

LECTURE # 18NOVEMBER 30

- FINAL PROJECT DETAILS / PLANS
- PRESENTATIONS (<sup>10 to</sup> 15 min each) of 4 projects:

DAVE OTTEN: BUS INTERFACE CLOCK/CALENDAR  
 JIM CHERRY: TRANSFORMATIONAL MEMORY ARRAY  
 STEVE FRANK: WRITABLE PLA  
 GUY STEELE: SMALL INTEGRATED MICROPROCESSOR  
 FOR LISP EXPRESSIONS (SIMPLE).

ANNOUNCEMENTS:

- PROJECT REPORTS: O.K. TO SLIP TO TUES. DEC 12, BUT PLEASE, NO LATER THAN THAT.

TRY TO KEEP COMPACT, BUT MAKE TUTORIALS POSSIBLE - SHOW ERNESTO PEREAS. (MENTION MULT. PARTNER PROJ)

- CRAIG OLSON'S SUGGESTION: MAY EDIT AND GROUP CTX PROJ. RPT'S INTO A REPORT ON THE COURSE, ESPECIALLY SINCE SO MANY QUEST. PROJS. HAVE BEEN DONE -

SO: WRITE FOR PERHAPS A WIDER AUDIENCE. IF IN SPEC FIELD, FOR EX. DIGITAL FILTERING, GIVE REFS RATHER THAN EXT. TIT. ON DIG FILTERING.

INCL. COMMENT ABOUT WHAT YOU LEARNED FROM ACTUALLY DOING THE PROJECTS WOULD BE INTERESTING. ALSO, MENTION/DESCRIBE ANY DESIGN AIDS YOU BUILT YOURSELF.

- REMEMBER: SEMINAR SERIES NEXT WEEK.

HANDOUTS.

ALSO --- I'M GOING TO TRY TO ARRANGE ~~OR~~ A GET TOGETHER N5 OR SO --- MAYBE AT THE FACULTY CLUB --- WOULD REALLY LIKE TO HAVE STUDENTS COME TO THAT --- TALK INF. WITH CALVER.

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DATE: 29 NOV 1978 4:52 PM (WEDNESDAY)  
FROM: LYON  
SUBJECT: MIT PROJECTS  
TO: CONWAY; FAIRBAIRN; ABELL  
CC: LYON

(SOME  
SAMPLE  
MSG  
TRAFFIC)

HERE IS STATUS OF PRELIMINARY DESIGNS RECEIVED HERE:

SUCCESSFULLY CONVERTED AND PLOTTED:

BAIN (1 MISSING SEMI)  
BROCK  
CHERRY (STUFF AFTER END)  
COLN  
FRANK (STUFF AFTER END)  
FRANKEL "  
GOLDIKENER  
LAM (MISSING SEMIS)  
LEVITT  
OLSON  
OTTEN  
PEREA (STUFF AFTER END)  
RUBINSTEIN (MANY ERRORS)  
SHAVER  
STERN  
YANG (STUFF AFTER END)

(NO COMMENT DOES NOT IMPLY NO ERRORS)

MESSED UP DATA; CONVERTED BUT UNUSABLE:

ROYLANCE (ALSO MISSING A SEMI)  
STEELE (SEVERAL ERRORS)

BOMBED FIS TO SWAT:

BALDWIN  
FRAEMAN  
HIRATSUKA

ALL ITEMS (NO SYMBOLS): CONVERTED; BUT TOO BIG FOR ICARUS  
SNYDER

MANY PROJECTS HAD MORE THAN ONE SYMBOL CALL AT  
THE TOP LEVEL; WHICH IS VERBOTEN (ESP. SNYDER)!

LYNN: PLEASE SEND BOUNDING BOXES AS SOON AS KNOWN.

DICK

9LOFD\Q\FGO

LOGOUT JOB 21, USER CONWAY, ACCT 1, TTY 24, AT 11/29/78 1711

USED 0:0:13 IN 0:5:34

!aNeKe2 (FTI)^

LENET

DL5

TERMINAL=

pid :415xr/parc

PASSWORD =

415 XR1 CONNECTED

PARC DLS #35

>Maxc1...

PARC-MAXC TENEX 1.34.19, MAXC1 EXEC 1.54.10, 6 JOBS, LOAD = 0.07

@LOG CONWAY 1

JOB 17 ON TTY4 30-NOV-78 05:20

PREVIOUS LOGIN: 29-NOV-78 17:05

[YOU HAVE NEW MAIL]

@READMAIL.SAV:21

Date: 29 NOV 1978 1713-PST

From: FAIRBAIRN

Subject: CHIP PROCESSING

To: ABELL; CONWAY; LYON; TRIM; FAIRBAIRN; ROWSON; BALDWIN;

To: WILNER; M-NEWELL; STROLLO; SUTHERLAND

ANOTHER FALSE HOPE... HP LOVELAND DIVISION CANNOT PROCESS OUR  
CHIP BECAUSE IT DOES NOT REALLY HAVE THE RIGHT PROCESS (THEY SAY). TE DEER  
CREEK FACILITY DOES HAVE THE PROCESS AND CAN PROCESS THEM IN 2 TO 3 WEEKS. THE  
CHRISTMAS HOLIDAYS REPRESENTS A PROBLEM TO THEM.

I WILL TALK WITH MEC TOMORROW TO GET A FIRMER IDEA FROM THEM ON  
TURN AROUND TIME. MY FEELING IS THAT WE CAN WORK MORE CLOSELY  
WITH THE MEC PEOPLE AND THE INTERFACE WILL BE SMOOTHER AND MORE PREDIATABLE.  
I WILL INVESTIGATE BOTH ALTERNATIVES MORE THOROUGHLY TOMORROW AND WE  
WILL TRY TO REACH A CONCLUSION TOMORROW.

Doug

DATE: 29 NOV 1978 2058-EST  
FROM: GLS AT MIT-AI (GUY L. STEELE, JR.)  
SUBJECT: SIGH  
TO: LYON AT PARC-MAXC  
CC: GLS AT MIT-AI; CONWAY AT PARC-MAXC

● LL BE READY TO SHIP ANOTHER FILE IN AN HOUR OR TWO.  
WILL THAT BE SOON ENOUGH? I'LL TRY TO FIND THE OTHER FILE ALSO.  
-- GUY

DATE: 29 NOV 1978 6:04 PM (WEDNESDAY)  
FROM: LYON  
SUBJECT: BALDWIN BUG  
TO: CONWAY  
CC: LYON; ABELL; FAIRBAIRN

LYNN:  
THE PROBLEM WITH BALDWIN ET AL IS A COMMENT LENGTH LIMITATION IN FIS  
(SIGNAL 5001B; STRING BOUND ERROR).  
I REMOVED THE COMMENTS FROM BALDWIN'S; AND IT PARSED OK; BUT ABORTED  
DUE TO CIRCULAR DEF REFERENCES. I HAVE NOT TRIED THE OTHERS.  
DICK

DATE: 29 NOV 1978 1841-PST  
FROM: ABELL  
SUBJECT: PROBLEM WITH GLS AND ROYLANCES CIF FILES  
TO: GLS AT MIT-AI  
CC: LYON; CONWAY; FAIRBAIRN

THE PROBLEM APPEARS TO BE THAT THERE EXIST SYMBOL DEFINITIONS THAT  
ARE EMPTY. GLS'S DESIGN HAS AN EMPTY DEF AS THE FIRST ONE ON THE CHIP.  
● HAVE CHANGED THAT TO HAVE SOMETHING IN IT. IT APPEARS TO DO  
BETTER BUT I HAVEN'T TRIED PLOTTING IT YET. ROYLANCE ALSO HAD  
AN EMPTY SYMBOL. THIS WAS DUE TO A FEW GARBAGE  
CHARACTERS IN THE FILE. I DID NOT TRY FIXING HIS.  
ALAN

DATE: 30 NOV 1978 0446-EST  
FROM: GLS AT MIT-AI (GUY L. STEELE, JR.)  
SUBJECT: SIGH  
TO: LYON AT PARC-MAXC  
CC: GLS AT MIT-AI; CONWAY AT PARC-MAXC; ABELL AT PARC-MAXC  
CC: FAIRBAIRN AT PARC-MAXC

<HOLLOWAY>STEELE.CIF @ PARC IS THE LATEST VERSION OF MY FILE.  
I FIXED THE EMPTY CELL PROBLEM (BUT ACCORDING TO THE MEAD AND  
CONWAY BOOK; AN EMPTY SYMBOL IS VALID IN CIF).

01/1

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011

- STATUS: > Net was down in early evening on Thursday.
  - > Files were shipped later, successfully
  - > Problems with FIS (CIF → ICARUS) program prevented some files from plotting successfully. We're fixing that program.
  - > 3 Plots arrived today. (OTTEN, CHERRY, FRANK)
  - > more will arrive tomorrow ≈ 10-11:00:  
including, I believe:
    - BAIN, BROCK, COLN, FRANKEL, GOLDREINER, LAM, LEVITT, OLSON, PEREA, RUBENSTEIN, SHAVET, STERN, ;, YANG
  - > FIS problems with  
ROYLANCE, STEELE, BALDWIN, FREEMAN, HIRABUWA.
  - > ICARUS problem with SNYDER

• DIAGNOSTICS OR CORRECTIONS: SEE ME FOR DETAILS

BAIN: MISSING SEMICOLON  
 BROCK: IN UPPER RIGHT RAND. LOGIC: Some pullups here channels not long enough  
 CHERRY, FRANKEL, FRANK, PEREA, YANG: STUFF AFTER END (; ?)  
 OTTEN: IMPLANT IN PULLUPS TOO SHORT  
 SNYDER: PUT DS -- DF around whole Jeslyn, Nencell.

~~OTTEN~~ ROYLANCE: MISSING SEMI AFTER COMMENT.  
 LAM: MISSING SEMI  
 RUBENSTEIN: MANY ERRORS

MISC.

- FIS: Has a comment length limitation

Don't know limit, But really big comments bomb it.

May have been problem with:

Baldwin, Freeman, Hiratsuka

- FIS: Doesn't like DS; with nothing in it.  
DF;

This bombed Steele's plot.

- NOTE ASYMMETRY IN PADOUT IT LOOKS SYM. BUT ISN'T!  
SLIDE

- EXTEND IMPLANT 1.5λ Beyond DIFFRACTION in all directions: SLIDE

- Previously: ( ) missing } would plot  
LN--; BOX --;

can though in error.

Now it won't! You might find such an error when doing full plots.

- Plans, Contingency Plans:

- > Modify Icarus to increase symbol space by deleting lower window: special version for project merging
- > Contingency plan: use TECO to premerge some or many design files by placing PADCELL LIBRARY IN FRONT, appending files, and deleting definitions of PADCELLS within each appended file. Place delete definition statements between files for #'s  $\geq 100$ . Note: This requires delete definition portion of FIZ to work.
- > Contingency Plans: Do two separate mergings of the two individual chip types in the set, and then merge these at the PG level.
- > MUST find and fix bug in FIZ which is causing error in plotting: Bounding boxes of symbols are not being correctly calculated, when symbols are mirrored / rotated. Does not affect ICARUS - PG but can't plot projects with this disease. So: Must fix to see merging effects.
- > Contingency Plans:

## FINAL RULES OF THE GAME:

SHOW BOARD  
OF PROJECT PASTELPS

- PUT COMMENT AT/NEAR BEGINNING WITH YOUR NAME IN IT:  
(PARC FILE = LNAME.CIF);
- PUT ALL LIBRARY SYMB. DEF'S NEXT. ( $\# \leq 99$ )
- PUT YOUR SYMB. DEF'S NEXT. USE #<sup>s</sup>  $\geq 100$
- PUT DS, DF AROUND ALL THIS. USE #  $\geq 100$
- THEN ONE CALL OF WHOLE PROJECT.

i.e. CALL ISI;

preferably with no Transformations applied.

- WHEN YOU ARE REALLY FINISHED:

Get a message to me: pref. a piece of paper, which gives me

> directory and filename

> final bounding box with the one call as described above:

i.e. minx, maxx, miny, maxy

just as output by CIFTRN

> sign off on this.

- LAB WILL BE OPEN THIS WEEKEND, SAT & SUN > 1 PM.



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- MUST HAVE YOUR SIGN OFF BY TUESDAY @ CLASS.
- PROJECTS WILL BE POSITIONED TO FINAL PLACEMENT.  
‡ THEN SENT ON WEDNESDAY MORNING.
- DURING WED/THURS, MESSAGING WILL BE DONE AT PARC.
- POSSIBILITY OF LAST ITERATIONS OCCURRING (IF FIND SMALL PROBLEMS) ON THURSDAY.

WILL BUMP OFF PROJECTS WITH OBVIOUS GROSS ERRORS (SUCH AS PADS NOT HOOKED UP --- VDD/GND SHORTS ETC.) AND REPLACE WITH OTHERS.

- ~~• May need help with project messaging / transmission  
Any before (no --- announce on Tuesday)~~

