、仙女下凡般站出来翻牌（意欲倒追一个 GG）时，还强调重点时说过"anyways 做题做题"。那就是说，不管最终结果是怎样，（这个专业）做题是很重要的，改变和提升我们自己在任何时候都是必要、最应该最值得我们去着手努力的事。

　　顺便多说一段，这个 QQ 群，十年来，不知道帮助过多少人、改变了多少人的命运，也改变了我自己的。曾经多少次 mitbbs 首页十大上，大家讨论要不要刷 lc，我就像了那曾经咬断了我钓鱼钩的千年乌龟一样，缩在那里一动不动。心理上，也没有觉得它非常难、不敢亵渎，但也没有任何心思动力想要去啃这块骨头、把它咦为平地。可当我来到这个 QQ 群，当我遇见的每个人都刷过它好几遍，甚至对做过的题目，别人都能倒背如流，甚至连一个聊天的小伙伴感觉都在变得玉树临风的时候，我终于是觉得自己渺小得不能再渺小、卑微得不能再卑微，乖乖地默默地跑去刷题～

　　人最需要面对的还是我们自己。若这个成绩对他并不公正、他有不服，就像此时的自己一样，那就迎难而上，再给自己一次机会、挑战自己一次，并不损失什么；若他像当年大学时的自己不上心没能完成作业，不也应该继续接受更多的练习来壮大自己（而不是像他那样去逃避这些牌块的课程），就像坐我左边的女孩子选二次编译课，（虽然那个女生第二次选没有任何进步，可同桌的基础比那个

女生强得不要太多），虽然人一辈子的时间要拿出又几个月来第二次选一门课，可能代价太大，可因为这一门课造成的自信心丧失、心理恐惧又需要多长时间、怎样的经历才能痊愈？

我多么希望我可以对此时就我坐在我旁边的这个可爱男孩、曾经的同桌语重心长地说出上面我敲下的这些话，可我不是他亲人，不算他朋友（距离还太远），甚至连 girl friend 也不是，我又有什么资格对别人讲出这样的话？也罢也罢，我一肚子的心事，就让往事随风，祈祷他接下来会顺利吧 ~

Chapter 24

第一个项目 (EC)

24.1 第一个项目 (1)

早就被板块同学打预防针说 EC 这门课特别难，老师上课讲的内容根本就听不懂，真正选了这门课，当然得认认真真、时时刻刻保持警醒状态地好好学下去。

当然，态度好仅仅只是前提，能不能达到老师项目考验的目标，能不能顺利地、安时有效地完成老师布置的各个项目，就成了继上学期编译课得 C 之后，这个学期我的重点努力目标。

当然，就像板砖同学说对 EC 课根本就没有兴趣，就像编译课代课老师的评价说的那样，我这个 programming experience 相对欠缺的小兵，在完成第一个项目时就出现了各种神插曲。

细数一下那些出现在第一个项目里的插曲吧，拍照存根留恋：老师把一个大项目工程折成了几个可以分别突破的小项目小版块，这样第一个版块写完的时候，所有的代码基本就只有一个文件，任何一个 benchmark problem 就只写在了一个 function，看起来落霞与孤鹜齐飞，秋水共长天一色，乱七八糟，应该是属于小学一年级的作业吧。后来在老师收了作业后的 review 建议下才慢慢改好了。第二个项目又是类似的问题，一个文件大脚走天下，1a 写出来、交上去的代码奇丑无比。后来课堂上，老师给我们一个大致的 OOD 设计的提纲，各种不同的类（individual, population, fitness functions, 以及要用的 main test file）、类与类之间就理得比较清楚了，写出来的效果好得不要太多～

24.2 第一个项目 (2)

这个时候的另一个问题就变成了怎么用编写 makefile，这是自己想到 cs121 实验有这个内容，但从来还不曾有机会真正用过，可书到用时方恨少，到自己真正要用时，却 run 不通。这个小问题后来当然是解决了；顺带一句 emacs，到这时一个项目往往需要十个、八个文件时（尤其是在 CSAC 工作时自己 $230 的笔记本 ubuntu 系统没有 linux mint 底层的任务栏），就发现之前配置 c++ IDE 时找到一个 speedbar 能在各文件间穿梭游动真心好用 *_, 06 个 difficult problems、以及要求 graduate student 作一个群体个体数目（population size）与进化代数间的关系分析等，乃是人为制造混乱、混淆视听时，这个天生带了点儿分析能力、试图接近事物真相的性格，就直接导致了自己窥得天机（用 function pointer ），到这时，老师设置的所有人为障碍都已经不再是问题，所以的问题都可以迎刃而解，除了交项目前最后一个周遇上一点儿意外。

意外是这个样子的：我的代码在这之前的上一个周已经全部完成，上个周还 run 得好好的，我又没有去碰自己的代码，为什么到这个周我再去 run，就出不来结果了呢？这在当时的自己还是太奇怪了，这真是一个奇迹啊～

24.3 第一个项目 (3)

我本能地觉得它奇怪，却没有去想为什么会这样，有什么原因可能会导致这种情况。

这次引导我前进的工作是班上一个人品极好的美国学生，以后叫他大 A 吧（后来那个介绍我 org-mode 的以后叫他小 A 吧），他写 java 代码，但是极有耐心地帮我一步一步 debug，我走程序，也坐旁边帮我出主意，花了一个小时左右的时间最终找到的原因是我的一个变量原本应该是 float，但被我不小心写成了 int，加上我没有 random number 的概念，就直接导致 infinite loop 重复出现。上次 Lose track of the Record 是 summer 的最后一个项目的那个 bug，我只自己在想着可能的途径，却没去想原因；这一一同样一个问题，居然第二次出现了，什么时候才能，当我一遇到问题的时候，我一定有一个思路、知道该如何（至少是朝着哪个方向）去解决它，而不是像现在这样第二次地沉浸在奇怪的魔力里，意识不到背后自己代码上应该一定是有问题的？

呵呵，当然，没有神插曲的课程、项目学起来、写起来又有什么意思呢？

想想这个神插曲，同一两个月后自己下定决心开始刷 lc 时第一个题目 atoi，我根本就没仔细读题目就跑去做，连续调了四个小时调得天昏地暗，还跑去问 QQ 群里的大神一次，直接泪崩" 我疯了~ "，还真是有得一拼（回忆起来可是无比好玩儿和甜蜜呀）~

24.4　第一个项目 report(need to add this project into github)

这时偶刚到 CSAC 工作不久，与小 A 同学还不熟，我用的还是 latex。随着贴的作业越来越多，应该是用有共同爱好的小伙伴更亲密些。这次贴 latex，下次才再 org-mode。

project1.tex

24.5　原来我可以 (Yes, I can~! attitude)

回想这学期这第一个项目（Subproject A, Subproject B, Project 1）一路写下来，每解决一个小问题，每交上去一个小版块，我都是一阵狂兴奋，那是成长的印记~ 说起来还只能怪不同老师的授课内容、代课风格、教课效果是不一样的，相比于板块，换成 AI 的老师来教，这第一个完整的项目做完了，把老师人为设置的障碍火眼金睛识破后，根本就没有多大的难度嘛，哪里难、难在哪儿？到第一个项目交上去后，我对这门课的戒备心就平复了~

那天具体日期我不记得了，大概是第一个项目交上去当天（?），就着那股儿兴奋劲儿，我上课提过两个问题（具体我问了什么问题，时间久远，我不记得了）；后来老师再讲一个什么统计表达式的时候，我又问了一个统计相关的问题，但那第三个问题的结果是，完全出乎自己意料的，我想错了，或许之前自己还是统计专业的学生时，这个知识点我就弄错了，几分羞愧，老师帮我把那个问题回答完，上课当时我脸就发烫，应该是红着的吧~ 同为狮子座的代课老师（我猜测的，不过我相信我猜对的可能性非常大），也觉查到我的异样，接下来的讲课，他说话的腔调、语气也都稍有变化，大概是说，我这样的学生、以这样的提问效果和方式，会扰乱他正常讲课吧~

Chapter 25

没有观点的提问

25.1 没有观点的提问（1）

那天是周五，没有想到的是，同学之间，小伙伴们把我这一不小心、显得没有观点的提问给传开了，这一一太让人无语了 ~

那天是周五，我上完 EC 接下来一个小时的 distributed system 课后就来 CSAC 值班。那时我每周在 CSAC 工作十个小时，再到系 main office 去帮忙整理 document 十小时，这时这后十小时并不是十分严格；后来是大牛看见我作这些事情心疼，问我"Why are you doing this?" 我解释后，后来就把我调整成每周 CSAC 工作十五个小时，给一门 CS150 作 grader 五小时。

往常周五下午来 CSAC 问问题的学生并不多，但是那天，很多学生（绝对反常于平时）坐在那里学习，还有一两个女孩子拿极其简单的小问题来问我，这是在显示对我悲天悯人的人文关怀？

系里的大牛应该是很忙的，那天中午，大牛随他的学生来到 CSAC 里一个实验室，路过时同我热情打过招呼。可这招呼却打得自己内心里本能地抵触反感，感觉自己一次 bad performance 就会被放大很多倍，会弄得路人皆知的 ~

25.2 没有观点的提问（2）

更有甚者，EC 课代课老师的另一门课的一个 TA（这个老师那门课有两个 TA，一个是我 EC 同学），他根本没上 EC 课，那天也有一两个 hours 在 CSAC 值班，我们坐同一张大桌子，他还在旁边与他的一个小伙伴不停地讲他的一个同学上课提问 make no point 的故事。

想想，自己之前概念理解错了，一不小心又多提问了一次，我又不是每天都以这种方式提问，犯得着这样把别人偶尔才犯一次的错误放大到这种程度吗？更何况，我就怕这种情况发生，在 EC 接下来一小时的 distributed system 课上，我已经自动启动防卫模式，上课时有疑问也没有提问，一堂课里没有任何发言。等到老师说下课了，我才把自己的问题向老师一个人提出的，我要浪费也是浪费老师一个人的时间，没有再耽误课堂上任何其它同学，这帮听风就是雨、见老师眼色形事的人，还想要我怎样？

见这个 TA 滔滔不绝地讲个不停，我就直接对他说"Excuse me" 请他帮我让道，老姐要去上厕所 ~ 等我回来，这人居然还在讲这同一个话题。坐里面的同学都明白我的不快，一个学生把他拉去问问题了，他临走时还对他讲话的对象说，"to be continued~ " 我心里窝火，对这样的环境难受极了，看看时间还有不到半个小时就可以下班了，就去 main office 里对老师说，我今天不舒服，我想早点儿回去，改天再把这半个小时补回来，她同意后我就遁回家了。

我原本不是这样的人，事件的发生也只是意外，这事后来也没能给放大到多大程度。过了那个周五，和接下来两天的周末，我自己的心情也就平复了。

Chapter 26

被鄙视

26.1 被鄙视（1）

这位代课老师清淅的代课风格应该是有目共睹的，他的 AI 课给大家上得很好玩，这门 EC 课注册的人就挺多的，相比于编译课一个小教室坐得稀稀落落，这门课一个两倍大的教室坐得还挺满的。这个 AI 老师代的两门课在学生中还是很 popular 的～

我并不认为班上的同学、graduate student 都能做到像我第一个项目那样条理清晰，有不少同学是 6 个问题一个一个分问题解决的。或许也是终合的第一个项目同班同学的进展，和第二个项目的难度，老师在第二个项目一开始就给出了四五个文件的基础代码，我们可以在这些代码的基础上去接着干接下来的活儿。后来知道，第二个项目还是有那么几个考点的，但是刚接到新项目当天，就有小伙伴不满老师还需要给我们基础代码，就毫不客气地把账算到了我头上～!!

26.2 被鄙视（2）

那天坐在我后一排右边的同学，从那天上课一开始就在不停在清理他的喉咙，清理他喉咙的声音之响，频率之频繁，让我感觉，他是在率领小伙伴们鄙视我，他们可能认为代课老师就是因为我，才有必要在第二个项目一开始就给出基础代码，代课老师是因为担心我做不出来、下不来台，才从此拉低了这堂课的授课水平和项目要求？!!

天地良心，我的第一个项目、将自己之前理解不透、用得不熟的 makefile、function pointers 都很好地串起来了，势如破竹般一一攻克，先前没有不够的意识也在大 A 的帮助下 debug 出来。大 A 就是见证人，他亲眼见证了我这个转专业的学生，第一个项目是完成得很好的呀～ 一定要算账的话，这笔账是无论如何也算不到我头上的呀？!!

那堂课我的一双胳膊一直本能地环抱在胸前，据说这反映了主人自我保护的心理状态。

26.3 被鄙视（3）

那堂课，空气有些对对峙。那堂课，老师也在试图制造机会让同学们回答问题。那堂课老师在讲 genetic programming 的 cross over。老师在白板上画了 genetic algorithm cross over 的图，和 genetic programming 的 cross over 的图，然后提问说，这两者在 cross over 上最主要的不同是什么？有一两个同学跃跃欲试地回答了问题，但都不是老师想要的答案，同上一门相比陌生的课，我也并不比自己的小伙伴们有更多的想法。后来，实在等不到正确答案，老师就直接给我们讲 genetic algorithm cross over 后基因的位置是不变的，但 genetic programming 的 cross over 因为是 swap subtrees，所以基因的位置就打乱了。等老师把这个问题讲完，我就接着问了老师关天基因上位性的问题，希望老师能稍作讲解。epitasis 这个概念老师在讲 genetic algorithm 时提起过一次。虽然自己的提问可能很傻，可我对先前老师提到过概念的回忆，小伙伴们对我的提问也还是服气的～

不是说我上课提问不 make a point 吗，现在有没有 point？我同小伙伴们一样，也没能回答出那个老师极度渴求的答案，但老师的讲解引发了我们思考，我的提问也 inspire 了老师的讲解和小伙伴们的思考，所谓课堂互动、师生互动，也不过如此吧～

Chapter 27

第二次作业

27.1 第二次作业

我以为自己对这门课的戒备心到第一个项目交上去就可以平复了，可我高兴得还太早，到了第二个项目时，subproject2a, subproject2b 也都还是很简单的，可到了写最后一个项目的时候，就赫然发现 subproject2a 写的 copy subtree 的函数 prototype 并不满足最后一个小版块的要求，于是对我来说，这个项目的最后一小版块就需要从头再来（重新再了更好用的 copy 函数）。

写到这个项目的最后一步，就真正体会老师基础代码的良苦用心，没有这个葫芦的存在，不知道有多少人能真正完成这个项目（至少我也还是有所倚耐的），每一步都不难，但很 tidious~ 比如，我想 subtree mutation, mutation 的 terminal 与 non-terminal 的比例分别是 10% & 90% repectively。这个很好控制，就是概率嘛；可在 90% 里，我产生 non-terminal subtree mutation 节点的方法是先产生随机数，再根据随机数去寻找定位那个节点 (把 root 数为 1)，返回指向这个节点的指针，和指向该节点的父节点指针，然后再 swap subtrees~ 可定位 specific 节点这一步，为了数对，我数了很久，debug 了很久，后来延伸老师擞 tree size 的方法才真正解决问题 ~ 不过最终，这个项目还是完成得很不错的，除了（except）老师讲项目要求时，自己又傻了一回，把他要求的 abstract 时他讲过的表格当成了 abstract 的要求，我画了表格才知道，老师的 abstract 还是要求 text 的 ~ 不过这个，不伤筋骨，还好还好 ~

27.2 第二次作业 report

project2.org fitness.jpg fit3.jpg

27.3 第二次作业补充说明（1）

呵呵，第二次作业用到的两个图片贴出来，就瞬间呼吸到被鄙视的气息、鄙视的声响蛙声一片 ~ 这里就把第二次作业的完成情况再补充解释一下吧。

首先，用 openoffice 的人都知道，把数据导进去画图，若只有两条线，那线的颜色，by default，就是红色和蓝色啊，我没有挑颜色的，所以没有影响 ~ *_^ 把图贴出来，一方面是必要性，这样一个 fitting 的项目，没有图一定是不完整的；另一方面，自己也还是有些自信的，虽然是不完美，但也还是不错的结果。这段时间自己游走于山水之间，游离在世事纷杂之外，立足点高一点儿的话，就没什么好担心害怕的了。

关于篇副。第一个项目，老师要求我们把 detail 写得尽可能地详细，这样他可以根据我们的描述来判断我们到底做对没有。但是交了第一次作业后，老师说过了不需要再写过细，大概我就是属于写得太细的那种，所以第二次篇副上少了很多。加上用了 org-mode，省了很多需要 type 或调用 macro 的体力活。

关于结果。正如大家第一眼反应出来的，这绝对不是最佳结果，因为离真正的 fit 还有一段距离，还有一段二次的函数没有完成。

fit 的结果理论上讲可能的结果应该可以分为四大类吧，完全没有方法，连右边一根线也划不出来的；仅画出右半段一根直线的（把我图上两根线段并成了一根长线段）；右半段 fit 出两段线段的，和 fit 出左边二次函数的。我右边的已经完全没有问题了，左边的也开始打折，但二次函数不是出不来的，介于四类中后两者之间吧。

27.4 第二次作业补充说明（2）

那么 fit 出二次函数的难点在哪里呢？笔记本内存硬件要求，和 C++ 资源管理，如果是用 c++ 编程的话，用 java 当然就没有这个问题了。

这个 genetic programming 的项目，我的 constructor, destructor 都是没有问题的；其它地方可能会占用资源的的就是，当我每一代（generation）选出两个 elite individuals 作为 parent，我用 steady-state 的方法，先把它们考贝到两个 worst individuals 的位置（保存一个最好版本），再将 elite individuals 突变，node mutation，这一步那两个 worst individuals 的资源我是释放了的，node mutation 并不占用资源，所以我认为自己的资源管理是没问题的。可我的 linux mint 大胡子帮我装的是 32 bit 的，内存就很少。加上这种进化，因为 crossover 的发生，tree 的 size 增长得非常快。这样导致的直接结果就是，每次程序上百万个 generation 一路 run 下来，不等程序正常结束，就会有"bad$_{alloc}$"   !   , , 1000 generations, 保存一个 best tree individual，只有真正保存下来了，我才能把自己选的最好的 tree 写进报告里。

这些都是需要自学的内容，cs121 的那个代课老师对这块涉入不深，之前也从来不曾用出现过这些情况。当然，到上 EC 课是，我已经把 c++ primer 看了一遍了，所以就是加深理解的过程。

27.5 第二次作业补充说明（3）

昨天提到的 crossover 节点位置，我的思路是自己想出来的，我的一个对这门课很有兴趣的美国同学还是跑去老师 office 问过老师才知道的。我们 C++ 的同学还在生成随机数，再一个一个慢慢数；我知道他们用 java 写的有一两个 TA 和另一个美国学生，他们说他们根本就不搞那一套，还随机数了，人家就直接 hard-coded 成了 best individual root 的左 child 与 second individual root 的右 child crossover~ !! fit 的结果可想而知！

到这个项目，因为项目的难度稍有增加，也有一个平时表现还很不错的 TA 由于各种原因吧，写不完不能按时完成，还请老师再给多余的时间才最终得到基础结果得以完成的。

我的结果应该也不是班上最好的结果，便也数得上是中上等。而且因为老师的数据人为增加了 noise，所以即使 fit 得过好也会有潜在的 overfitting 的问题。

当然，一个转专业的学生，对 c++ 资源管理也从不曾有过任何深入研究，所以我对自己对资源管理的理解并没有绝对的自信。所以在前天写出了自己一颗受伤的小心灵之后，为防止自己变得骄傲高傲，昨天的项目就自动 balance 写得很谦卑。就像后来 QQ 群里有小伙伴自认为学得还不错，出来一张口说话，马上就有大牛跳出来说，这里那里哪里哪里不对，瞬间被打脸~ 所以说，computer science 这个尖端前沿 major 本身就决定了我们这个专业的人注定只能成为某个领域某一方面的专家，对其它领域就只能抱着谦卑的心多去学习和了解。所以说任何时候，在我看来，谦虚一点儿，总是好的~

那时 mitbbs 上首页老有一个大牛叫转 java，后来这个项目完成后，感慨资源管理的重要性和影响力，我就把这个项目重新改装成长得很丑的 java 了。只是自己 java 项目写得太少，用起来还不熟，但基本也过了 pass by value - pass by reference 的初始 like or dislike 的瓶颈阶段了。

Chapter 28

EC 第一次考试

28.1　EC 第一次考试（1）

我的第一个项目，延续了自己之前上 AI 的风格，把源代码也打印出来交了上了，可能是希望老师能看见，他先前设置的几个障碍考点我都攻破了吧～

第二个项目，难度有所增加，但还是眼睛都没眨一下就完成了～ 额，不对，眨吧眨吧眼睛，结果也出来了；除了因为资源管理的问题还多跑去折腾了一下 java～

就像转专业后不到开学第一天，我就已经同导师、大牛说清楚我希望两年毕业一样，大概这个学校这个系也从来就没想过要给我 A 的吧，EC 课的第一次考试很难、非常难，考得考场上蛙声一片，咳嗽声、清喉咙声，声声入耳～ 到要交卷纸时，很多同学感觉都还不有写完，没时间看第二遍。我们平时的考试往往有很多学生早交卷的，这次就只有两三个提前交的。同学们小伙伴们这次把这笔账算到我头上，一点儿也不冤。可以猜测得到，老师把卷子弄这么难，应该是卡、希望我晚毕业的吧。

卷子的难度，说起来，也是多少门课来的老问题了。这是一个从 plant science 退出来的原 ph.d 学生，退出来的原因是修 MMBB 的课得了个 C，原因是对概念理解不透。这个对概念理解不透的国际学生，因着这一点儿，就活该被永远地订在耻辱的十字架上么？

后来，卷子发下来后，同 AI 课一样，老师评分给得极严。平均分是 76 还是多少，我只得了 72还是 69 不记得了。

如果说转专业第一年的自己过得暗无天日，完全看不到任何希望、盲人摸象昏昏乎乎地努力；那经历了去年暑假 A 帮 inspire 带来的启蒙，经历了上学期炭火盆上烤肉般编译课的烧烤，这学期的我，已经清楚地意识到这颗转过专业的脑袋在新的领域里终于开窍、有了思考的力量，开始加速运转了。为什么我还得永远得 B？

那堂课，就像第一学期那个魂飞魄散的 cs21 课堂一样，我长了水鼻子，流着鼻水，我在那里用纸巾捏呀捏，捏了一堂课～ 下课就跟老师去他 office 去找老师了。

28.2　EC 第一次考试（2）

自从去年在前导师 office 里大哭一场后，自从期末考试感觉到自己专业领域里的成长与进步，我已经基本不再轻易彻底崩溃了；可我的眼泪还是在扑朔扑朔地往下掉，学期开学前一天在自己导师面前是，在现在 EC 代课老师面前，也是，人还没开始说话，眼泪已经大滴大滴地滚落下来。

我对老师说我担心自己的成绩。给老师讲了自己上学期编译课的惨痛教训，基本相当于对老师直说，我对编译课得 C 的成绩是不满意的、认为老师给成绩不够公平。代课老师问我，上学期期末考完后，我有去找过编译课的老师吗？他说这种情况，可以去找代课老师讨论一下。

代课老师问我，你就为这个成绩流了一堂课的鼻涕？我点头是啊是啊，成绩大于天呀，你把题目出这么难、这么偏、还改得这么严，要我这样的国际学生怎么活呀？他说就像我说的，这第一次考试有题目都读不懂，那第二次考试的时候，我可以找另外一个时间在他 office 里或者是哪里单独考，这

样，我有看不懂的题　目可以问他。我当时在代课老师 office 里是答应老师可以这样的，但后来到真正第二次考试，我还是同小伙伴们一起考的，因为我害怕被孤立。同小伙伴们一起考，即使是蛙声一片，我还可以根据环境的变化来调整自己的做题速度，若是只有自己考，怕自己把握不好进度，会死得更难看的～

Chapter 29

听一次报告

EC 代课老师在每进行一新版块授课内容前都会把他作过的相关研究项目 demo 给我们看一遍，一方面 show 成果，另一方面也激发我们的学习兴趣。只可惜，他忘了，花为悦己者容，他的所有 demo，在我这个已经没有多少岁月可以停留在校园里的学生眼里，看见的就只有 bug，又看见一只蛾子去撞南墙了，都撞死三四回了，脸上还一幅兴灾乐祸相 ~ 在此，也嘲笑嘲笑自己吧，连个作业二次函数都没能 fit 出来，还嘲笑别人吮蛾子撞墙笑得要死，本身不也够搞笑的吗？

后来，EC 老师课堂上极其鼓舞我们去听一个博士生作的 EC 相关的 defense。在 EC 老师的强烈推荐鼓舞下，我就去听了一次他们的报告。我以为班上绝大部分同学、喜欢他代这门课的同学都会去的，但真正去了才知道，我认识的人里，也就只有自己和大 A 而已。而且当然，我也只是去听、去欣赏别人作过的项目而已！或许，我没能弄明白 EC 老师的真正意图，不知道他是在试探我的科研兴趣意图？

报告并不怎么出色，心理上会觉得别人五年博士时间也不过就做了那么点儿事而已，当然这也反应了听别人说的容易、自己做起来难的常态啊。听完了这人的报告，我就绝对不会甘心自己苦守在这里，却也只能、只做得了、干得了这么点儿活 ~ !! 而且，更让自己被吓到的是，报告人 present 结束后的提问时间，前 80% 的时间都只有女生 raise questions，有四五个女学生、女研究员（？）先后问了问题，最后才有一两个男学生表求性、象征性地提了一两个小问题而已。我敏感的心态就又回到了大半年前的起点，回到那时 career fair，与前导师作课题别人会帮 refer 工作的时候：这个时候别人还拿你当根葱，看等你真正留下来一年的时候，看别人要如何对待你！别人女将们先从气势上就吓死你 ~ !! *_^

我想我是敏感、脆弱的，我并不坚强。偶尔的坚强只出现在我被逼入绝境的时候，才会鼓起逝死返抗的勇气 ~

后来，不知道是不是与这次我去听了报告有关，第二次 EC 考试，蛙声一片消失了，呈现的是云淡风轻，不在话下 ~ 。

Chapter 30

看病及结果 See the doctor and results

30.1 看病（1）

这个春天，就像 2002 年开春等待考研成绩、等待复试般辗转反侧，就像 2005 年春夏那样，晚上总是睡不着，心里诸多压力，难受极了。

早前 2 月 2 日那次生理周期的时候，那个周期第一天晚上就没去学校、直接在家休息，整个人感觉很疲惫；后来到第四天第五天，像往常周期后半段一样，到快要排血块的时候肚子又狠痛了一阵子，痛得死去活来，只有等到血块排出来后才真正算是周期过了、好了～

2 月底 3 月前，连续几晚上睡不好之后，就注意到，只要睡上一睡不着，左边的肚子就开始痛，有时候像针刺痛，这是长肿瘤的一个症状，有时候会是 quarter 大小的地方灼热痛；起床上厕所猛地站起来会反应不过来，有些发晕虚脱。几年来，尤其是这次回学校读书这两年来，我早就开始深度怀疑自己右侧卵巢囊肿发作，也许已经长到很大了；去年 4 月看医生后我就自己上网查过相关资料，严重的情况会需要整个卵巢、输卵管及附件切除的；加上早就多少次去触碰感觉到的右侧囊肿的存在 (按下去再释放产生的回弹力，若不是囊肿，那也一定是上次手术后感染造成的右侧脏器黏连!)，和右侧外生殖器官的麻木，我对自己的右侧部位已经心理上彻底放弃了。可是如果我的左侧也开始串长，也在日益加重的话，我可不想放纵疾病的滋长，弄得左边也变得一样严重，搞得自己将来生不了小孩，后果就太严重了～!!

30.2 看病（2）

那段时间左边肚子的针刺痛，让自己心理上害怕极了。高三之前我学习上最大的心理障碍就是，担心、遗憾有过那种经历的自己将来生不了小孩～！现在，造化弄人，眼见着心理障碍就要成为真正的生理障碍了～ 我可不想这样的后果真正发生呀，我要去看医生!

这次值班的不是去年四月给我看病的女医生，那次自己前前后后总共花掉 $350，除了从 CA~125 知道自己没有得妇科癌症外，花掉的钱对自己的病情就没有任何帮助；这次看第一个医生说查尿检查不出任何症状来。"Ever since 2009 which was the very first time I noticed the uncomfortable after my surgery in July 2001, It has been years. And especially during recent couple of years, it becomes more and more severe!" 我对医生说了我对自己健康的担忧，我对医生说我希望有什么确信的测试能帮我鉴定自己的健康状况，有没有卵巢囊肿，多少尺寸了，是良性的，还是恶性的？在 CT scan 与 ultrasound test 之间，考虑到检查效果和经济因素，医生帮我 order 了当天下午五点钟的 ultrasound test。

那时是下午 3：30 左右，于是就按照护士的建议，赶快回家狂灌了 6 杯温水（她帮给了我一个固定大小的纸杯），憋着不上厕所，走到要作检查的地方，等待一份命运的判定。

30.3 看病（3）

我坐在 image center 的前台等待，一个清秀的穿着制服的美国女孩子出来招待了我，感觉很亲和。我们聊着天走到扫描室，按照她的要求躺下。

为了扫描方便，我躲下时头是在她机器这一侧，这样她的事手方便按在我的左侧肚部进行探头的挪动操作。她的显示屏也稍微侧着，我的头偏一偏，就可以看见屏幕上她在进行的操作和扫描结果。

探头先滑行着滑行着，大概还在作最开始的定位吧。然后屏幕上就出现一个长椭图形的泡状物，上面还有一个半个大小稍小点儿的椭圆形的气泡。这应该就是那个硕大的、我按下去它会弹起来的囊肿了吧？居然还不止一个～！想着这次回学校一两年来，自己的病情日益加重，每次生理周期里，自己没有少遭罪，居然这囊肿也已经这么大了～‼ 头侧着平躺在那里的自己眼泪就顺着眼角往外默默无声地流淌着～ 如果上天再给我一次机会，让我重新长大一次，我愿作个乖孩子，再也不叛逆了～ 万一万一意外发生，我也一定会第一时间告诉父母的～

回想 2001 年阑尾炎发作时也碰巧在生理期间，医院里躺在病床上的自己，医生在帮作超声波检查时还是两侧都检查了的；我便对女孩说，我右边病得更严重，问她能不能、要不要帮我把右边也检查一下？她好像是没说什么话（不记得了），但最终半个小时后，她说我们已经检查完了，她的探头一直都是放在我左边的。

她出于职业操守、不方便向我透露任可我希望知道的病情结果，我就往回走回家了。刚走出医院大门，她追出来问我的名字是怎么拼的，原来她们帮我 order 这项检查时我的名字不小心拼错了。我回家后，就只需要等到第二天，结果也就该出来了。

30.4 看病结果 (1)

我没有电子版的超声波检查结果，就按照纸版的 type 了一份，除了必要个人信息隐藏了，其它完全一样～。

MFM UX Student Health Services

Health center address

Health center phone number and fax number

(me~ ~)

Female DOB: xx/xx/xxxx

03/03/2014 - Imaging Reprot: GMC - PELVIC ULTRASOUND

Provider: the doctor's name I saw PAC

Location of Care: YYYY Medical Center

YMC - PELVIC ULTURASOUND

HISTORY: Pain

FINDINGS: Transabdominal views of the pelvis show the uterus to be mildly enlarged, measuring 4.3 x 5.1 x 10.1 cm. Central endometrium measures 9 mm in AP diameter. There is fluid within the endometrial canal of the lower uterine segment. Both ovaries are visualized and are normal. There is a small amount of free fluid in the cul-de-sac.

IMPRESSION: Mild uterine enlargement with fluid in the distal endometrial canal (? recent menses or douching). Otherwise normal pelvic ultrasound.

Electronically Signed By: Image doctor's name

Electronically Made Available By: Image doctor's name

Date: 03/04/2014 10:11

Electronically Signed By the doctor's name I saw PAC on 03/04/2014 at 12:29 PM

30.5　看病结果（**2**）

　　当医生打电话给我，已经拿到我的扫描结果，要我去 student health center 去找他时，我捡起 office 里的书包就冲在了去往 student health center 的路上，心理上感觉，我又一次地站在了命运的十字路口上～

　　office 里，医生首先对我说 congratulations，我有些莫名其妙，有什么好恭喜的？然后医生说，你的两侧卵巢都是好的！是好的吗？"Are you sure?" 我惊讶不已，这怎么可能，那我的病痛来自哪里？然后医生说，"but," 便接着对我说了子宫增生的事情。在 office 里当时，我并没能反应过来那个词到底是什么意思，只是觉得我还以为是卵巢呢，我自己之前也在网上查过，先前自己那个巧克力类型囊肿不是很容易复发的吗，（之前自己十二三岁出事后十年时间就发现囊肿了，现在手术后又过了 13 年）这么多年来这个囊肿、这个病它居然真就没有复发？我早年并没有生理后期需要排血块的经历啊，为什么近两年要死去活来地排血块，还变得日溢严重了呢？

　　我心想着，去年看一次病花掉 $350，什么作用也没有起，那这次，既然已经花了这笔大钱（超声波检查据医生说需要 $1000 左右，我的 ISO 保险只能报 $400），发现了病灶和症状，怎么得深入一下，看看是什么原因引起的，要怎么治疗和，如果能治得好，接下来该如何预防啊～ 毕竟，我是一个三十多岁的成年女性，还没有结婚，还有强烈的生育欲望，这一块的工作千万马乎不得！所以后来，student health center 的医生征求我的意见，问我要不要接下来去看妇科医生时，我就同意了，请他帮我推荐、预约我接下来该看的医生。大钱已经花在前面，多花再看一个医生的钱，好让自己心里踏实。

30.6　看病结果（**3**）

　　可能那个妇科医生真的很忙，可能是学校的策略有意压制这件事，也许后一种可能是我自己想多了。接下来约的妇科医生就给约到了学生们都放假回家的 spring break。

　　其实早在去看接下来的医生前，我就打电话给不好护士的姐姐，她说不痛不是很严重的话，就可以不用再看了。但在网上搜索查看了很多网页之后，出于对自己健康负责的态度，我还是没有取消这次预约，继续按原订计划走下去～!! *_^

　　那天去了医院，妇科医生所有所做的也不过是同我 talk, talk 再 talk！

　　解释了些我在网上查过，但也还是不懂的概念；我问了他是什么原因可能会引起这种增生，他说医学上也搞不清楚这个问题；然后再问这个东西会对女性的生育有什么影响啊，他给出的答案也是拖泥带水，说是对有的女性有影响，有的女性没有影响，就好比是说，这个状态对 50% 的生育期女生会造成影响，对剩下的又不会？!!

　　再问问他有什么样的治疗方案啊？他给列出了三种：一种是避孕药，2009 年的时候医生就是给我开了三个月的这种丸子，我吃了一两颗再也不想吃了；一种是生理周期前吃的叫"Ibuprofen" 的什么东西，他解释药物的作用居然只是止痛!! 第三种是一种叫"Lupron" 的针剂，每月打一针，连续打半年后，再超声波复查，看药物的效果。

　　我对避孕药就像早前舅舅提眼科手术后可以不用带眼镜一样有着本能的抗拒，它违背了生物的正常生理机制，在我看来也是非常恐怖的事！第二种只能止痛；只是止痛的话，在没钱的情况下，痛我还是可以自己再忍忍的，只要不伤及自己将来的生痛能力；只有第三种是有治愈效果的，医生说便宜的话每针可以只花 $200 左右，他是很希望我去治疗的，可惜我没有钱，这一次的看病之旅也就只能到此为止了～　以后痛还得痛，排血块还得排，账单倒是很增加了一笔～!!

Chapter 31

发贴求助

医生对于自己的痛情对生育的影响回答得拖呢带水，而自己还是有着强烈生育欲望的，加上自己生理期排血块的痛苦，中文网页上绝大部分都还是肯定这个会对生育有影响的，我就一心想从现在的境况里逃跑，可怎么逃呢？

小伙伴们看一下下面这个贴子是否还有印象、比较熟悉？那可能是偶滴传说中的马甲吧～?!!

发信人: (me~ ~), 信区: JobHunting

标题: 求指引方向

发信站: BBS 未名空间站 (Tue Mar 25 23:53:41 2014, 美东)

小女子半路出家 CS，学了两年基础课，混混恶恶，终归只算勉强入了 CS 的大门。

语言：

C++/C：《C++ Primer》能懂 85% 以上；《Effective C++》只能看懂 50% ~ 70%，编程时真正用上大概就只有不到 40% 了；《More Effective C++》没看完，只看了两三章。正向 C++11，STL，Boost 等相对新新事物靠扰

Java, C#: 只有入门初级水平，写过几个很小的 hw/project

Python: 上了编译课, 终于开始试着理解汇编的一些东西，开始有意识地尝试写真正的 python code 而不再是 c-style python code 了。

呆在一所小学校，完全没有机会学习 javascript,.net,.xml，CSS 等，除非自学。可惜偶榆木脑袋，触角还没能延伸到这里。

项目：

算法很弱，没做几道 leetcode 题，只把《Cracking the Code Interview》做了一遍。

C/c++/java/lisp 的项目断断续续有一些，BFS，DFS，decision tree, neural network, connect4, tictactoe, java plugin for eclipse，RTOS，compiler, Zigbee, GUI interface 等等都有一些，做得也还过得去，有一次实习经历。感觉自己有基本的分析和解决问题的能力，一般情况都能安时 deliver 能 work 的 code，但还需要一个相对强大的存在从 code safety, exception handling, OO 设计，资源的管理与利用，code reusability，refactoring, 兼容性，template programming, metaprogramming 等层面帮我提升一下。

喜欢 latex，emacs, org-mode makes life so much easier. 想学习 lisp 更好地用 emacs,可惜很多时候还是不懂。到现在收发邮件的 package 还没 configure 出来,mew 和 gnus 都有 bug（emacs23.5+linux mint）。

耳朵听力不好，分辨不清发音的细微区别，口语极烂。只是还算明白问题的重点，答案的重点，能 hit the point，基本能做到用英语有效交流。

这几年经历了一些生活的变故，终于不再 take everything for granted 了. 个人觉得师傅领进门，修行在个人。在我没有任何基础，没有强大的毅力去自学的时候，我花时间精力去入行。现在触角打开，真的很想要离开这个鸟不下蛋的小镇，却发现受困在这里。眼睁睁地看着自己枯萎凋谢，垂垂老矣，却苦苦挣扎，无能为力。

诚请各位路过的大牛帮小女子指条明路：1。赶紧把 leetcode 做一遍 2。学 C#。系里一个 TA 说工作上学 C# 比学 Java 有用偶才开始学 C# 的，但不知哪个更有用。3。理科脑袋。OO 的概念基本都懂，但不全都 implement 一遍，总觉得哪里不自在。所以 google 搜代码也好，自已写也好，implement 一遍确保理解 OO 相关。4。使劲投简历，每天投一二十份，投到 h1b 名额快速用完完全没有可能为止？

求路过的大牛前辈帮指点方向；1234 谁轻谁重，有没有一些需要注意或更重要的方面被我忽略了？

求指点，求鼓励，兼求推荐，小女子这厢有理了！

Chapter 32

第三个项目

32.1　第三个项目（1）

早说过了，不同的授课老师授课内容和效果都会不同。为此，早已领教习惯了 EC 老师的代课风格的自己对这门课也早就放下心来。

发出求救信后，最多的建议应该就是刷 lc 题目和学 java 了。接下来几天，也阴差阳错、误打误撞地进了一个 QQ 群。真正进了这个群之后，才发现别有洞天，才开始感觉我与这个广阔的世界终于有了联系！他们也深深地影响了我，那个恁是躲在龟壳铠甲里一动不动的自己这次终于是默默地主动跑去刷题了，用差不多四月份的时间连懵带骗地写了 100 个最简单的题目，然后再去准备期末考试 ~

这期间，就是写作业而已。而且此时，我刷 lc 的兴趣远高于写项目，写项目被我归功于一个小学校的小家子行为，刷 lc 是属于终身受益的世界性行为 ~ 所以写第三个项目就比之前写第一二个项目要晚。看见有写得早的小伙伴早就已经写完的时候，心里也还是会有些许着急，这时，EC 代课老师的两个 TA 的另一个与我 EC 同学的这个才只二十多岁的小伙伴就已经懂得安慰我说，没事，不用担心，我相信你一定写得出来的 ~ 是的，我也是这么想的！可听到小伙伴这么坚定地站在自己这一侧的时候，还是心理上感受到莫大的安慰和鼓舞呀 ~ *_^

到这个项目，老师也不再搞之前的什么折分成 subprojects，结果就是又刷掉一批人 ~ 对我来说，of course，这个项目也一定会按时保质保量地完成滴 ~

32.2　第三个项目（2）

一两个星期后，收到老师发的批发后的 project3，这次又轮着自己惊诧了，我的成绩只有 8/10，这一一老师又开始压分了吗？我的项目是没有任何问题的，我打算一下课就拿自己的项目报告上台直接去找老师谈一下 ~ *_^

这里也报一下 EC 课前几个项目和考试的成绩，也让小伙伴们理解一下拿到项目的自己何至于项目报告一到手就会一脸惊诧吧 ~

subproject1a: 9/10, hill climbing 应该有一个 scaling factor 随着越来越接近终点需要 scale down，但那时还没有 apply 这个 trick

subproject1b: 10/10, was marked "your code will be much simplier if yuo avoid pointers, dynamic arrays whenever possible." 我是想锻炼自己的呀 ~

project1: 90/100, 几乎没有可挑剔的地方，除了"more detail then is necessary in an abstract." 和英语非母语遣词造句上的问题。

Exam I: 68/100, 回去查了，是 68，不是 69 或 72，平均分还是没记，大概是 76 吧，但改得极严格 ~

subproject2a: 10/10，几乎只有一个 copy tree 函数，考对这个版块授课内容的理解，没有多大难度的；只是后来这函数在 project2 被我重新定义了 prototype

subproject2b: 10/10, 写起这种项目来没有任何问题的 ~

project2: 9/10, abstract 不小心画成了表格；node mutation probability slightly high; 我接着锻炼自己就把自己锻炼死在了二次函数 fitting 上 ~

Exam II: 90/100, 没什么感觉，同正规作业项目一样，考完了就考完了，讲评完了就讲评完了 ~

32.3   第三个项目（3）

这堂课我等着下课，课就显得特别长。一等老师说下课，我就拿了项目报告上台去找老师了帮我重看项目了。

我转专业第一学期就与大 A 同学有过接触，经历了我在这个系两年的学习，经历了 EC 第一次考试的天气骤冷变化，第一次与我真正同学的大 A，相信我给他留下的印象还不算太差吧，在我这次走上讲台去找老师时，就与他的同桌在教室里多停留一会儿，再次成为了这次事件的又一个学生见证人。

亲爱的小伙伴们，到这里就不得不介绍一下自己学校里的小伙伴——大 A 同学了。

那是我回学校读书的第一个学期，跟他们一起旁听 cs336 代课老师的 senior design 课。那们课的要求是作项目，班上所有注册的学生被老师分成了五六个小组，每个小组四五小伙伴一起合作一个项目。老师说他们没有选择小伙伴的权利，但他们有选择项目的权利。这样性格很好、乐于助人的 graduate student 大 A 就被分到了与男闺密、另一个国际学生及一个美国人一组。闺密那会儿也还在自学 java，大 A 却是一个 java 通，项目就是在他的坚持下选择了 Texas android 纸牌游戏。

后来我知道，他是 EC 代课老师的硕士研究生，作 Robotics，我们 EC 课上用到的好多种方法，什么 hill climbing, sales traverse man, genetic programming 等等，他在项目上也都用到。所以 EC 于他，就从来不在话下。最让我欣赏的一点儿是，这个 graduate student 天才般从来都知道自己毕业了想干什么—— android game, android app, it's all about android~ !! 而我，却与他正好机反，方向版块我也试了好多几个，我却是那个永远迷糊着、不知道自己真正喜欢什么、想干什么的人。

32.4   第三个项目（4）

走到讲台上，我先申明自己这门课是想得 A 的，因为已经到了我的最后一个学期。

"Yes, you can get A from this course!" 没有想到老师这么直接就可以给我 A 了，我有些喜出望外。

"I am glad to hear that. It really makes me happy to get an A from this course!" 我继续肯定着。

为了保证自己能拿到 A，我先问老师，是第一个项目还是第二个项目，我记得一个项目会值好几百分的，这个项目是只值 10 分吗？如果它只值 10 分，你只给我 8 分，比平时少一分我开以不讲较；但如果最终结果你会像之前的项目乘个 10 还是 50 的，那我想 argue 一下我的分数 ~

老师直接肯定说这个项目是会与之前的各个大项目值一样多的分数的！那我就继续与老师 argue 我的分数不应该只得 8 分！老师先前没有看我的报告，直接就这个人工蚂蚁的项目提问我两三个细节上的问题，他大概怀疑我没能真正完成这个项目，report 有造假吧。待我把他所有提出的细节问题都回答好，他就只好也只能挑图表说明、map symbol 说明等句子描述、以及语法语义上的毛病了。

我是真心想得 A 的，我要 argue 一分回来，虽然老师挑的都是小毛病，但它也是毛病，那最终的结果就是，老师让我回去把这些小毛病改过来，再重新发给他一份 pdf report，他会帮我再加一分回来 ~ 我当然是开开心心地跑回去改了后再赶快发给老师呀。

老师说这门课我可以拿 A~ !! 这个新的专业领域里，上课老师从来不给 A 的学生，骤然感到自己可以拿 A 的时候，真的想像电影里那样喊出来，我好开心呀 ~ *_^

32.5　第三个项目（5）

　　早说过了，我从来就不忌惮直面惨淡的人生。前面连才 45% 测试完全通过的 final version 的 compiler 测试结果长得奇丑无比都贴出来见人了，我并不怕贴自己的项目，只是前面依次贴了 .tex file, .org file, 这次没有更好的改进和提升的情况下，我也就不再浪费同专业小伙伴们的时间了。加上昨天贴病情结果、或者严格地说，整个这次站出来写，从来就没能与读者建立深切联系，风向总是阴晴不定，认识到这一点儿，我也感觉很挫败呀～ 就让我最终能顺着一口气写下去吧　 *_^

　　后来，到我们在进行最后一个项目时，一次周五我在 CSAC 值班，一个脑子不是特别好使，身体可能也有病、在这里年复一年、读了好几个学期的台湾同学向我要这第三个项目的代码，说想参考一下。我让他在白板上画、讲解他的思路，帮他指出了两三个他没能理解的地方，比如人工码蚁已经走到 map 的最右边了，按照老师的要求，如果再向右移动一位，蚂蚁是需要从 map 同一行最左边一格出来的。我说等我到 office 里从大笔记本拷后发给他，但实际上我没有发给他。亲爱的读者，请原谅我没有顺他的意帮助自己的同胞。从这门课第一个项目 (我自己弄明白老师要求的 scaling factor 后，又用中文讲解给他) 开始，任何思路上他想不通的问题，我都尽自己的最大努力为他讲解，但我更想看见一个更为用功、学得带点儿狠劲儿的同胞，而不是现在这个因为家里有钱、呆在这里年复一年 (比我早来还在读，不知要读到什么时候)、老师只要一个轻微的风吹草动就能把他拍得粉身碎骨的学生。在这样的环境里，我们要像小强一样顽强地活着～

Chapter 33

风雨飘摇

33.1　风雨飘摇 (1)

这个春季的学习大环境，和自己的心境，实在可以用" 风雨飘摇" 几个字来形容。

圣诞节假期刚过完不久，待我们楼下作访问学者的姐姐从加州玩完儿回来，我就问她要不要同我一起去附近的山上呼吸一下新鲜空气？那个 trail 上冰雪尚未化掉的中午，我们的鞋子都不防滑，走了不到三分之一个 circle，就连摔带爬地撤退回来，一路上聊着系里的事、聊着我们各自的经历和情感。

小姐姐试探我明不明白说，" 你知道，你只是一个异国他乡的小小留学生，别人处在高位上，要弄死你很容易的 ~!!" 我明白她的试探，便也说出了自己自嘲式的调侃，" 你想想啊，如果一只苍蝇围着一个关着的窗子四周，在那儿嗡嗡嗡地飞；它或许只是想逃到这个窗子外面去，可在这屋里的人，整天整天、几小时几小时地听它在那儿嗡嗡嗡，或许一个拍子下去它就死翘翘了，也只是迟早的事 ~!" 为表示对她善意提醒的肯定，我接着说，" 那会儿高中语文不是要我们背各种诗句吗，那什么' 说你行，你就行，不行也行；说不行，就不行，行也不行!'"，" 横披是' 不服不行'"! 我俩异口同声地应喝着，阳光点点撒落在山林小道上，很是僻静的山道上荡漾着我们的笑声，那样的日子不常有，还是很让自己怀念的。

33.2　风雨飘摇 (2)

那时候，mitbbs 首页上也出现过会有女生只和同专业男生约会的贴子出来，和自己当下的境况很有几分相似。

星相老师说，狮子们最有利的筹码，便是拥有" 神等级的专业"，这是与现实世界最好的连结，就算彼此精神、目标不相容也没关系，在贡献专业方面，只要有机会，狮子就会愿意世俗些，再世俗些，因此才会" 苦守寒窑" 到现在。

在这个我与周遭的世界最强大的" 神等级的专业" 联系里，借助于自己的专业，我可以分析、体会到小伙伴们的想法，estimate、evaluate 他们的思维方式、价值观，这也就有了后来 QQ 群里偶那" 妹纸只通过题目了解汉纸" 的调调 ~ *_^

而且更可恨的是，偶这个专业里最为世俗的、苦守寒窑到现在的狮子，居然已经全然丧失了从专业以外任何其它方面去了解异性的欲望（说得绝对了点儿，但是这个大致方向），这可真搞笑，不也真就成就了那" 只与同专业小伙伴约会"、只与同专业小伙伴关系最要好、最亲密的事实吗？

33.3　风雨飘摇 (3)

大概我欣赏的都是与自己性格合拍、比较有能力的小伙伴吧。

大 A 同学有着敏锐的对专业前途方向的判断，毕业前就已经找到一份大公司 android testing 的工作；小 A 同学兴趣要比我广得多，同在 CSAC 工作，同为 Emacs 爱好者，他帮推荐了 org-mode、zsh Emacs command set 等等。这两个小伙伴，同自己一样，也都是很好的 team player（自己也算得上是其中一个吧），很愿意、乐意去帮助别人。

而有些伙伴，能力应该或许也并不差，但性格上，玩起来、共事起来，可能就多多少少会有些磨擦，那当然也就只能有所保留、有所限制地合作共处了。

比如系里也有一个印度新生，来读硕士研究生，写 java 的，c++ 大概也还可以，能力应该也不差 (我还在努力学习 java 呀～)。应该是同暑假实习时 B 的个性比较像吧，他自己意识不到，是他一直试图塑造的团体里队伍里他一枝独秀形象的这种作法或者说潜意识，在伤害着他自己，那样就难免会让其它队友反感嘛。我一个新的专业学了一两年、脑袋终于开始开窍的学生，他还总找机会、若有若无地表现着他的鄙视，为抬高他自己的个人形象？这当然会让别人感觉不舒服嘛（至少是让我感觉很不舒服啊）～ 后来导师课的第二次考试评讲课，他 priority ceiling protocol 没弄明白提问了，可老师还是没能讲透，他再接着问时，我就课堂上回答这个问题了，说明白、说透了，他还是显得略有不服，拿眼睛看我的卷子。我那会儿还没学会用 org-mode 画这么繁琐的图，这个大题的几个 protocol 我就是在纸上用尺子比着画图画得清清楚楚的，因为是 open book，考试其余所有部分我就是用 org-mode 生成的 pdf type 得清清楚楚。见他想看我就给他看，不知道他看完之后，是否会让他有所醒悟和帮助～

当然，我也很感谢那晚 mitbbs 首页那篇老师抓学生换 typed 卷子的贴子，让我有所意识和醒悟，不再站出来写一次，我可能也会被无声无息地掐死的～ *_^

33.4　风雨飘摇 (4)

大环境的风雨飘摇，感觉起来就是环环节节地与自己的针峰相对～

二三月份，EC 课的第一个项目没办法难倒我之后，来了一次蛙声一片的第一次考试；第二次项目也没有难度，可学校的其它地方还有让我头痛和为难的地方。

我收到学校发来的邮件说我还有 balance 需要付，可我的学费是开学第一天已经 payroll deduction，付完自己现有的 TA 工资 (约 $3800，因第一周我不能工作扣了 $200)，我自己又用 debit 卡付了 $160 才付清，所有的奖学金也就只够勉强付学费，春天的生活费就完全只能靠信用卡度日了。我怎么还会有 Balance? 于是跑到学校里去查。

查的结果是，他们把我的 payroll deduction 弄错了，所以他们没能按照期望收到我的学费。因为我第一个周被扣掉 $200 是开学第一天交完学费后第一周里发生的事。加上任何时候，别人都可以有充足的理由可以犯错，别人有犯错的权利，别人要犯错，我也是没办法阻止的，这就没什么好说可说的；可别人接下来的处理方式是，沟通之后，因为别人已经没有按照预期收到我的 payroll，尽管之前是别人不小心犯的错误，所以以后我还必须得自己一次一次、每月两次地交学费，在 office 里她帮我重新算学费后，我需要交出纠正错误前 $1015.50 的学费。

33.5　风雨飘摇 (5)

而早在这之前，我的车早在二月份的时候就已经没办法发动了。当时我的保险没有拖车服务，是同一层楼上一个美国学生用他的大卡车帮我把车拖到修车店里去的，好让店里帮作检查。加一句，那个帮我拖车的老美，我去逼问过，别人就只要一盒 white chocolate cookie 就可以了，他说那是他们美国人感谢别人的方式。后来我就在店里买了盒他喜欢的 cookie、买了盒 muffin 送他以示感谢。

车检查出来的结果是，gas pump 给不了油，必须得换。打印出来的初步估价是，零件 $574.37, labor $85.00/hr * 2.5 hr = $212.50, fuel filter $34.82, 501 $25, 共计 $883.24, 别人说给我 $50 的 discount, 这样总计 $833.24。

呵呵，这又是老问题了。买车的时候，就是花了二十多块钱，请这家店帮检查的车。那时车主还有一副 extra 的 gas pump，说是他们当初以为是这个坏了，所以买了，但是因为没用，卖车的时候

就一起拿给我。但当我把这个东西抱到店里，店里说他们不能保证这个东西与自己的车是 match 的；如果不 match，我必须要付劳工费。这一年里我一直很穷，那这事就搁浅吧 ~ 这个价钱，我一定修不起，也不舍得再花银子去修它，车就扔在他们店里，我也没精力再去管它 ~

33.6　风雨飘摇 (6)

连我楼下的姐姐走的时候，知道我按预计 (她走之前我的车好像还没坏？) 我还差两个月的房租没法付，走的时候还非常好心地为我留下 $500 现金，希望能帮我度过难关。小姐姐说，将来我若有钱、有经济能力还她钱也可以，若我没钱就把这作为一种精神传承下去，在别人有需要的时候，我们尽力去帮助别人 ~ 我对姐姐说，这钱等我早晚回国，我一定会还她的 ~ 小姐姐临走时会留钱给我，这实在在我的意料之外，把我感动得一踏糊途 ~ 。

是前一个室友一直帮我交账单惯出来的毛病吗，在自己没有经济能力的情况下，学校里的那个 balance 就搞得自己十分窝火。后来，在闺密那里又借了些钱之后，写了张 check 把这个给清了。心理上，却好想好想，超越这平凡的世界 ~

可越在人穷得发疯的时候，账单到得越频繁。去年 4 月 8 日的账单是后来暑假实习后 (6 月中旬之后) 才到的；今年 3 月 3 日的账单 4 月 16 日不期而至说到就到 ~ 这一次，我选择作鸵鸟——把头埋进沙子里，眼不见心不烦，你们爱怎么着怎么着吧 ~ *_^

Chapter 34

针峰相对

34.1　针峰相对 (1)

或许是这个 ID 曾经在 mitbbs 上挖过一个大坑，或许是我所理解的，这个网站始终有一个股盘旋在这个学校上空的监督力量，当三月底我用马甲在网站上发出求救贴子后，这种来自于这个网站的影响力就回馈到了这个学校。从 EC 老师讲 fitness sharing 的课堂开始，这种回馈回来的影响力似乎就转化成了系里与自己的针峰相对。

前三个项目的授课内容结束后，老师的 topic 包括了 variations of genetic programming, 包括 Cartesian　GP，and Grammatical Evolution, 包括了 executable structure properties, Automatically Defined Functions (ADFs), ADFs 相当于把 Genetic programming 按功能模块折小，这样 cross over 时可以如愿切换不同的功能模块（也相当于实现 if…else if… conditions 吧）。老师 ADF 讲完后就讲了 Island Models。

前两个项目，当我们从每一代选择父母本的时候，老师推荐和 prefer 的是 rank-based tournament selection 方法，我的两个项目也都一直用的是这种老师推荐的方法。相对的，另一种方法是 Roulette wheel 方法，是 probability-based 方法。当老师讲 species attributes 的时候，就讲了 fitness sharing and crowding。但大半节课的时间重点强高的是 fitness sharing。fitness sharing 是在 probability-based 方法的基础上，减少选择极值父母本的可能性，增加群体的稳定性和群体长远的生存能力。至于 niching，基本就只提了一下。

这个授课内容让自己若有所思，但好歹它还是课本上的内容。在下课的时候，老师提醒说下堂课要讲"restrict mating"！当这两个 topic 联系到一起，我就本能地联想起了这些 topic 与自己个人的关系，我什么时候毕业、感情的结果又会是什么样的？

34.2　针峰相对 (2)

接下来的课堂，老师就真讲了 restricted mating。讲了 Geography, temporal mate selection, crossover only with similar individuals, 讲了 selection approach，比如父本按 tournament selection on fitness 选，母本按 similarity 选。讲这些，也只不过是讲了理论，具体实施起来，我猜测，如果代课老师的科研兴趣不在这一块，他也未必能设计出什么比较好的项目来供我们做吧～。

接下来，老师已经开始讲 schema theory。

第三个项目后的这所有的内容，相比于之前的课程和授课内容，虽然感觉这个老师科研上的兴趣性格与自己尚极为相似，但老师仿佛已经俨然失去了他天生的分析问题的直觉能力，课堂上的内容讲得走马观花、蜻蜓点水，点到为止，根本就不去管、去理会讲课的效果会是什么样子的。

他一方面讲得奇快、讲不透，一方面又时不时地、偶尔需要学生来回答他的问题。到这时候，EC 与上学期的编译课相比，就殊途同归地达到了下半学期、或后半 1/3 的课程、学生基本就不敢、不再、也回答不上来上课提问的局面。偶尔一两个胆子稍大点儿的顺应老师的意思，尝试着答一下，我

有自己想法的时间也会跳出来答一答。到这时候，要还有人再说我不 make a point，就该直接撞墙死掉算了 ~!!

34.3   针峰相对 (3)

舆论的影响力也还是强大的。正是有感于上学期舆论对自己的影响力，这个夏天再站出来写，无论结果如果，也一定要写出来救自己一次 ~!!

到那时，大概我用马甲发的求救信也已经反溃到了实习公司。根据 mitbbs 上的反馈，他们或许正有打算以人文关怀的名义、以给我特殊照顾的方式给我 return offer，这样我可以如愿工作。

到这时，学生个人已经与实习公司有了很好的联接、衔结；那学校这边呢，学校这边会舍得放人吗？舆论的目光重新投回到学校，学校这时会采取怎样的做法？

我自己在心里琢磨，从上学期编译课自己被整得惨死在这门课上、只得一个 C，这学期第一次考试再次被整，他们真的会老老实实地交人、这么轻易地放过我么？!!!

不，从他们压制学生、控制舆论的节奏来看，他们一定不会的 ~!!

又一次地给摆放在了命运的十字路口，我要为自己争取机会 ~!! *_^

34.4   针峰相对 (4)

我同学校里两年可以毕业的愿意是回到学校第一次同前导师讨论选课内容时，就已经同前导师、大牛知晓过的；两年毕业、不争奖学金的" 君子协议" 是第一学期在写出了 Tic-Tac-Toe 500 行代码后激流勇退甘愿被雪藏，同 cs210 的代课老师达成的，事后还去代课老师的 office 里说过。但外界，在学校的舆论操控下，去年暑假实习的公司、和外界舆论并不知道，我与学校有着这样两年的" 协议"，我要想个方法把这个点打出来 ~

接下来这次 EC 课上课前，我早早地来到了教室。等代课老师一来到教室，我就走上前台，对老师说，"I changed my mind. You know I have written that decision tree project in AI class. For EC, I don't need to challenge myself with interests. I just want to successfully finish the last project, so that I can focus on other things and graduate smoothly in August this year as planned~ " 我问老师他有没有什么项目可以推荐给我，他说 fitness sharing；那我反问改写 project1 的选择方法，用 fitness sharing，同时也完成 project 1 graduate student part，然后将结果与原 project 1 比较？代课老师同意，同意就好 ~!!

我课堂上的小伙伴们到这时，都已然明白我醉翁之意不太酒，代课老师，他，难道不明白吗？

这堂课，老师匆匆讲完 schema theory，就到下课时间了。这堂课结束时，老师提示下堂课的内容说，"The topic for coming class will be 'No Free Lunch' theorem!"

34.5   针峰相对 (5)

接下来 mitbbs 的舆论上，同一版面里，就有了三足鼎立的局面和字眼。

接下来周五的 EC 课，老师讲了一个"Royal Road Problem"，讲了一个"No Free Lunch Theorem"，讲了一个"Kolmogov Complexity/Randomness"，讲完这三个问题就下课了。

关于早早地被代课老师预告过的"No Free Lunch Theorem"，我的笔记本上是这么记的：

What is a GA optimization problem – abstraction? Every different search landscape/space is a different optimization problem. A search space is a mapping from inputs to fitness. No optimization algorithm will do best on all optimization problems. Any non-revisiting optimization algorithm will do equally well when average across all optimization problems.

作为一个理解起概念来、资质平凡的国际学生，这三个问题的代表性，No Free Lunch Theorem 的理论精髓，我们当时上课也没能真正理会清楚，现在除了笔记本上还留下了那么些句子，其余所有

的一切，随着这几个月时间的过去，也早就全部返还给了代课老师，除了当时境况下、下课前那一句"No Free Lunch" 所彰显出的穷凶极恶的恶毒，触目惊心，留在心底，久久挥散不去～

34.6　针峰相对 (6)

老师讲完 No Free Lunch Theorem，已经到了四月下旬。

接下来周一的课（04、21、2014 ），代课老师又重复了那"Kolmogov Complexity"，和 Schema Theorem / Building Block Hypothesis, Deceptive Problems.

The complexity of a thing is defined by the smallest program that will generate it.

How complex is the "source code" to generate? Kolmogov Complexity says Program A cannot generate a program more complex than itself.

For Deceptive problems, Deception can be used to measure problem difficulty.

这堂课结束前，老师举一个什么例子的时候，居然说到来自非洲等穷困国家、地方的孩子撒傻啊什么的，有很多不良习惯，他们的话不能信～!! 我记不得代课老师当初的原话了，但小伙伴们对老师这句话的反应就直接映在了我身上。那代课老师的意思是说，我上堂课前的话，关于 decision tree，关于毕业，有什么话是骗他的？!! 那是哪句话、到底是哪句话骗他了？作为一个生长在发达国家，受到过良好教育的学校里的教授，他又何至于说出这样 judge 的话来？

对于老师这样的舆论打法，和对来自穷困地区的孩子身上可能有的缺点的这种评价，迫使我把对这位代课老师的评价、evaluate 得很低。我也是来自相对贫穷的发展中国家，小的时候我也撒过谎，但长大后基本也都改正过来。为表达、发泄我对代课老师那种说法的不满，下堂课我就没去上课～!!。

34.7　针峰相对 (7)

逃了周三的课，在接下来的周五，当我来上课时，就发现，代课老师居然搞同自己一样的打法，这堂课他也不来上，由他的 ph.d 学生来讲一个他的研究项目。

代课老师，请问，你这样做，是要咬定第二次考试后，这些触目惊心的 topic、topic 的广泛性需求，optimization problems 的涉及都是针对我的吗？你故意紧接着我逃课不来上课，就是要强化，这所有的一切就是针对我——这个学生的，是这一层意思么？*_^

ph.d 学生就是对代课老师和他自己的研究课题作了些基础性、科普性介绍。没有了代课老师走马观花、蜻蜓点水式的授课方式，博士研究生的课显得更平和、他就一直在讲台上说啊说，把他准备的材料说完讲完了，也就早早地下课了。

继上上个周三课前我说想要按计划毕业、下课时他 predict 下堂课讲 No free lunch, 周五真正讲了 No Free Lunch Theorem，三中鼎立日舆论也已经发酵了十天左右。我也始终在等待着，不知道接下来会情况会怎样。

34.8　针峰相对 (8)

接下来的周一，代课老师讲他研究项目上所用到的 prey, predator 关系，为他上周五不来讲课找到、摆出了充足的理由。

紧接着的周三，代课老师开始讲 Competitive co-evolution, cooperative co evolution。

Competitive co-evolution 时，老师举了几个例子：1 population – implicit competition, for some environment 1 population – explicit competition, head to head competition 2 population – explicit competition, between 2 species 2 population – like Solver & Problem Generators

到 cooperative co evolution 时，老师先举个例子，比如说 Santa Fe trail 问题，2 ants, but the food requires both ants to pick it up together. 老师要我们回答，evaluate fitness 的方法、approach 有哪些？前面一个同学试了一下，但是答错了；到这种问题了，我与此代课老师类似、本能的分析与解决

问题的能力，就得到了彰显，回答这种问题，几乎成了一答一个准 ~ !! 我回答出来了，他们或许还没能想到，到这时，小伙伴们也没办法不服呀 ~ *_^

34.9 针峰相对 (9)

接下来的周五 (05、02、2014)，老师讲了 cooperative coevolution 里的一个边边角角，voting。

老师先讲 selection in individual level. 大意是说在某个层面，若有三个人参与 voting，若全部 voting 结果一致，那就是那一致结果；若结果有不同，则多数票否决少数票。我当时还提问老师说，这样的话，elite individuals will be shadowed by this mechanism. 老师说，是的，这个正是这个 voting 系统在 individual level 存在的缺陷。

老师接着讲 selection in team level. 当老师接着讲这个 level 的时候，我才意识到刚才那坑，似乎，我不应该跳；心里有些犹豫，可现在已经晚了 ~ !! 我睁大眼睛寻找着这个系统的缺陷，但以老师讲课的速度和侧重点，我使了九牛二虎之力也找不出缺陷的存在，除了可能的 (potentially) 对极少数 individual 的 shadow。

若是作为一系统，就比如一个学校的教学效果，他们能够在 team level 胜出，虽然这种选拔系统对个人来说并不合理。可问题是，当公司选拔个人的时候，他不是说要从学校里选一个 team 去公司工作的呀？可老师讲这两个 level 的先后次序，也决定了作为老师，他是站在 team level selection 这一侧的呀 >? !! *_^

到这一堂课，上了将近一学期的 EC 课，我终于知道，我今年的命运也只能如此了。代课老师不是要从科目上挂掉我，而是从舆论上掐死我 ~ !!

那天，我滚回家里去嚎了一个晚上，再想想接下来我该怎么办 ~ 。

好，到今天，

所有大版块内容，

都写完了

明天，

就该是发悲愤了

剩下的，

把剩下所有的材料邮件

归总起来，这几天发完

也就该结束了

还有一年时间

可以学习

从来再来 ~

居然忘了 QQ 群

后面会简要补写的 ~ *|^

Chapter 35

三方合作：延长 **CPT** 时与 **HR** 邮件

35.1   from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: "(me~)@gmail.com" <(me~)@gmail.com> date: Fri, Aug 16, 2013 at 1:04 PM subject: (agency 公司)- Update! : Important because you marked it as important.

Good Afternoon (me~),

I hope all is going well!

I received an update from (实习公司) that the anticipated completion date for your internship is scheduled for Sept. 20th. The expiration date I have listed on your Form I-9 (authorization for employment) is 8/23/2013. Do you have an update on the expiration date, and if so C please forward a copy to me for our records so I can confirm the extension with (实习公司).

Please let me know as soon as possible, so I can confirm with (实习公司) C and please feel free to contact me with any questions!

Best Regards, (agency 联系人)

35.2   from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Fri, Aug 16, 2013 at 8:39 PM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Hi (agency 联系人),

Sorry I just reached your email few minutes ago when I arrived home. Yeah I do have a update with my last day of working here as an intern, and it will be Friday 08/30/2013. My school will start on Monday 08/26/2013, but I will stay one more week here in (实习公司) so that I would be able to finish all my projects and also get well-learned and practised.

Thank you so much, and have a nice weekend! (me~)

35.3   from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Mon, Aug 19, 2013 at 9:40 AM subject: RE: (agency 公司)- Update! : Important mainly because you often read messages with this label

Good Morning (me~),

Thank you for the update C please confirm that your I-94 has been extended to 08/30/2013; (agency 公司) cannot continue your employment beyond the expiration date 8/23/2013 of your Form I-9 (attached).

Best, (agency 联系人)

35.4   from: (hr 联系人) <(hr 联系人)@(实习公司)>

to: "(me~)@gmail.com" <(me~)@gmail.com> cc: "(agency 联系人)@(agency 公司).com" <(agency 联系人)@(agency 公司).com> date: Tue, Aug 20, 2013 at 2:38 PM subject: Internship extension mailed-by: (实习公司) : Important because you marked it as important.

Hi (me~),

I understand that you internship has been extened to 8/30/13. Please confirm that your I-94 has been extended to 08/30/2013; (agency 公司) cannot continue your employment beyond the expiration date 8/23/2013 of your Form I-9 (attached). Please reach out to (agency 联系人) at (agency 公司).

Regards,

(hr 联系人)

35.5   from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Tue, Aug 20, 2013 at 8:41 PM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Hi (agency 联系人),

I have attached a scanned modified form, please help me check if it is OK. If it doesn't satisfy the requirement, please let me know.

Have a nice day!

thanks, (me~)

35.6   from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Wed, Aug 21, 2013 at 9:17 AM subject: RE: (agency 公司)- Update! : Important mainly because you often read messages with this labe

Good Morning (me~),

Please call me at your earliest convenience, so we can discuss the extension of the work eligibility. In order to extend beyond Friday, (agency 公司) needs to verify you have received an extension to your I-94 from your school C this is the document you received with approval for CPT.

Thank you, (agency 联系人)

35.7   from: (hr 联系人) <(hr 联系人)@(实习公司)>

to: (me~) <(me~)@gmail.com> date: Wed, Aug 21, 2013 at 9:26 AM subject: RE: Internship extension mailed-by: (实习公司) : Important mainly because you often read messages with this label.

Hi (me~),

Thank you for following you with (agency 公司). (agency 联系人) called this morning and would need to see you I-94 form that you received from your school. Please send that to her.

Regards,

(hr 联系人)

35.8   from: (me~) <(me~)@gmail.com>

to: (hr 联系人) <(hr 联系人)@(实习公司)> date: Wed, Aug 21, 2013 at 10:03 AM subject: Re: Internship extension mailed-by: gmail.com

Hi (hr 联系人),

I missed her call this morning but we have talked afterwards and I am processing the necessary documents in order to get my CPT extended. Hope all the process can go smoothly this several days.

Thanks, (me~)

35.9 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Wed, Aug 21, 2013 at 10:07 AM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Hi (agency 联系人),

It was good we talked and got the process clear now. I talked to my university and the CPT extension application process has been initiated. Hope it will be done on time by this Friday. By the way, do you have any hard deadline this Friday, something like 5:00pm PDT? I mean the school is OK and processing it, but new student orientation will be from tomorrow, things are rushed into these two days. But anyway, just let me know, I will try my and my university's best to make it work.

By the way, please do help forward a blank version of the I-94 form so that I can fill it out and send back to you on time.

Thanks a lot! (me~)

35.10 from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Wed, Aug 21, 2013 at 10:21 AM subject: RE: (agency 公司)- Update! : Important mainly because you often read messages with this label

Thank you (me~),

You will need to have the approval before you can work past 8/23/13 C so if it takes until Monday, then you would be able to report for work on Tuesday after submitting the updated I-9 form to (agency 公司). To continue working, please update the attached form. Here are the instructions for completing Section 3 C Reverification

1. Ask a friend or non-relative to act as an agent of (agency 公司) if (some friend) is not available to update the form (if she is, then skip to #3)

2. Ask the friend to sign the "I-9 Agent Authorization Form" in order to complete Section 3. Reverification

3. Present your friend the original I-94 form to document under item C:

   Document Title
   Document Number
   Expiration date (if any)

1. Sign on the line below that says, "Employer or Authorized Representative" add the date, and printed name.

Please let me know of any questions C I'm happy to help! (agency 联系人)

35.11 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Wed, Aug 21, 2013 at 10:30 AM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Hi (agency 联系人),

I think I got most of the part, but in order to fill out an updated I-9 form and the reverification part, I think I would still need a blank form of Form I-9 page (7 of 9) and (8 of 9). Please help me look into this one if I really need these pages.

Please don't worry about the date too much then. If I can not get completely processed by Monday, I can work as volunteer on Monday without pay. It's completely ok for me. I appreciate the experience I got this summer from working in (实习公司).

Thanks, (me~)

35.12 from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Wed, Aug 21, 2013 at 10:37 AM subject: RE: (agency 公司)- Update! : Important mainly because you often read messages with this label.

Hi (me~),

Section 3 C Reverification must be completed on the completed form on file; it is at the bottom of page 8 of 9.

(agency 公司) does not permit employees to work as volunteers; this would need to be pre-approved by (实习公司) directly C please confirm with (hr 联系人) if you are authorized to be on campus without work authorization by (agency 公司).

Thanks, (agency 联系人)

35.13 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Wed, Aug 21, 2013 at 10:42 AM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Hi (agency 联系人),

Now I completely understood the process now. I will follow your instruction and try my best to get the process done on time. If by Monday it has not got processed, I can work on Monday at home then, please do not worry about that too much!

I will contact you if I get any other questions.

Thanks a lot!

(me~)

35.14 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Fri, Aug 23, 2013 at 3:54 PM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Hi (agency 联系人),

I have submitted my CPT Extension Application to my university International Program Office already, and becasuse of the new school year student orientation, things are slightly slowed down, but I will get my CPT processed today. As you issued out earlier, I will take Monday off to wait and process

all the documents until all are processed completely, and then I will come back to work. So please help spare me some time on Monday, and I will for sure contact/email you the copies needed. Hopefully we can get all the documents processing done by the end of Monday.

If you have any other concern of issues, please let me know.

Thanks, (me~)

35.15   from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Fri, Aug 23, 2013 at 4:13 PM subject: RE: (agency 公司)- Update!

Thank you (me~),

As soon as you receive the extension Form I-94, please send it to me via email. If you get it today, please text my cell phone: (555)-555-5555 i will check my email C if all is in order, you can report on Monday. Otherwise, we'll connect on Monday.

35.16   from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Fri, Aug 23, 2013 at 4:18 PM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Thanks (agency 联系人),

I am not sure if I-94 is the new I-20 for CPT, but as soon as I received my I-20, I will fill out the I-9 (Page 7 of 9, and Page 8 of 9) and signed Authorized Agent For Form I-9 (totally 3 pages) to you as soon as possible.

Thank you so much for all the help, and have a nice weekend!

(me~)

35.17   from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Fri, Aug 23, 2013 at 4:26 PM subject: RE: (agency 公司)- Update! : Important mainly because of the people in the conversation.

Hi (me~),

I will not need a new I-9 form; please send me a scan or copy of the I-20, and I will update the form on Section 3 C Recertification. It is very important I receive a copy of the document from your school that confirms your extension.

35.18   from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Fri, Aug 23, 2013 at 4:34 PM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Hi (agency 联系人),

Yeah, I got the information. Right, right, I will send the scanned copy of my extended-to-08/30/2013 new I-20 then as soon as I get it.

I sent out the application form on Wednesday, and most probably, they will send the new I-20 to me directly instead of to you. Sorry I want to make it clear now, do you want the I-20 come from my university, or from me is OK too? Just that usually they send to me first, but I want to try my best to satisfy the regular process here in (实习公司). Please help confirm.

Thanks, (me~)

35.19 from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Fri, Aug 23, 2013 at 4:35 PM subject: RE: (agency 公司)-Update! : Important mainly because of the people in the conversation.

From you – it will be fastest

35.20 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Fri, Aug 23, 2013 at 4:50 PM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Hi (agency 联系人),

The latest news: I just confirmed with my university that my university International Program Office will send me the scanned copy tomorrow after the Madam finishes it. And I will forward the scanned copy to your email and also to your phone immediately. Could that help and means I could come on Monday and work on regular hours?

Thank you so much! (me~)

35.21 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Sat, Aug 24, 2013 at 8:54 PM subject: Re: (agency 公司)- Update! mailed-by: gmail.com

Hi (agency 联系人),

I received the scanned copy of my new I-20 from my university, and I have the scanned pictures attached, please check. I will send a message to your cell phone as well.

Please let me know if you need any other materials, and let me know at your earliest convenience if I would be able to work on Monday.

Thank you so much, and have a good weekend! (me~)

35.22 from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Sun, Aug 25, 2013 at 7:45 AM subject: RE: (agency 公司)-Update! : Important mainly because of the people in the conversation.

Great job! Thank you (me~) yes, you can work on Monday. I will email (hr 联系人) & confirm with her, too. Enjoy your Sunday!

Chapter 36

三方合作：延长 **CPT** 与导师邮件

36.1   from: (me~) Huang <(me~).huang2010@gmail.com>

to: cs445 代课老师 <captainbbbbbb@gmail.com>, cs445 代课老师 @XXXXXX.edu date: Wed, Aug 21, 2013 at 10:01 AM subject: Summer Internship Extension mailed-by: gmail.com

Hi Dr. cs445 代课老师,

I am in the hurry to apply for one week extension for my summer internship so that I can make slightly more money. I have modified the Application form so that I would be able to work until 08/30/2013. Could you please help me review and modify the signature date so that I can forward to IPO for CPT extension? IPO will have new student orientation tomorrow. So if you have reached this email by any chance, please help me process it so that I can get one week extended smoothly without forced to be ended this Friday.

Thanks a lot! (me~)

36.2   from: (me~) <(me~)@XXXXX.edu>

to: "captainbbbbbb@gmail.com" <captainbbbbbb@gmail.com>, "cs445 代课老师" <cs445 代课老师 @XXXXXX.edu> cc: "(IPO)" <(IPO)@XXXXXX.edu>, "(me~)@gmail.com" <(me~)@gmail.com> date: Wed, Aug 21, 2013 at 3:19 PM subject: CPT Application mailed-by: XXXXX.edu

Hi Dr. cs445 代课老师,

I have refilled a CPT Application form, please help me review, sign/date it and help me to forward to (IPO) at your earliest convenience so that (IPO) would be able to help me process the CPT one week extension.

Thanks a lot!

36.3   Re: Summer Internship Extension

cs445 代课老师 [captainbbbbbb@gmail.com] You replied on 8/21/2013 7:45 PM. Sent: Wednesday, August 21, 2013 7:23 PM To: (me~)

Hi (me~), Tell me in a numbered list of well explained simple steps what you want me to do. thanks, cheers,

36.4   RE: Summer Internship Extension

(me~) Sent: Wednesday, August 21, 2013 7:45 PM To: cs445 代课老师 [captainbbbbbb@gmail.com]
Hi Dr. cs445 代课老师,

I just modified the file to extend it to be 08/30/2013. And since you have signed it for me before, I just need you to

1. modify the signature date of yours to be 08/20/2013

2. Send back the modified one to me

so that you "know and approved" the process.

Thanks a lot! (me~)

36.5   Re: Summer Internship Extension

cs445 代课老师 [captainbbbbbb@gmail.com] You replied on 8/21/2013 10:21 PM. Sent: Wednesday, August 21, 2013 10:17 PM To: (me~) Attachments: CPTApplication$_{(me~)}$-2.pdf? (236 KB?)[Preview on web]

Hi (me~), See attached. Let me know if there is anything else you need.

cheers,

36.6   RE: Summer Internship Extension

(me~) Sent: Wednesday, August 21, 2013 10:21 PM To: cs445 代课老师 [captainbbbbbb@gmail.com]
Dr. cs445 代课老师,

This works perfectly. Please ignore the email I sent to you one minute ago, and I will forward the current one to (IPO) so she can help me with CPT application.

Thanks a lot! I will see you soon!

(me~)

Chapter 37

三方合作：延长 **CPT** 与 **IPO** 邮件

37.1 CPT Application

(me~) Sent: Wednesday, August 21, 2013 10:19 PM To: captainbbbbbb@gmail.com; cs445 代课老师; cs445 代课老师 @XXXXXX.edu Cc: (IPO); (me~).huang2010@gmail.com Attachments: CPT Application.pdf? (354 KB?)[Preview on web]

Hi Dr. cs445 代课老师,

I have refilled a CPT Application form, please help me review, sign/date it and help me to forward to (IPO) at your earliest convenience so that (IPO) would be able to help me process the CPT one week extension.

Thanks a lot! (me~)

37.2 CPT one week - extension Application

(me~) You forwarded this message on 8/24/2013 12:14 AM. Sent: Wednesday, August 21, 2013 10:28 PM To: (IPO) Cc: cs445 代课老师 Attachments: CPTApplication$_{(me~)}$-2.pdf? (235 KB?)[Preview on web]

Hi (IPO),

I have attached the updated CPT Application form, please check.

I am trying my best to get my work extension processed by this Friday so I won't be prevented from working on coming Monday. Please help me process it at your earliest convenience. And when you have the new I-20 ready, give me a notice and I can ask some friend to pick it up and mail to me immediately.

I have troubled you a lot during the summer. Thank you so much for all the help. If you have any question or concern, please let me know.

Thanks a lot! (me~)

37.3 FW: CPT one week - extension Application

(me~) Sent: Saturday, August 24, 2013 12:14 AM To: (IPO) Attachments: CPTApplication$_{(me~)}$-2.pdf? (235 KB?)[Preview on web]

Hi (IPO),

I feel great that you showed up in office even after orientation and I still grabbed the chance to talk to you today the last moment. Please help me spend some of your extra hours process it so that I would be able to work on Monday. I will catch up with you sometime when I arrive on campus and hope we will have a nice chat!

Thank you so much, and have a great weekend! (me~)

37.4 Advisor's Signature Process Attached

(me~) Sent: Saturday, August 24, 2013 7:51 PM To: (IPO) Attachments: CPTApplication$_{(me~)}$-2.pdf? (236 KB?)[Preview on web]

Hi (IPO),

I have forward you the advisor's signature process so that you understood the advisor's signature has been taken care of. Please help me with some extra hours process the new I-20 so that I would be able to work on regular hours.

Thanks in advance. (me~) ___ From: cs445 代课老师 [captainbbbbbb@gmail.com] Sent: Wednesday, August 21, 2013 10:17 PM To: (me~) Subject: Re: Summer Internship Extension

Hi (me~), See attached. Let me know if there is anything else you need.

cheers,

On Wed, Aug 21, 2013 at 12:45 PM, (me~) <(me~)@XX.XXXXXX.edu> wrote: > Hi Dr. cs445 代课老师, > > I just modified the file to extend it to be 08/30/2013. And since you have signed it for me before, I just need you to > > 1. modify the signature date of yours to be 08/20/2013 > 2. Send back the modified one to me > > so that you "know and approved" the process. > > Thanks a lot! > (me~) > ___ > From: cs445 代课老师 [captainbbbbbb@gmail.com] > Sent: Wednesday, August 21, 2013 7:23 PM > To: (me~) > Subject: Re: Summer Internship Extension > > Hi (me~), > Tell me in a numbered list of well explained simple steps what > you want me to do. > > thanks, > cheers,

37.5 RE: Advisor's Signature Process Attached

(IPO) You replied on 8/25/2013 3:49 AM. Sent: Sunday, August 25, 2013 2:06 AM To: (me~) Attachments: (me~) 001.jpg? (461 KB?); (me~) 002.jpg? (619 KB?); (me~) 003.jpg? (259 KB?) Hi (me~),

Please see the attached I-20 for your CPT extension, please let me know if there is anything else that I can help with!

Sincerely,

(IPO) Senior International Student & Scholar Advisor International Programs Office

Chapter 38

三方合作

38.1 三方合作 (1)

星座上说，"然后到了 2013 年，狮子地位依然维持，依然努力工作、兢兢业业，但状况似乎有些变化。说不出所以然，就是一股隐约的反对势力让你不得不被牵制、晃到，而且理由莫名其妙又不友善，让狮子很不服气。虽然说这些不顺伤不了狮子的筋骨，但就会明显感到，啊，"有人不买账了、莫名被吐槽了、就是要搞你了"，暗中的恶意正对你而来，且不怕让你知道他的恶意，对方甚至有点来头跟你对杠，就是要狮子注意到他与你势均力敌。"

对上面星相老师对 2013 的总结，我也是深有体会。正如上面三个贴子所贴出的关于实习最后一周延期的事，对这一点儿的体会也是再深不过了。

前面写实习部分的时候，故意跳过了这一点的细节。而我必须首先老实交待和承认的是，那个周五 (还是周四？) 的下午，当我把 C 说希望实习能够延长一周时，我说过，"学校那边没什么问题"，请读者原谅我，那时说这话的自己，其实尚未同学校打招呼。在我眼里，学校那边要比公司这边容易处理很多，若是公司这边不允许，学校那边便也就没有必要联系了。而我有如此自信，学校那边不会有什么问题，也是因为在心里我早就打算要自己交秋天的学费，在这种前提下，料想学校那边不会有任何问题。

所以接下来的周三，当实习公司这边开始浩浩荡荡开打，欲想实习公司与学校合作，若是能揭穿我说、说过谎，便把我打回十八层地狱、打回阴朝地府去～!! 可学校这边，正如我一早已经开始同软件工程课的代课老师、系里的大牛开始联系秋季上课交学费的事情，我也在周三第一时间同自己的导师联系 CPT 延期申请，所以学校这边完全没有意识实习公司那边到底在作什么。

38.2 三方合作 (2)

周三上午同那个相关人员打电话时，我问她，当我第一次来正式实习的时候，你不需要看我的 I~20，现在，我只需要延期一周，你们要亲眼看我的 I~20 吗？电话那头传来的女声说，是的～!!

周三同导师联系时，因为自己着急，想着导师只需要修改上次申请电子表格的日期就可以了，后来，因为 IPO 本着认真负责的精神，充分怀疑我的申请表里导师签字的真实性，所以后来就把自己导入到了更长的等待里 (等到周六)。但公司这边，因为我周三一一也是开始申请的第一天，已经拿到导师同意的签字、安全过渡，所以再看接下来周四、周五 C 与其它 manager 们的反应、表现，一方面后怕不已 (原来我迷糊犯错时，还有那么点儿本能的防火防灾性，但不可再犯!)，一方面却也对公司里头目们如此想看别人出洋相惊诧不已～!! *_^

正如，这次站出来贴早前时候的一次作业，当时我没有找到正确的版本，但等后来我找到了，我就及时将自己犯过的错误纠正了过来。虽然高考之后，我已经不撒什么大谎了，但这两件事仍然会警告自己，不是迫不得已，不是出于善意的谎言，我坚绝不要再撒任何的谎～!!

38.3 三方合作 (3)

再来回补一下 EC 课代课老师说非主洲孩子撒谎，难道代课老师的说的是这件关于实习延期的事？我已然主动承认了 (说了谎也是因为，觉得及时与公司打好招呼比从学校走正规程序要难很多的常识啊)；倒是代课老师接下来也没来上课之后，当他发还给我们 project3 有时候，他给我的成绩 8/10 又该如何解释？他的评分难道是信口开河？

那次代课明明说我们课我可以得 A；我的最后一个项目也写得很好，顺利地完成了所有他所建议要求的所有内容；期末考试因为他把最后三分之一的课彻底讲迷糊掉了，我绝对相信期末若是 close book 考的话刷掉的人不要太多 ~ ! 但老师有自知之明，AI 的期末都是闭卷的，这门 EC 期末这次必须得开卷考试呀 (要不然学生们怎么过，试卷出 1+1=？)，所以对我来说也没有什么问题。但我最终的成绩，老师给的还是 B~ !! 之前第一次考试后在他 office 里，说起上学期的编译课，他建议我说我可以去找一下代课老师。这学期期末考试后，我因事在学校停留了一周才离开去加州，这一周我多次到楼上他 office 前去，我想去找一下代课老师，但我连代课老师的影子也见不到 ~ !!

再补充一点儿。关于 EC 最后一个项目，代课老师从网上找各种来源的项目、鼓励大家争发 paper，把那个项目打得山响。但我清楚地知道，在自己与代课老师针锋相对、个人与系里的矛盾已然白热化、舆论已然关注到这个学校、这个系、这门课的时候，代课老师那么做，也不过是他虚张声势，也不过是自己往自己身上抹金、往他的其它学生 (因为之前的我已经说了我要 focus on 其它事情上) 身上抹金的 xx 作法而已。

38.4 三方合作 (4)

就好像说本来一个系一个专业这近一年毕业的好学生也就那么两三个，处于打战场、打舆论、装点门面的需要，这两个学生可以被安排在五月初答辩一次，8 月份我回学校来，舆论再次集中到这里来时这两个学生再答辩一次，别人不觉得别人系里、学校里人才少，别人不觉得有丝毫不合适、不妥帖的 ~ !!

就像五月份 directed study, team project, 自己明明与小伙伴们写了四五个周末的项目，是三个大项目里进展最好的项目，是这个项目六个人里贡献最多的三四个人之一。这 6 个人里一个从来不参加项目的，最后代课老师给他水过？一个就只来了一次作了作样子；我们四个人是对项目贡献最多的，但到五月份代课老师刻意安排 demo 时，代课老师不让我参加、压根儿就不通知自己 ~ !!

就像 distributed system，我原本就不太懂，老师也讲不透，这样的课，不曾期待拿个 A；别人也只是想要别人喜欢的 programming 的科目上拿 A 而已，为什么就这么难，每门课就一定得弄个奇难的考试、评得极人、把别人的活活打死、卡死 ~？别跟我说我不配拿 A，cs210，就算别人转专业不到一个月已然写出 500 行 lisp，但代课老师评分五次作业一次作业平均仅只 30 分，总共两次考试，每次考试 150-200 分，想拿 A，作梦吧，门都没有 ~ !!

就像一年前的九月当自己没选到统计相关课时，对家里室友就过不喜欢这个系这个学校，当自己的成绩被系里一直打压、当别人的价值得不到肯定，要别人拿什么来爱这个学校？

Chapter 39

三方合作：实习前与 **HR** 邮件

39.1   from: (hr2) <c.laituri@(实习公司)>

to: "(me~)@gmail.com" <(me~)@gmail.com> cc: (hr 联系人) <(hr 联系人)@(实习公司)> date: Tue, Jun 4, 2013 at 8:38 AM subject: Your upcoming internship with (实习公司). mailed-by: (实习公司)

Good Morning (me~), I am pleased to hear that you will be joining as an intern very soon. My name is (hr2) and I manage the immigration department here at SSI. (hr 联系人) your recruiter gave me your name because I am required to run some additional export license review checks and SDN/do not fly security checks prior to you joining us.

(hr 联系人) was kind enough to provide your job description and resume to assist me, but I also need your last place of foreign residency complete address please. Regards, (hr2)

39.2   from: (me~) <(me~)@gmail.com>

to: (hr2) <c.laituri@(实习公司)> date: Tue, Jun 4, 2013 at 8:58 AM subject: RE: Your upcoming internship with (实习公司). mailed-by: gmail.com

Good morning (hr2),

I am slightly confused with the last place of foreign residency, I think most probably it should be my last previous address in US, Which should be: 110 S Almon Str, Apt #312, Moscow, XX 83843. I had lived there for the past year. And my current temporary address in US is: 2959 Hostetter Road, San Jose, CA 95132. I have changed to this address before I leave for CA in the post office.

I want to check with you if these additional export license review checks and SDN will possibly change the hiring result, and if I should start my CPT application from my university immediately.

I may have misunderstand about the address. If you have any question or relative information for me, please do not hesitate.

Thanks a lot! (me~)

39.3   from: (hr2) <c.laituri@(实习公司)>

to: (me~) <(me~)@gmail.com> cc: (hr 联系人) <(hr 联系人)@(实习公司)> date: Tue, Jun 4, 2013 at 9:29 AM subject: RE: Your upcoming internship with (实习公司). mailed-by: (实习公司)

(me~), I need your last place of foreign residency which I believe (hr 联系人) mentioned is probably your home county of China. Please provide that complete address. If we have to obtain an export

license, that process takes about 40-50 days after we submit the request. If we did need an export license, you could start with SSI but would be limited to the technologies you could be exposed to. The SDN Do not fly report could be a problem if you are on the restricted airline fly list which I would doubt that you are. Please don't worry about this until I have these checks completed and the reports back to (hr 联系人) which should be within the next 48-72 hours. I can tell you that the last two internships that (hr 联系人) sent me, the positions DXX NOT require an export license. I will share the results with (hr 联系人) as soon as I get the reports back.

This is nothing out of the ordinary as all companies are required to screen positions for export control licenses for all foreign nationals. Same thing for the SDN/do not fly checks. You probably weren't even aware the checks had been made (or should have been made) on your prior internships or full-time positions.

Please provide your last place of foreign residency address at your earliest convenience. Your past U.S. addresses will not suffice.

Thank you, (hr2)

39.4   from: (me~) <(me~)@gmail.com>

to: (hr2) <c.laituri@(实习公司)> date: Tue, Jun 4, 2013 at 9:52 AM subject: RE: Your upcoming internship with (实习公司). mailed-by: gmail.com

Dear (hr2),

Thanks for all the detailed explanation for me. I understand the SDN Don not fly security checks now and I agree with you that I don't need any flight during my intern and I will go back to school driving my car, so I won't take any airplane within coming one and half an year. I have not even hear about these concepts before with my previous internships. So I don't think this process is necessary neither. But you will be the one to make the decision.

My last place of foreign residency address is: ~ aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa ~

I have some concern with this checks/address as well, because in our country I don't think we have clear address records like US at all. The above presents the last address I lived when I was in China. But according to our human resource management, my documents/files/address are now stored in some agency place in Wuhan, Hubei province, in which state that I was born. But I don't have any idea where is that place and agency name at all. Please help me put these circumstance into consideration as well.

Thanks! (me~)

39.5   from: (hr2) <c.laituri@(实习公司)>

to: (me~) <(me~)@gmail.com> cc: (hr 联系人) <(hr 联系人)@(实习公司)> date: Tue, Jun 4, 2013 at 10:01 AM subject: RE: Your upcoming internship with (实习公司). mailed-by: (实习公司)

(me~), The address you provided in Beijing is the one I need since it is your last place of foreign residency. I understand you won't be flying. This is a required security check that (实习公司) requires me to perform on all foreign nationals holding any type of position in the company along with the Export Control screening. Our immigration attorneys from the Morgan Lewis and Bockius law firm in Washington DC will be performing the check. Thank you for providing the information and I will let you know if I need anything else. (hr2)

39.6   from: RedCarpet Onboarding <RedCarpetMailer@silkroadtec

reply-to: redcarpet$_{support}$@company.com to: (me~)@gmail.com date: Mon, Jun 10, 2013 at 10:57 AM subject: Welcome to (agency 公司) Onboarding for your assignment at (实习公司) mailed-by: silkroadtech.com

Welcome (me~),

We are so happy to have you join our team here at (agency 公司). We will be your payroll and back office provider at (实习公司). RedCarpet is our application that will guide you through your onboarding process with us. Please write down your login information username & password, for future reference then proceed to our RedCarpet by clicking the link provided.

Note: Your first task is now available. Please login below to complete your first task.

Username: (me~) Password: kgjdfjkgfkg

39.7   from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: "(me~)@gmail.com" <(me~)@gmail.com> date: Tue, Jun 4, 2013 at 10:55 AM subject: (实习公司) - Welcome to (agency 公司)! : Important because you marked it as important.

Good Morning (me~),

Thank you for taking the time to speak with me - Congratulations on your Internship with (实习公司)!

(agency 公司) will serve as your employer of record, and administer your payroll and benefits while you are on assignment. In addition to providing direct deposit and weekly paychecks, (agency 公司) offers medical benefit plans including vision, and dental coverage. I look forward to working with you as you complete the required pre-employment steps in preparation for your assignment through (agency 公司) - Let's get started!

Background Check

It is very important to begin the pre-employment screening as soon as possible to ensure all is complete and clear prior to your targeted start date. For your position, the following screenings are required: Criminal Background Check, Education Verification, Employment Verification.

Please go to the website `https://www.candidatelink.com/fgfgjhgj` and follow the steps noted below: Go to the lower box designated "New Users" and click "Create Account". Create a user ID, enter your email address, create and confirm a password and select a challenge question/answer in the event you forget your username or password. Make note of the username and password created for future reference. Return to the ADP home page and enter your new username and password created. Review and complete the E-Sign Confirmation. Create the Candidate Record information by completing the data fields requested. Create the Screening Collection information by completing the data fields requested. Review the Background Check Disclosure and Authorization Form. Complete the form by digitally signing at the bottom of the page.

*Please be sure to provide accurate dates and contact numbers to the best of your ability. All employment checks completed will be verifications of employment (not a reference call).

(agency 公司) will be notified automatically of the completion of your registration through the ADP system. Once your pre-hire screening has begun, we will be happy to provide you status updates through the process until completion.

New Hire Paperwork – Red Carpet

After the background check begins, you will receive email instructions for completing your new hire packet online with Red Carpet. Most of the information can be processed on-screen with an electronic

signature. The exception is the I-9 form, which will require you to print and sign the form, then have a witness (non-relative) complete Section 2.

If you have any questions, or would like further assistance please feel free to contact me – I'm here to help!

Best Regards, (agency 联系人)

39.8   from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Tue, Jun 4, 2013 at 11:21 AM subject: RE: (实习公司) - Welcome to (agency 公司)! mailed-by: gmail.com

Good Morning (agency 联系人),

It was really nice speaking with you in the morning. Thank you so much for all these helps, and I will start the pre-screening process once I finish this email immediately!

In the phone I mentioned about the offer letter and job responsibility staff. But after I have reviewed the previous emails, I think the email offer letter and email job description works perfectly, and please don't contact (hr 联系人) for these documents any more, since I have got them already!

If I am in difficulty with the pre-screening, I will write to you. Thanks a lot.

Sincerely, (me~)

39.9   from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Tue, Jun 4, 2013 at 12:30 PM subject: RE: (实习公司) - Welcome to (agency 公司)! mailed-by: gmail.com : Important because you marked it as important.

Hi (agency 联系人),

I have followed the link and have finished all the parts that I have information on hand. Some reference records were left are home in XXXXXX, so some items are missing.

I have clicked the "Exit and Submit" button, and I think it should work, just that I could not get any feedback to confirm it works.

Please help me with the continued screening process, and if you find any issue or have any questions, please let me know.

Thanks, (me~)

39.10   from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Tue, Jun 4, 2013 at 12:36 PM subject: RE: (实习公司) - Welcome to (agency 公司)! : Important because you marked it as important.

Thank you (me~) – this will be fine! I am going to register the new hire packet for you now – please let me know of any questions.

39.11   延迟一周开工的邮件

from: (agency 联系人) <(agency 联系人)@(agency 公司).com> to: (me~) <(me~)@gmail.com> date: Mon, Jun 10, 2013 at 10:01 AM subject: RE: (实习公司) - Welcome to (agency 公司)! : Important

because you marked it as important.

Good Morning (me~),

A follow up on the background check process shows that your information was not received by ADP. I am not sure what caused this issue! Would you be so kind as to log in to ADP again, and enter the information so the background check can begin?

Also, is there an update on the approval of your CPT? I would like to provide an estimated start date to (实习公司) today.

Thank you (me~)! (agency 联系人)

39.12 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Mon, Jun 10, 2013 at 10:31 AM subject: RE: (实习公司) - Welcome to (agency 公司)! mailed-by: gmail.com

Good Morning (agency 联系人),

I will log in to ADP again, and enter the information so the background check can begin again. I have got my CPT on hand already, and can start immediately once we get the background check done. When you provide an estimated start date to (实习公司) today, please CC me a copy so I would be able to know the start date too.

Thanks, (me~)

39.13 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Mon, Jun 10, 2013 at 10:47 AM subject: RE: (实习公司) - Welcome to (agency 公司)! mailed-by: gmail.com : Important because you marked it as important.

Good Morning (agency 联系人),

I have just resubmitted the relative information from ADP website, please help check. I am wondering if you have any idea to help facilitate the background check process, so that I would be able to start work earlier. If you have any question or concern, please let me know.

Thanks, (me~)

39.14 from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Mon, Jun 10, 2013 at 10:42 AM subject: RE: (实习公司) - Welcome to (agency 公司)! : Important because you marked it as important.

Thank you (me~)! I will contact them after the background check begins, which will give me an anticipated start date.

39.15 from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Mon, Jun 10, 2013 at 10:55 AM subject: RE: (实习公司) - Welcome to (agency 公司)! : Important because you marked it as important.

Hi (me~), You will soon receive the link from RedCarpet for your new hire packet. What would be the first date you are able to start, if (实习公司) approves you to begin while the background check completes?

39.16 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Mon, Jun 10, 2013 at 11:18 AM subject: RE: (实习公司) - Welcome to (agency 公司)! mailed-by: gmail.com : Important because you marked it as important.

Hi (agency 联系人), I have received the link from RedCarpet for new hire packet now. I am able to start immediately once (实习公司) approves me to begin while the background check completes. I am filling out the link from RedCarpet, and will try to finish it as soon as possible.

Thanks, (me~)

39.17 from: (agency 联系人) <(agency 联系人)@(agency 公司).com>

to: (me~) <(me~)@gmail.com> date: Mon, Jun 10, 2013 at 11:25 AM subject: RE: (实习公司) - Welcome to (agency 公司)! : Important because you marked it as important.

Wonderful! (hr 联系人) will be contacting you to confirm the start date – targeted for Monday, 6/17/13

39.18 from: (me~) <(me~)@gmail.com>

to: (agency 联系人) <(agency 联系人)@(agency 公司).com> date: Mon, Jun 10, 2013 at 11:41 AM subject: RE: (实习公司) - Welcome to (agency 公司)! mailed-by: gmail.com : Important because you marked it as important.

Yeah, (hr 联系人) has contacted me already, and I will report to her on Monday morning to get my badges. Thanks a lot!

(me~)

Chapter 40

实习公司 offer letter

40.1 from: (hr 联系人) <swati.fanse@(实习公司)>

to: "(me~)@gmail.com" <(me~)@gmail.com> cc: "svogel@(agency 公司).com" <svogel@(agency 公司).com>, (某人) <@(某人)(实习公司)>, C <C@(实习公司)> date: Mon, Jun 3, 2013 at 5:26 PM subject: (实习公司) Offer Details mailed-by: (实习公司)

Hi (me~),

Congratulations on accepting the position at (实习公司).

I am confirming the offer details in writing with you please see below:

Title: Intern

Start Date: TBD, dependent of acquisition of OPT/CPT

Location: company headquarter location

Pay rate: - $36.00 per hour

Supervisor: C, Sr. Manager Engineering

You will be pay-rolled through our agency, (agency name). (one special name) is our contact and she is copied on this email. She can answer any questions you may have about being on their payroll, including benefits options.

Regards,

(relative person) Associate Manager, Staffing Programs

company name company headquarter location

40.2 from: (me~) <(me~)@gmail.com>

to: (hr 联系人) <(hr 联系人)@(实习公司)> date: Mon, Jun 3, 2013 at 5:35 PM subject: RE: (实习公司) Offer Details mailed-by: gmail.com

Hi (hr 联系人),

Thank you so much for the help this time. I will devote all my possible/potential time, energy, and try my best to work for C. I look forward to seeing you sometime when I work here to express my appreciation.

Again my down from heart thanks for you!

Sincerely, (me~)

Chapter 41

register internship course

41.1   From: (me~ ~)

Sent: Wednesday, May 29, 2013 10:21 AM To: (实习课代课老师) Cc: (main office 小秘) Subject: RE: Internship Courses

Hi, Dr. (实习课代课老师), and (main office 小秘),

I want to know if I have missed the summer courses deadline already, is there any way that I can petition for a one credit registration for summer? If I can do that, who are the responsible person that I can contact when I get a job offer?

Thanks, (me~ ~)

41.2   RE: Internship Courses

(main office 小秘) You replied on 5/29/2013 5:29 PM. Sent: Wednesday, May 29, 2013 5:25 PM To: (me~ ~)

(me~ ~), It probably depends how long/when you're wanting the internship to run. Summer Session II begins June 10, and Session III begins June 24 for 6-week courses or July 8 for 4-week courses. You would need to decide which session you wanted the 1 credit internship to run.

-(main office 小秘)

41.3   register insternship courses

(me~ ~) Sent: Tuesday, June 04, 2013 4:26 PM To: (main office 小秘) [(main office 小秘)@uxxxxx.edu] Hi (main office 小秘),

I want to let you know that I got a job offer and I need your help to help me register some internship course credits. I guess the best suit course will be the Session II which begins June 10, and to the end of summer. I am not quite sure how many credits I need for this internship, and please help me decide about this and let me know the result.

By the way, I have simple question needs your help as well. How would I be able to know I have registered summer intern course already, anything that I can use as evidence for IPO for CPT application? And, Session II starts on June 10, will it be OK for me to start to work from this week?

I look forward to hearing back from you.

Thanks a lot! (me~ ~)

41.4 Internship Registration

(main office 小秘) You replied on 6/6/2013 3:01 AM. Sent: Wednesday, June 05, 2013 10:41 PM To: (me~ ~)

(me~ ~),

(main office) is in the process of setting up a section of CS 398 for the 8 week session (June 10-August 2). You will want to register for one credit, as approved by Dr. Donohoe. Please be sure to register by the Monday deadline to avoid the $50 late fee. If you have any questions, let me know.

(main office 小秘)

41.5 Re: register insternship courses

(实习课代课老师) You replied on 6/6/2013 2:57 AM. Sent: Wednesday, June 05, 2013 11:26 PM To: (me~ ~) Cc: (main office); (main office 小秘) CS 398 - 01 has been created, and I removed all restrictions for you, so you should be able to register for it now. If you have trouble, please let me know.

• (实习课代课老师)

41.6 RE: register insternship courses

(me~ ~) Sent: Thursday, June 06, 2013 2:57 AM To: (实习课代课老师)

Hi Dr. (实习课代课老师),

I tried to register both 1 or 2 credits, but it does not work through VandalWeb. Since the intern ends in the end of summer and it supposed to be 3-months (actually 11 weeks), I guess I will need to register for 2 credits instead. Actually I am not sure about the credits, so please help me figure out the credits, and help me double check why I am not able to register, and it still says "Instructor Permission Rqd".

Thanks, (me~ ~)

41.7 RE: register insternship courses

(me~ ~) Sent: Thursday, June 06, 2013 3:33 PM To: (main office 小秘)

Hi (main office 小秘),

I tried a moment ago, and it works great now! I have registered 2 credits of CS398, and I think it should be able to last until the end of summer.

Thank you so much for all the help you have done for me. If I need any further help during summer, I will contact you immediately.

Have a great day!

(me~ ~)

Chapter 42

实习的经济帮助

正如上面的 offer letter 所列出的，暑假期间我总共工作 11 个周，总计收入约 $15840, 但是除去各种税，那个假期，到结尾的时候，我总共到账大概在 $10000 左右。

而这期间，我注册学校里两个实习学分，$650/credit，因为系里 main office 说 1 个学分只能管 8 周，我注册了两个学分，为学校贡献了 $1300(还多交了几十块其它混杂的手续费用) 的学费。而我自己暑假在加州，从 5 月 18 日到加放州，仅只住最普通的房间，整个假期下来，房租也需要花掉 $1500(吃饭暂时就不算进去了)。回到学校，除了 $10500 的学费，作为国际学生，我还必须买医疗保险，我是买了外面 ISO 的，但作为三十多岁的女性，因为大龄女性潜在的怀孕可能性，我的保险费用也高至 $1300。

而我之前工作所有的积攒也仅够到夏天时，买了辆二手车开去加州。所以那年夏天，不到回学校，第一件事是，先问男闺密借钱交学费，这过去的一年整个处于无收入状态。

那个夏天，当我得到外界的帮助，当我有一点儿小钱的时候，系里设的一个学分管 8 周，我实习 11 周，我就自动注册了两个学分，丝毫不曾为难学校；当我暑假有实习，向朋友再借点儿钱、能勉强凑合着交够学费的时候，在 4 月份明知道自己身体有病、却舍不得花钱作超声波检查的情况下，我没有向系里求助奖学金，连问都没有问，自己乖乖地将自己暑假所有经济上的缴获上交给了学校，留下自己接下来一年的经济瘫痪～。

Chapter 43

再说自己的病

43.1 再说自己的病 (1)

上次检查结果说 Mild uterine enlargement，参数指标都列在那里了。医生说是 mild，mild 本身是怎么个评价法，我也不清楚。我原本就是一个个头不高的亚洲女生，他们美国的医生说是 mild，我就能不去管它吗？原来我病到这个程度也只算 mild 的啊，那将来若是已经丧失了生育能力，该叫什么，也叫 mild？之前的引子上提到生理周期紊乱，也记一下过去一年的周期吧。

从去年九月底那次一杯苏打水引发的身体崩溃，接下来一年的生理期时间依次是：9 月底、12 月 7 日 (这前两个期间有没有一次，还是中间有排卵期不规则出血，我不记得了)、2 月 2 日，(3 月 18 有不规则出血) 4 月上旬、6 月底 7 月头，这样差不多一年下来会有五六次周期。再接下来，我就没太再注意，以后应该也不会太去关注了，毕竟，接下来一年我都没有经济实力、精力去管它，太多地 focus 在这上面太容易加重自己的心理压力了。

感觉这最后一年来出血量都比较少，但每个周期的时间反而是给拖得很长。比如第一天较多，会用掉两三片卫生巾；第二天就奇少，仅只一片也量很少；第三四五六甚至第七天，就是断断续续、淋淋漓漓地把周期拖得很长、量也不大。就得早些年的时候，同样是在美国，一般第一天就几滴表示一下来潮的样子，第二三天才会增多用掉七八片，到第四第五天基本就完事了。

上次超声波检查的结果，我已经贴在上面了。心理上，我不是很相信那次检查结果，或者更确切地说，我很怀疑我右侧的卵巢是有问题的。右半侧的麻木暂且不说，这一年 12 次我只有约为半数的周期，我怀疑与右侧卵巢是密切相关的。而且自 12 年秋天某天清晨的发作开始，我所有的痛、生理期的痛、排血块的痛都痛在右侧卵巢部位。若是子宫的问题，会拉伸到那个部位去吗？综合自己所有的病症感受，我对自己右侧的卵巢是不大报希望的，就当它已经废掉了吧。检查结果的报告里说，with fluid in the distal endometrial canal (? recent menses or douching)，但 3 月 3 日检查后，我是 18 号时处于排卵期、开始有不规则出血，真正的生理周期是 4 月上旬才出现的，所以那些 fluid 到底是什么，我也搞不清楚。

43.2 再说自己的病 (2)

前面我已经提到排血块，但大多数小伙伴并不知道我说的是什么意思。排血块的具体过程是这样的：先是右侧靠阑尾的卵巢位置一阵巨痛，五分钟、十分钟、十五分钟？痛的时间长短不固定（奇怪，为什么从来都是右侧痛，而且是卵巢部位痛？子宫与卵巢的位置到底有多远？这也是我非常怀疑超声波检查结果的原因！）这个过程是最痛苦难受的；等血块真正从卵巢上撕裂、剥落下来（从内壁还是外壁我不清楚，多次深切体验过，但没上网查过这个具体细节），流出排到子宫的过程也还是很不舒服的，但相对说来要好受了很多。这种时候我往往会本能地想去上厕所，心理上会把它当上大号处理。可上厕所就一上一个准，只要是处于生理周期后半段，只是伴随着这种巨痛，准能排出三四个大血块来。等排出这些东西来，一个生理周期最痛的过程才算是终于结束了；偶尔，第二天还会再痛

一阵子，再排出两三个小得多的血块来，但较之周期里的第一次，痛的程度也会轻很多 ~

这个撕裂、剥落的过程如此痛苦，有时候，痛疯了，上完厕所后，穷凶极恶的自己，恨不得不去冲水，去找根树枝把那血块拨出来看看，看一下它究竟是何方神圣，竟是要把别人折磨到如此地步？~ 当然，这事还是太恶心了，只停留在愤愤不平时的思想冲动阶段。

我就知道自己一定有病，应该不是子宫增生这么简单，可是什么病、病到什么程度，大概还只能等到以后有更多的检查的时候才能知道，交给时间去处理吧。

今年 3 月 3 日那次去看医生，到手的账单我已经花去 $132.08，和 YYYYYY imaging consul $37.54，但超声波检查的账单还没有到手，估算应该会需要自己付 $600 左右。

Chapter 44

表哥

44.1　表哥 (1)

我很想写出之前右手背上、拇指腹上方一瓣拇指温热的感觉，但时过境迁，那股温热我再也找不回来，只是那曾经发生出现过的右手背上、拇指腹上方一瓣拇指温热的感觉刻在了记忆里。

有人说我之前写与舅舅、表哥家的亲情关系时，字字是骨、句句带筋、棉里藏针，可我也只能说，就如同此时的自己我愿用最真诚的文字记下自己当前的感情状态一样，为不给自己找麻烦，任何时候我站出来写，写出来的都该是那时候自己的所思所想啊。

我是一个成长在边远小镇的农村女孩，爸爸妈妈教会我的是做人的质朴与善良，但受他们成长、生存环境的限制，他们并没能教我游刃有余的人际关系处理方式和手段。自己的成长过程，就是一路磕磕碰碰、摸着石子过河的过程。国内时我学习上一直相对顺遂，考研，出国，我没有经历过任何送礼环节，我不懂得、不知道该花多少钱为舅舅买多轻多重的礼物。所以这个被舅舅 push、作了人生中第一次这种送礼尝试的过程，以及表哥家人物在我眼里的出场次序，都会在人的心里留下烙印。别人说，因为懂得，所以慈悲；我想说的是因为对这家人的不够了解，所以难免心生恐惧，对自己眼下的生活作最真诚的纪录就是对自己最好的保护了。

后来的自己，对表哥，也有了些许的怀疑。其实这个不可原谅的细节，关注、关心过我的人，应该也早就知道了。

44.2　表哥 (2)

去年春天官司之前，我去找过表哥。在他所在的教学楼楼梯间，我想跟着去上他讲的课时，他真的是把推倒、掀翻，臀部磕在了楼梯棱上～!! 摔得很重很重，一时间站不起来；站起来了，走起路来，巨痛下不知道该如何迈开脚步～ 后来，几天后回到家后，第一件事便脱光衣服照镜子，那块地方紫青了一条楼梯棱～!!

表哥的属相星座上是这么写的："一般人会说这位肖马者在爱情关系中不会长久，并宣称双子肖马者需要情感关系的改变以经历其隐约企求的刺激，然而一般人都没有尽力去发现在这位表面肤浅者的内心其实是在追求某些他所彻头彻尾笃信的理想，他希望人们能更好些。更具了解力而更加慷慨与仁慈。双子肖马者无法忍受他人的讥消行为。他们总在寻找某位理想的对象，对方没有过错可述，而也将会为他献出忠诚。"

表哥，真的是在追求他隐约企求的刺激，还是在他精神追求的马拉松上再登高峰，对我的考验自动实现了精神上的升级？

是的，那个冬天，当我打电话给舅舅，问我与表哥的亲情关系，舅舅把我往火炕里推了一把；亲人的经历、爸妈晚年真的不再吵架了，让我愿意去相信人性是会转变的，愿意相信后来的舅舅和表哥是真心为我好的，但当时的节骨眼上，还会觉得，没有真心付出过，就不会有真心回报；现在，表哥真的真心付出了，真的想把我赶走，我，清楚地知道那个人是爱自己的，却也真的开始犹豫、想走了

在爸爸出车祸后两三个月的昏迷里，我一一没能回家照顾爸爸；2006 年 8 月 8 日早上，叔叔开拖拉机、载着爸妈妎妎把我送到镇上，那一别，竟是我与爸爸和叔叔的永别。我大概还是原谅不了来自表哥的那一记推吧～ 那时还看 < 非诚勿扰 >。节目上黄老师尚且劝说，不要争的打啊～ 摔倒时，我是胳膊还帮撑了一下，头没出事；如果我再笨一点儿，如果我摔得不平衡，如果我不小心磕着的是脑袋、不小心摔成了脑振荡，那接下来的日子又会样？

44.3   表哥 (3)

之前提到，我那非常有魄力的大表姐，国内 EE 大专的她三十多岁来到美国后重新开始，先回到校园拿一个计算机硕士学位，毕业后赶上经济危机，回加拿大与表姐夫团聚、一起生活了四五年；07 年经济好转后就再次两地分居、一直在加州工作，后来日渐成长为 team 里的核心人物，大表姐夫一直在加拿大生活、照看他们家孩子，都上大学了。

大表姐对感情非常珍惜，一个月前，她给我讲她的情感经历时说，大表姐夫对她来说，这么多年来，他帮她维护着这个家，照顾孩子，两个人都没有情感上的出轨，这是来之不晚、不可多得的感情，任何时候，她绝不离婚!

我，多么希望能有大表姐这样坚定的信念，像邮局里的大叔启示自己的那样，坚定地等下去～ 但随着这一年的筛选、过滤和进化，我还是没有这样的信念，我不知道在自己身体状况已经不允许自己再等的情况下，我继续等下去，我会等到什么样的命运？生自己的小孩一直是自己从十二三岁到高三，一直是自己的心头大瘊；现在当自己真正有这样生理上会影响到生育的问题时，我一定会有生育的压力，我不可能无限制地等下去，我不知道自己接下来的命运会是什么样子的～

我没有大表姐那样的坚定信念，心里有的却是自己脆弱、弱下的心灵在成长、与人相处过程中留下的种种阴影。这个春天的时候，还常常被骂，这个人怎么一见到人群，立马表情严肃变呆，嘴巴也瞬间就变成猪八戒的嘴巴～ 别人也只是一个小地方长大的人，别人也有别人成长过程中的阴影，别人为什么要被你们这么多美国学生围观，别人当然是要板起脸高冷躲开的呀～ *_^ 不知道这些阴影什么时候才能真正褪去底色。

两年前，当爸爸离去时，我能感受到的启示是，爸爸提醒我，我看不见，太多的事，因为自己过于年轻，所以看不透彻。为此，一年半前，当自己的第一辆二手车坏掉，我将车捐给了 heritance for blind，我也希望通过这种方式，有一天，我可以"看见"爸爸提醒我当初我所看不见的。

正如早在两年前，当自己写自己的传记的时候，不知道将来会发生什么，此时此刻，我也不知道自己将来会发生什么，所以我愿意以最真实、朴实的笔写下自己当下的心情。

我去查过表哥的星相，记忆里有种说法说，这类人的爱情纠葛在时空里。而我，恐怕没有足够的时空来与他纠葛；此时，我更愿意去纠葛、探索我自己～

Chapter 45

第四学期

45.1　第四学期 (1)

　　期末考试后，因为私人原因，我离开到加州前在学校停留一周。这期间，拿到了自己的期末成绩，知道自己的 EC 又拿了 B 之后，我去找自己的导师，想同他好好谈一下。

　　面对第一学期同 cs210 代课老师达成的"君子协议"在这一学期、在自己眼前眼睁睁地看着它被撕毁、面对自己被这个系压迫了两年的成绩，cs336, cs445 老师都给了 C，面对 AI、EC 自己这么喜欢、老师却使尽办法只给 B 的成绩，面对这个在这所学校里随时都可能被改写的命运，我迷惑了：不管我在这里、在这所学校、在美国这片国土上，对自己的命运作怎样的抗争，似乎，我都永远抗争不过这无边的黑暗，我终将、我注定会被这片黑暗给吞噬掉？我不服，我要去找自己的导师谈 ~

　　我问导师说，我不明白为什么在自己最喜欢的 programming 的科目上，我从来也都拿不到 A？导师平静地回答说，他认为，那是因为我是转专业过来的，我本来就没有这个专业本科的强硬基础 ~!!导师的这句话激起了我本能的愤怒，我告诉导师说，当我 33 岁决定留下来的时候，我希望为自己的生活 make a change; 我不是为在这里多拿这一个学位，我是为能在这里——美国这个国度、这片国土里，拿下这个专业的学位只是前提，我是想找到工作、找到一片用武之地、在这个国度生存下来的呀 ~!

　　与导师谈话愤怒之余，我感觉自己在自己导师这样假定的前提下，我变得已然无语了，我这三年的命运为何要被如此设定？

45.2　第四学期 (2)

　　既然导师、系里的老师已然早早地将自己的命运如此设定，那么，好吧，小伙伴们一起来细数一下，2012 年我回到学校想拿计算机硕士学位后，我可能会有的几种死法吧：

　　转专业的第一个学期，如果我听导师的话当初跳过 CS121、没修 C++ 课，那后来的编译课、EC 课，我必定会跟不上课，保不准这些们课上轻易挂掉、过劳死；即使我选了 cs121 课，那学期，我的代课老师也是系里最为宽松的代课老师，而不严厉、不严格的 c++ 教育、迎接我的终将是预计的第二年编译课、EC 课的鞭策与炙烤! 我也还可能在 CS121 学期末，老师给成绩时不反抗，直接得 C 死也会成为一种死法。

　　我也还可能在第一学期，听前导师的话，选了前导师的 CS270 system software 课，第一学期直接被这个近乎变态老头直接整死；还有可能，在 C++ 跳过、编程不够过硬的情况下，我的 CS445 编译课，直接得 D 死。

　　而且，现在的自己正在经历着最后一种死法：雪藏、得 BBBBBBB。。。，毕业了直接滚回国，永无翻身之日被气得活活敚死!

　　而不管有多少种可能的死法，似乎，眼前，自己正在经历着的死法都是最为严厉、逃脱不了、惨不忍睹的 ~

再回头看看那些我选过的课，我并没有想在操作系统的课上得 A，没想在 RTOS 代课老师不能从代码上帮我的情况下得 A，我只是想在自己比较喜欢的 programming 的课上得 A 而已～!!

45.3　第四学期 (3)

回头再来看 EC 课最后一个半月的针锋相对。从我那次用余某的马甲发出求救后，小伙伴们都知道我醉翁之意不在酒，代课老师就真的不知道吗？这个进化算法课，老师把最后的 1/3 学期的课程讲成了乱七八糟；整个 EC 课，他讲 no free lunch Theorem, 他讲 Competitive co-evolution, 既然要公平竞争、竞争进化，这个学校、这个系的代课老师却不给自己公平况争的机会；他讲 cooperative co evolution，却自始自终，自己的命运在这个系里都是被改写，所有的错都错在这个系、这个系里的代课老师身上，而所有错误的结果，却都只能由我自己来承担？

这们 EC 课，老师若是心里没鬼，他为何不讲同样重要的 self-adaption，不去讲 survivor selection？EC 代课老师是为谁服务的、在维持观点？还用说么，还用问么？EC 代课老师当初是谁给拍板进这个学校的？当然，我必须肯定，因为直觉的分析能力，EC 老师的课成为系里最受欢迎的课之一；因为对科研的执着精神，是系里拿了 tenure 后少有的、还有那么点儿研究兴趣的老师。

早在 EC 最后一个项目之前，早在大 A 在系里签辩前的某个中午，我就在 CSAC 同大 A 谈过。大 A 是 EC 代课老师的硕士研究生，今年春季找到工作后毕业的。我问过大 A 他，他的硕士论文发文章情况和 EC 代课老师的发文章情况。大 A 说，他们大概有两篇文章在路上，可能迟早会发表，一部分工作是 EC 代课老师的 ph.d 学生做的。呵呵，代课老师的网站上六七年没有曾发表文章的更新，这个小学校的代课中年老师们，哪个不是在拿到 tenure 后就再也不曾发表一篇文章，EC 代课老师，连他的硕士研究生、博士研究生都未必能真正发表文章，EC 课的最后一个项目，代课老师居然是狠打舆论、鼓励学生去发表文章来装点门面，这个小学校居然也是要留我这样没有青春年华、身体严重带病的人在这里为他们的科研贡献力量，想起来也还真是讽刺搞笑～!!

45.4　第四学期 (4)

那再回来看回来读书这个决定。我的前室友尚且说这个学校的本科学生，有很多学生完全没有资格来这个学校读书，他们的"高考"成绩很多都很差的。而我当时，也只有这个学校 cs120 4 个学分得 B 的成绩。若说是这个成绩对他们来说真是一个 concern，那他们完全可以拒绝我入学，我也没什么好多想的，就直接回国，也不失为一条很好的出路。那这个学校、这个系的 commitee 当初既把我留了下来让我读硕士、可成绩上又如此压迫别人，让别人没有资格在 industry 生存，我也只是一个小人物，为什么我这两年、三年的命运要遭如此劫难？科班出生、年轻有为的板砖同学 29 个月 OPT 都不用，就直接在这个学校读博了，难道他们还想逼出来一个高龄单身女博士不成？2012 年，站在人生的十字路口，接下来的这两三年，是谁在摧残我的命运？

这个学校，早在 2010 年的时候，我还为当时自己所在的统计系捐出过 $1000，他们何至于待自己如此？

如果我将来能够顺利地生下自己的小孩还好，若我真的因为再一年的拖延和耽误，病情真的加重到丧失了生育的能力，我想我一定没办法不去恨，恨这个当初没有人文怀、把我生生阻隔、耽搁在这里的学校，恨这个十八岁时舅舅介绍带入我的世界的、这个见死不救的发达国度的社会制度，恨这个发达国家的文明、文化也不过如此，枉费我耗尽八年努力、万里走一回，还把接下来八年青春时光浪费在这里!

去年秋天，系里想方设法不允许我选统计相关课。为什么他们不允许我去选统计相关的课，系里这么做的目的不正是要阻止我成功吗？为什么平生唯一一次我的导师会写出那般严厉的邮件？那么，对这个学校来说，教育的意义难道是教愚么，难道就是要从工作过的、或是国内有钱的中国学生那里收取学费吗？

45.5 第四学期 (5)

五月份之后，EC 代课老师开始讲 developmental system。是啊，正如这次八月份我来所看见的，满镇到处的坑坑洼洼，到处都在修建；正如这个学校想要说的，正如这个小镇本身也正在建设，这也还只是一个发达国家中的一个发展中学校，它的不完美也是它迈向完美的必经之路。只是不知道碾压在这条建设道路上的冤魂如我，家财散尽 (累计超过 $33000 的学费)、耗尽年华 (两年硕士变成三年)、牺牲健康，这个学校接下来又将会如何对待我？是一如这个学校一早为自己设定的命运，是三下五除二地打发掉我完事，一毕业就让滚回国？还是，我还能沉冤昭雪、还能获得公平竞争的机会？若是，我又该要等到何时？

话说到头来，这个学校再不好，它还是属于自己的学校，它还是 2006 年那个带给自己希冀、愿望的学校。也是这次整理邮件，我才发现，原来编译课，我也给代课老师写过那么多封寻求帮助的邮件呀 ~ 这些教我课的代课老师，他们没有功劳，也有苦劳啊。即使他们教课的效果可能未必真的足够好，但他们愿意真诚地教我们，尽着他们的最大努力，也是应该值得感激的。我愿用再接下来一年的时间，来与这个学校同呼吸、共同成长。只是，我也真心期待，属于自己的公平竞争的机会会早日到来。

顺便，也交待一下春天那个车坏掉后的结果吧。

后来，等到五月份，我还是打算去加州，而我需要车。临时情况下，当我等到四月份的退税，还了闺密 $1000 之后，我还是打算把这破车再修一下。经历了四五月份舆论的发酵，他们也不好意思再对我过分。我的车已经在别人家门口停了几个月，修车当然还是在他们家修。后来是里面一个师傅告诉我到 autozone 店去买零件，这样原本要 $833.24 的维修费用就变了 $267.11 的零件费用和 $178.48 的劳工费。在我们这里寒冷的冬天，原本一二月份电池就不太好，几个月不开电池老化后，换了电池花了 $105.88, 再买上最便宜的保险 $170.90 for 6 months，我就开车去加州了。

Chapter 46

写给实习老板的感谢信

46.1 from: (me~) <(me~)@gmail.com>

to: C@(实习公司) date: Mon, Jun 3, 2013 at 5:51 PM subject: Thank you so much! mailed-by: gmail.com

Dear C,

This is the most cherished opportunity ever during my life, and I have dreamed to be able to work here so long. Thank you so much for offering me this opportunity to work for you! I will spend all my available and potential time, energy for you, for this position, together with Sherry's help. Again, thank you so much for the help down from my heart!

Sincerely, (me~)

46.2 from: C <C@(实习公司)>

to: (me~) <(me~)@gmail.com> date: Tue, Jun 4, 2013 at 11:50 AM subject: RE: Thank you so much! mailed-by: (实习公司) : Important mainly because of the people in the conversation.

Hi (me~),

You are welcomed. We will make every effort to make it an interesting and great learning experience. Looking forward to having you joining the team.

C

46.3 from: (me~) <(me~)@gmail.com>

to: C <C@(实习公司)> date: Tue, Jun 4, 2013 at 12:14 PM subject: RE: Thank you so much! mailed-by: gmail.com : Important mainly because you often read messages with this label.

Hi C,

Thanks! I look forward to joining the team, working for you and enjoying the great fun learning and working as the intern!

I will see you soon!

Sincerely,

(me~)

Chapter 47

再说实习公司

亲爱的小伙伴们，一年前从加州回学校路上的大哭，所有的细节都是真实的，所有的涉及到的 technical 也是真实的，大概我这个人还是比较能够透过现象看本质的吧。

那年暑假的实习是实习公司在帮我，他们耗费了大量的人力、物力去年四月组建一个 team，一年后这个 team 解散。虽然我是被大表姐 refer 到这个组去实习，但就像我对 C 邮件里说"A friend in need is a friend indeed."，表面上是 C 和大表姐帮了自己，实刚背后是这个公司是帮助自己。这个实习，的确从经济上帮到自己不少。

身处实习期间的自己，认识不到这个实习、来自于 A 的各种启蒙启迪、对自己专业的巨大帮助，外加这一年来各门课的 B，和与 cs210 代课老师的"君子协议"，使得我全然忘记了，实习的机会是别人公司给的，我还在那里试图为自己争取一点儿我从学校拿不到的 credit。这个争 credit 的过程争得多不应该! 后来到编译课的期末考试，当我考试考到脑袋滋滋响的时候，我终于能够看见，专业上自己的巨大进步，从内心里感激 A、感激公司曾经提供给自己的学习机会。实习期间，同 C 一直以来的沉默相比，我争 credit 争得太不应该了。

自己接下来一年的生活应该是这样子的：我的硕士学位的 OPT 早在自己拿到统计学位的时候就用完了，所以这个计算机学位完成时，我不会再有实习的机会。我愿用最辛勤的努力，来争取明年四月前拿到 H1B 工作签证的申请，这样自己才能真正最终在这个国度生存下来。

每个人的道德水准不一、定力不同。当个人的成长史塑造了今天自己复杂的性格，当拿到检查结果确认的病情成为了压倒自己爱情的最后一根稻草，也请给这样一个苦难的历程一份在这个国度生存的权利与机会。

这是一个曾经叛逆的精灵，这也是一个觉醒的灵魂。这个灵魂承载了个人成长史上太多生活的苦难，这个灵魂也探索、发崛了爱情人生的真谛，为人类文明贡献出了、贡献出着自己的物质和精神力量。这同样也是一个值得得到别人帮助的灵魂。

不管实习期间，自己弯弯拐拐的肠子当时有多少想不通、想不明白，有多少自己认为的委屈，今年春天，当自己的求救信发出去，在舆论间引起反响的时候，自己曾经实习过的公司还是那个愿意伸出援助之手、站出来帮助自己的人。为此，我深怀感激、非常感激这个公司的企业文化，愿意去帮助如我般真正有需要、值得帮助的人。一个国家因为有这种公司的存在，而推动加速了人类文明的前进步伐。一个公司，也必将因着这种优秀的企业文化赢得人心，拥有更大的市场、更好的发展前景。

Chapter 48

QQ 群

呵呵，来到这个 QQ 群，就不得不再叹一下了。这是一个 QQ 群，也是一个小社会，有上千人寄居在这里。

在这样一个 QQ 群，对于来自任何一个人举手之劳的帮助，为什么这个小人都会发出由衷的感激，会去想想、探问一下这些名字的背后，有着怎样的故事？这样一个小人在这上千人的 QQ 群里，也只呆了两三个月的时间，即使后来从这个群离开了一阵子，依然对这个 QQ 群、这个群的群主心存感激，对 mitbbs 上版上别人一个问候关心心存感激，可为什么，这个小人呆在这样一个因着一辆自行车、有着人文关怀的学校里，就从来感觉不到温暖？

真要来写这个群，我就要真实地写生活中活生生存在的人物了。大学时候听一位女作家的报告，隐约记得她说过，以真实人物为原型写小说的时候，不管写的是真实人物好的还是不好的方面，都会对真实人物造成伤害，所以，尽管这部传记性质的故事 99% 都来源于真实生活，真实生活中的人已经被我写进去太多了，此时，一定要真来写这个群，为减小对当事人的伤害，我还是只能少写为妙。

前面的 < 冒牌医生与假想病人 >，是我自认为所有自己写出来最好的短篇了，早年写自己亲舅舅家表哥的人生可能也还勉强算是比较不错的一篇。借助这个最好的短篇，我应该也算是写出了自己对这个 QQ 群群主的各种作法理解与感激。正是这位心地善良、心怀天下苍生的年轻人，十多年来，借助这个 QQ 群，帮助无数人加速了专业上自我提升这一步骤。也因为自己在这个 QQ 群感受过的温暖与感动，我想我会永远感激这位群主、感恩来到这个 QQ 群的。

呵呵，最好玩儿的，是四月底我在这个 QQ 群遇见一位大神。这位大神不是之前我刷题时帮助过我的人，却是我到群一个月之后，通过旁听一场 mock interview，让我瞬间明白之前 29 个月 OPT 实习期间，自己面试失败无数的 phone interview 究竟失败在了什么地方。那种奇幻的感觉，仿佛这个人瞬间将我自己聋着的耳朵叫醒，瞎着的眼睛睁开 ~!! 不知道这一点儿的人以为，我欣赏这位大神只是因为他英语好；而我这里，也还因为那骨骨节节的存在、面试官与面试者进退之间脉络分明，这是之前 29 个月里我面试时从来没能今天这般警醒、当时意识不到的。他还听得懂我的儿童语言，能揣摩出别人心里是怎么想的、想说的是什么话。当然，所谓一见钟情，也得是最终终成眷属才叫一见钟情吧。那若修不成正果呢？显然就不是了啊 ~ 所以，在我这样三十多岁的年龄，有了前面遇见表哥时打下的坚实基础与提升，了解、试探和考验都还在继续，默默撤退也不是没有可能，就祝自己好运吧 ~ *_^ 当然，不管将来发生什么，我想我都应该感激这位大神，是他那种魔幻般的存在，帮我加速了与表哥之间那血肉模糊的撕裂过程。不管最终的结果会怎样，我都会感激这个人。

那是一位大神，那么追随大神的人就海了去了。大神又岂有可能只属于我？!! *_^ 这也是一位三十多岁的姐姐，有了姐姐这样的行为，就难免有或真爱或缺点儿主见的 mm 们跟风追随，追随的是大神、还是跟风着我，我就搞不清楚了 (所以偶尔，我也需要稍微帮纠正一下由自己造成的不良风气啊，因为之前我参与有份，罪恶在前，罪过罪过)~ 。对于与我有缘份的 mm，我也会像当年的情敌push 我一样，希望能在友情的道路上，陪她走一程。而同时，我也是一根地地道道的草根平民；对于 QQ 群白富美的出现与存在，就如同这样一位 mm 对之前关系稍好一点儿的大神与我心怀好奇一样，作为草根平民，我也很想窥探一下白富美的日子、生活、思想是什么样的呀! 这大概就是 QQ 群里这么多的不相关者热衷于支持白富美的原因吧 ~ 若我们看不到白富美与偶滴大神在一起，大概也

一定很希望亲眼目睹白富美的 mm 花落谁家吧 (虽然我心里无数次地默念了无数次另一位大神的名字)~ 不要问我结果，我也不知道结果是什么样的，这也是 QQ 群的一个 by-product 魅力所在啊 ~!!

嘿嘿，有我们这样略为扰乱风气者，也就有科学怪叔叔，就怎么也看不顺眼这一切呀。于是也就不难理解，这样上千人的 QQ 群，每当午夜降临的时候，就看见偶尔有些人会站出来黑别人，看着一个又一个的人来黑，看着一个又一个的人被黑，仅只看着，也是一件很搞笑、很惬意的事啊，成为 QQ 群午夜场一道独特的风景线。当然，某天，如果有人看你不顺眼，轮着你自己被黑，就也得有强大的神经视而不见、一笑而过了 ~

Chapter 49

后怕一一可能被设局

是的，正如大家所知道的，刚过去的周六，我去找过表哥，然后我被 arrest 并且被 put into jail，然后我用自己仅存的一点儿钱将自己 bond 出来了。

911 是表哥打的；我走出楼外的路上，遇上第一个警察；根据他的问话，我告诉他我最后的记忆是 3/7/2013，我知道自己一年内不能联系这个人；我回答我没有任何关于 3/ 21/2013 的记忆；我不知道那天我需要出什么庭；我有记忆 1/17/2013 我回到家后的第二个还是第三个晚上 evening，有两个警察给我送一份文件，告诉我不要再去找这个人，1 /31/2013 出庭一个 hearing, 关于 temporary protection order （我有提过表哥细数我的 11 条罪状，就是这个文件里的）；但那天出庭的结果是那一方没有来人，"Petitioner did not appear to prosecute the petition. "然后这个就没有下文了。

第一个警察记了我的地址，电话号码，陪我各种聊天，直到另一辆车另一个警察到来，提议第一个警察去复印一份什么材料；再次问到两个警察送材料的事，同样的回答第二遍，时间在缰持，他们在调一个什么东西；再然后匆然的，那警察说那天两警察拿给我的材料里有要我 3/21/2014 出庭的要求，我没有去；protection order 早就 file 过了。因此，我被 arrest 了，而那天，那一两个小时之内是我第一次听说关于 2017 exprire date 的事，但我已经被 arrest 了。。。

被装进 jail 前，因为我说过我不知道任何关于 permanent protection order 的事，他们把一份 3/21/2014 court 结果两页复印件交给 jail 里的 policeman，告诉我我回家后再好好读一下。在那里被关了接近 3 个小时，6 − 8:40pm，试了几张卡拼着几张卡里的钱把自己 bond 出来，领完了我的东西，最终不忘问 jail 里的 policeman，刚才那警察说有给我留一份复印件，在哪里，我需要读？他表现得像是忘了忽然想起，再从文件柜里找出来给我。

回到家，仔细看了文件，忽然后怕不已，如果有局，就大概就是这么设的吧。我从来不知道有这个 permanent protection order, 不知道有 3/21/2014 的 hearing，不知道这个结果，不知道这个 "THIS ANTIHARRASSMENT ORDER EXPIRES ON MARCH 21，2017 "上面的结果处理是："Respondent did not appear. The restraint provisions in this order are the same as those in the temporary order . The court is satisfied that the respondent was personally served with the temporary order . Further service is not required. "

回想一下，fall semester 的 fault tolerance 借助上课内容，代课老师一直在讲 lie, lier，可最终证明的 lier 是谁呢？

回想一下 2013 实习的倒数第二周，当公司 HR 大力催促要我 I − 20 的时候，我心态平和地把一切看透，所有的人都认为我撒谎，要把我打倒在地，可所有的邮件也都证明，前一周周五下午借 manager 经过我的位置，我同她打了下招呼，然后接下来的周一，我已经第一时间得到了导师的同意，而接下来一周的空好大概也只是帮我把一切看透？我 lie 了吗？我想我是一个明事理的人，连与国内前硕士老板的关系自己也受过很多委屈，但为什么我会面对这样的结局？

昨天晚上自己在网上找过一个资料, restricting order violation 可以罚到 $5000, up to one year in jail. 老实说，我被自己查到的结果吓到了。虽然说我是无古的，但强权之下，谁又能保证太平平安？

今天下午按要求的时间去 court, 他们没有 file, 不知道有我的 case; 按照今天下午 4:00 court 的结果，因为他们系统里信息不全，他们找到 temporary order，法官说今天可以就这样算了，只要我明

白这个重要性，以后不要再犯。后来小秘上去找法官说，查到一个 permanent order 的纪录，但是什么 file 不全，没有办法，法官帮我写下的是，"call this number or go to this office on Monday Jan 5th and as if charges have been filed. "他说到时再根据结果看需要上庭还是请律师，所以此刻，我同样悬而未绝。。。

　　虽然我相信法律是公平的，但这两天才知道这么重要消息的经历还是让人胆颤心惊。对我自己，更心生悲凉的是，草兼人命，别人的生命好像都不是命，permanent order 我也竟然都从来不知道。。。虽然同样的两年，那时若是知道，结果于我不会不一样，我还是会等。。。

Chapter 50

11 条罪状

- Ms. H (hereafter "H") has repeatedly visited me from California throughout

2011-2012, coming unannounced, uninvited, and later on, deliberately ignoring our demands that she cease and desist. She has encountered Pullman PD 3 times, and XU police 3-5 times. Despite this, here attitude remains, "I don't believe you!"

1. There were several prior incidents in 2011, but my records are at home.

During this time, H lived and worked in California. Here behavior pattern was to sneak out of town without informing here boss, drive non-stop to X, visit/intrude for a day or so, then drive non-stop back to CA.

1. 2011/?? (late summer?) - (a) H snuck into my office in XU office (and

took a nap on a cot). I snuck out without waking here, and went home (to dfhdfjkjk). H walked to our hourse and locked herself in my dad's bedroom to sleep. My dad returned home and called X PD, who escorted here out of our home. At this time, I told here verbally face-to-face that I was not interested in her, and didn't want her. X PD coordinated with X police to return here to campus to retrieve her backpack (which she had locked inside my office). X PD trespassed here from my office. No further contact.

1. Sat 2012/04/14: H appeared at X office, interrupting my work. I listened

to here for 0.5 seconds, then walked away (down the hall). No further contact.

1. Sat 2014/05/12: H appeared at X office, interrupting my work. She lunged

into the doorway 9which I was blocking, and grappled with me in an attempt to get inside, but I stepped into the hallway floor next to muy door. i called X 911, and X PD found here unresponsice and uncooperative. Ofc. Y placed here under mandatory arrest for 4th degree assault, and summoned a medical team 9with stretcher + ambulance. She was held in J county jail until here court appearance on Mon 05/14 (which I did not atend). No further contact.

1. Thr 2012/08/09: A colleague in my new office location (X dkfdj) infromed

me that a female matching H's description had knocked and asked for me. (I was in "my~me~" all day.)

1. Sun 2012/08/12: As I left office and walked toward the dfkljdf parking

lot, I saw H appearing on the sidewalk up the steep hill (dfkld Ave.) I sped up to avoid her, but she chased me down and pulled at my car door handle. I drove off without her, and went toward my home. As I turned right onto dfkdjk just below dkfldj, she car-chased me briefly up dfkdjfkdjk, down dklfjdf, and part-way down dfkjdfj, where I eluded her. I drove directly to X SRC (gym) instead. Later, my parents recounted that she did go back to our hourse, but they sent her away.

1. Sat 2012/10/06: I returned home to dfkljdf to find H in my bedroom. My

mother (retured) recounted that H had used a "doorbell ambush" to gain entry , where she rings the doorbell while hiding out of sight from the interior windows, then pushes here way in once the door is open. I attempted to forcibly remove H from my room, but she physically resisted. I called X 911, and Ofc. dfjdhjfh responded. We did not demand an arrest at that time, so they trespassed here from our hourse, and escorted her out. By this time, H may have moved from CA to dlfkjdfj.

1. 2012/mid-Dec? H appeared at X office. I had forgotten my cell phone that

day, and I have no landline office phone. I borrowed a cell phone from kfdjj , and called X 911. H eventually fled, but X PD apprehended her outside. Ofc . dfljdf trespassed her from X for the day.

1. Sat 2013/01/13: H appeared at X dfjdfjk. I pushed here away from my door,

then walked down the hallway while calling X 911. She fled before I turned around again, but X PD found here outside.

1. Wed 2013/01/16 @16:10: As I left my office to give a class lecture (I am

instructor for dlfjdfjk), I met H at the stairwell doors. I explicitly forbade here to disturb my class, but she followed me downstairs and sat in the classroom. I delayed class by 10 minutes to call X 911. At end of class @17:05, a X PD officer met me by the front door, while H fled via the back door. I think he chased her down.

1. (ct'd from above) Wed 01/16: When my dad and I returned home ~17:35, H

emerged from my bedroom. My mother said she had used another "doorbell ambush" to enter the house. My dad sternly ordered her out etc. She dragged her feet and stalled for 7-9 minutes, during which I called X 911. I watched out my bedroom window and described her driving slowly back down Sunset toward dfkldjf. Ofc. dflkjd stopped her there, and arrested here for criminal trespass. I don't know if she posted bond.

 dated Thu 1/17/2013

Chapter 51

re, 1/5 打电话问到新的 court day 是 1/14;

1/14 那天, 他们说他们还没有收到来自警方的材料, 也不知道表哥那方对这事是什么处理态度, 他们一时半会儿也不知道该怎么办, 所以给我分了个律师, 下一下出庭日是２／１３, 期间间隔一个月仅差一天;

期间 2/5 日去见了律师, 将对１２／２７日警官面前讲过的话重复了一遍, 我仅在１／１７／２０１３一两天后的一个晚上, 有两个警官来到我家, 给我一份 termporatory restriction order 的复印件, 并要我１／３１／２０１３出庭, 那天表哥没去, 所以没有下文. 我明确对律师说我知道自己没有被任何警官 serve permanant order, 但为给自己减少麻烦, 我希望这件事尽早结束. 律师说她会向警官要 serve order 的 proof, 再根据情况今天对我说下一步该如何做. 当时间过她, 她说警官对她说２／５她应该能收到来自警官的反馈, 但她还是会等到今天见了我再与我计论下一步, 中间就不再见了.

２／１３今天她说还没有收到反馈, 所以拖到一下次的出庭日为２／２７／２０１５.

他们可以无限拖, 但我拖不起. 明天会写个序, 这两天好好理一下思路, 还是打算把这一年的经历写下来. 会尽量以第三者旁观者视角写得客观. 我是理科生, 完全不会写文章, 所以若有建议请尽量提. 先谢了…

Chapter 52

序

　　三年前，在表哥、舅舅等亲人都不发表意见、要我作自己的决定时，因着导师和系里在节骨眼上的宽容，允许我选课，而不是之前同导师 Email 里交换的意见我第一学期只能选 cs121 与 cs150 7 个学分，因着自己对爱情的一点小小坚持，因着导师、系里都允许选课，怀揣着两年读完 MS. Computer Science 的梦想蓝图，在 33 岁高龄留了下来，花尽自己所有的积储，来读一个计算机硕士。。。

　　就像四岁那年坐在外公牵着缰绳的牛背上努力想像着远方的医院和献血会是什么样子的懵懂孩童，就像十八岁那年被舅舅科普地球的另一端有一个神奇国度的懵懂想往，2012 年 7 月，我怀揣着对爱情的一丝眷恋和执着，又一次地开车走在了通往以前学校的 5 号公路上，懵懂依旧，却心想着这一刻将是梦想起跳的地方。

　　时间过得真快，三年过去了，转眼我们都老了。这三年前一年半的时间我都过得很麻木，心甘情愿在臣服在各种委屈之下；后随着雕刻时光、风雨飘摇、争锋相对的渐变（很有量变引起质变的感觉），这第三年的两学期就演变成了手段与诡计共存，作秀与暗黑齐飞，各种出乎意料层出不穷，要想出头永无天日。。。而我现在的情况是，通过人为设置障碍，我现在已然爬到了生死边缘。。。

　　虽然早在 2008 年春转统计是因为当时老板拼 tenure 的欲望与压力，要我干一学期的活，但不允许我选哪怕一门功课，那时感觉自己稍微受了点儿欺压；读统计时因系主任的偏心，系主任把奖学金任凭给一对夫妇也没有给我，但好歹那几个学期我的外州费是被免掉了的。常抱一颗感恩的心，直至统计硕士读完，我对这个学校的总体认识都还是正面的、肯定的。可经历了这最后一个三年，我会时不时的恍惚，这还是我记忆中我认识生活过的那个学校吗？

　　受尽了各种委屈，为爱情执着到今天，被种种手段逼迫到生死边缘，我又该如何存在？19 岁时我长那么大第一次质问自己，人活着是为了什么？没有生的欲望、死的勇气，我选择攒钱准备离家出走；今天困境中，我一次又一次地问着自己同样的问题，爱情的答案是明确的，可这个社会不需要爱情。。。

　　之前写自己的经历的时候，曾无意中提到过这个学校的外州费比较便宜（虽然后来学费也涨了不少），直接导致了这个学校小留数量激增。荐于自己这三年的过往，我也希望用自己的经历让那些缺少信息的家长和朋友更真实客观地认识这个学校。人选择可以有很多，十八九岁来读语言，七八年的时间把语言、本科和硕士一条龙全读下来只是其中的一种，逃得过逃不过博士再说。

　　我想此刻我还没有清楚完整的思绪，十多天的时间我大概也还说不清楚这一年里发生的事情。但我会尽自己最大努力还原这一年里事情的真相。