```
Last login: Thu Oct 11 22:44:17 on ttys000
Computasaurus:~ starcub$ ls
Applications                Movies
Applications (Parallels)    Music
CSCI247                     MyBudget.buddi3
Calibre Library             MyBudget_0.buddi3bak
Creative Cloud Files        MyBudget_1.buddi3bak
Desktop                     Parallels
Documents                   Pictures
Downloads                   Public
Dropbox                     README.md
GameMakerStudio2            Sites
IdeaProjects                typescript
Library
Computasaurus:~ starcub$ cd Dropbox/WWUGitRepos
Computasaurus:WWUGitRepos starcub$ ls
csci347        csci450_f18
Computasaurus:WWUGitRepos starcub$ cd csci450_f18
Computasaurus:csci450_f18 starcub$ ls
README.md        atl0
Computasaurus:csci450_f18 starcub$ cd atl0
Computasaurus:atl0 starcub$ ls
ATL0.gmr        atl0            hc              main.o          scan.o
Makefile        baltree.c       hc.out          parse.c         testProgram
README          baltree.h       hcas            parse.o         util.c
README.md       baltree.o       hcld            sample.atl      util.o
atl.hco         defs.h          hcnm            scan.c
atl.hcs         global.h        main.c          scan.h
Computasaurus:atl0 starcub$ ./atl0 -l sample.atl
program
ID: testit
SEMICOLON
variable
ID: a
COMMA
ID: b
COMMA
ID: c
COLON
integer
SEMICOLON
begin
write
LEFT PARENTHESIS
STRING: "Enter two integers: "
RIGHT PARENTHESIS
SEMICOLON
read
LEFT PARENTHESIS
ID: a
SEMICOLON
ID: b
RIGHT PARENTHESIS
SEMICOLON
ID: c
```

```
assign
LEFT PARENTHESIS
ID: a
MINUS
CONST: 15
RIGHT PARENTHESIS
PLUS
ID: b
SEMICOLON
write
LEFT PARENTHESIS
STRING: "first was "
SEMICOLON
ID: a
SEMICOLON
STRING: ", second was "
SEMICOLON
ID: b
SEMICOLON
STRING: ", (first-15)+second is "
SEMICOLON
ID: c
RIGHT PARENTHESIS
SEMICOLON
writeln
LEFT PARENTHESIS
RIGHT PARENTHESIS
SEMICOLON
write
LEFT PARENTHESIS
STRING: "1000 - 10 is "
SEMICOLON
CONST: 1000
MINUS
CONST: 10
RIGHT PARENTHESIS
SEMICOLON
writeln
LEFT PARENTHESIS
RIGHT PARENTHESIS
SEMICOLON
end
ID: testit
PERIOD
sh: hcas: command not found
./atl0: Assembler problems.
END OF FILE.Computasaurus:atl0 starcub$ ./atl0 -s sample.atl
Parsing successful! Gooooo Joooooe!
Computasaurus:atl0 starcub$ more atl.hcs
a:        .bss 1
b:        .bss 1
c:        .bss 1
tmp$stor:          .bss 100
        ladr 0,tmp$stor
        movs "Enter two integers: "
```

```
        pint 0
        csp wrs
        ladr 0,a
        csp rdi
        ladr 0,b
        csp rdi
        load 0,a
        pint 15
        sub
        load 0,b
        add
        stor 0,c
        ladr 0,tmp$stor
        movs "first was "
        pint 0
        csp wrs
        load 0,a
        pint 10
        csp wri
        ladr 0,tmp$stor
        movs ", second was "
        pint 0
        csp wrs
        load 0,b
        pint 10
        csp wri
        ladr 0,tmp$stor
        movs ", (first-15)+second is "
        pint 0
        csp wrs
        load 0,c
        pint 10
        csp wri
        csp wln
        ladr 0,tmp$stor
        movs "1000 - 10 is "
        pint 0
        csp wrs
        pint 1000
        pint 10
        sub
        pint 10
        csp wri
        csp wln
        halt
Computasaurus:atl0 starcub$ ./atl0 sample.atl
Parsing successful! Gooooo Joooooe!
sh: hcas: command not found
./atl0: Assembler problems.
Computasaurus:atl0 starcub$ ./hcas atl.hcs
Computasaurus:atl0 starcub$ ./hcas -x atl.hcs
Computasaurus:atl0 starcub$ ./hc

Hypothetical Computer: (hc-2.0 Nov 10, 2011)
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```
hc (? for help): load atl.hco
File atl.hco is not a hc executable.
hc (? for help): load hc.out
loaded hc.out, 344 bytes of code.
hc (? for help): run
Enter two integers: 50 100
first was          50, second was         100, (first-15)+second is         135
1000 - 10 is        990
HALT: PC=343.
hc (? for help):
```