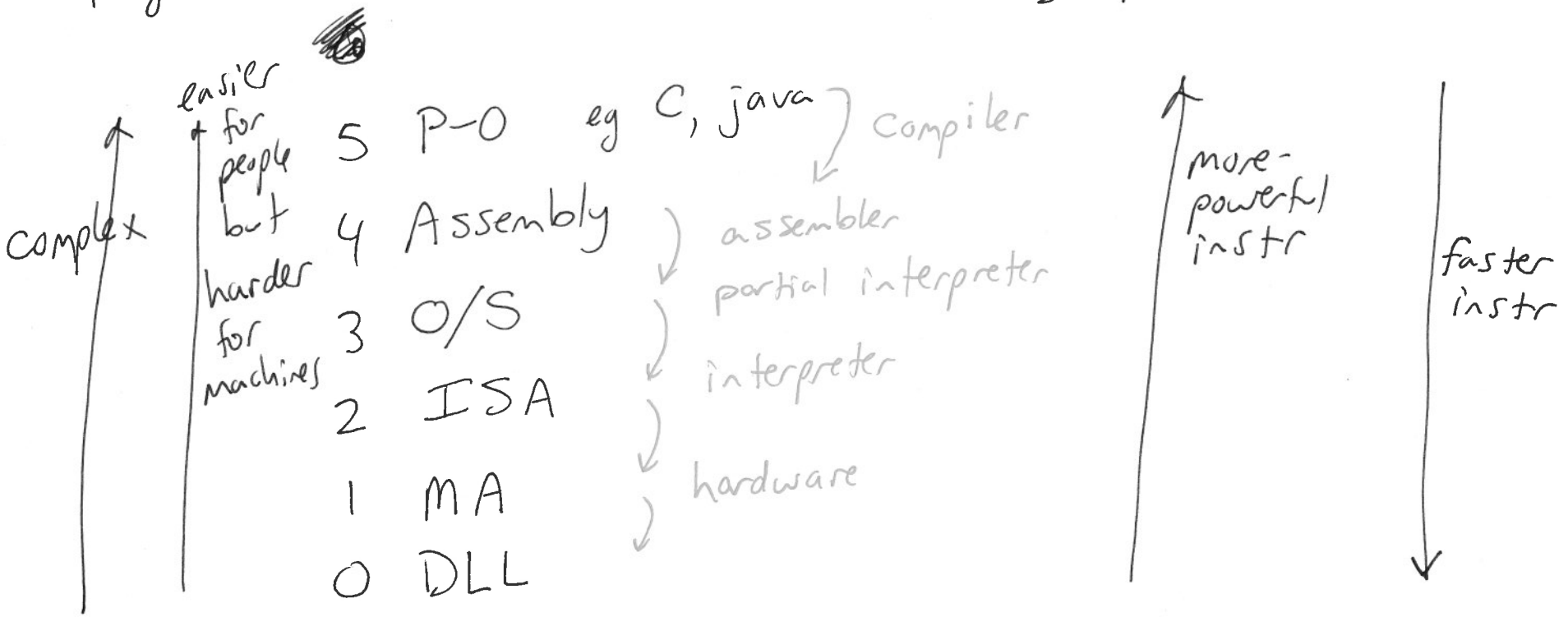
VON NEUMANN: - Manhattan project
- car accidents
- V-N architecture: cpu
- cellular automata
- software
- game theory

Page 5: 6-level computer (6 layers + 5 interfaces)



interfaces between levels:

eg compiler:

input → eg C code
output → eg assembly

software programs

HLL code → interface → LLL code

- was closer to human language
- slows things down
- longer program
- closer to machine language

5
4
3
2
1
0

6-level architecture is SLOW but

advantages! (compared to <6 levels)
- easy for people
- faster for people to code
- ☆ cheap! = simple HW
-

- modular

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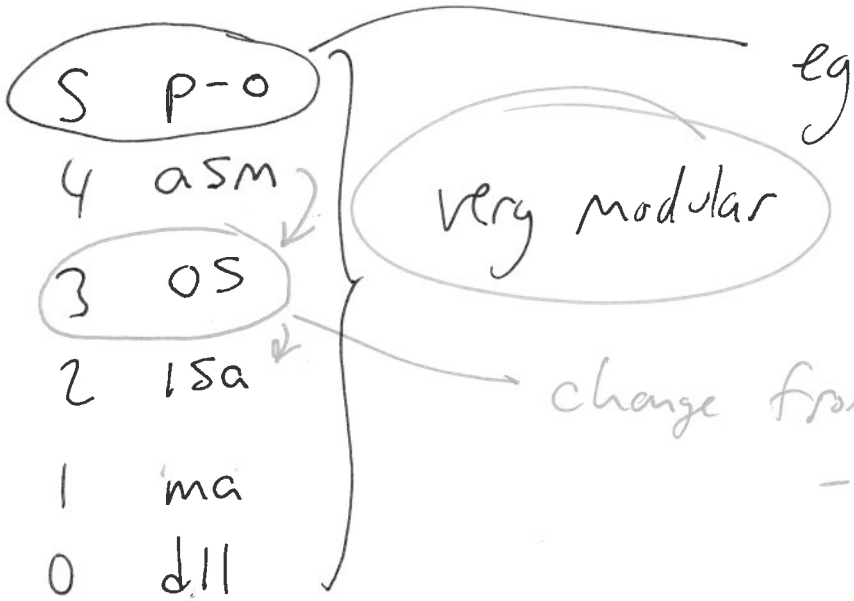
level 6? - even simpler for people to code
- even slower
-

compromises:
- complexity
- cost
- backwards compatability

imagine a two-level computer:

eg from C → hardware

requires: - quite a compiler
- no modularity



eg change from java to c:
just change compilers

change from windows to linux:
- just change the O/S and the two interfaces

5 ENG
4 FR
3 CH
2 SP
1 GR
0 RU

ENG-FR
FR-CH
CH-SP
SP-GR
GR-RU

Modular!

change CHINESE:
- just change the two surrounding interpreters

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compilation aka translation

Money/business is very important in determining speed

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city bus ≈ computer bus

- connects points A and B
- shared
- wait your turn
- cheap
- often indirect

HW is just petrified SW.

- can do the same job.
- HW is faster
- HW is more expensive

chess DVD

chess card

Read pg 1 - 8

28 ~~the~~ 30

49 - 50

Questions pg 52 - 54 } - math / diagrams especially
- thinking hard

Quiz:

math - not next week

levels

VN

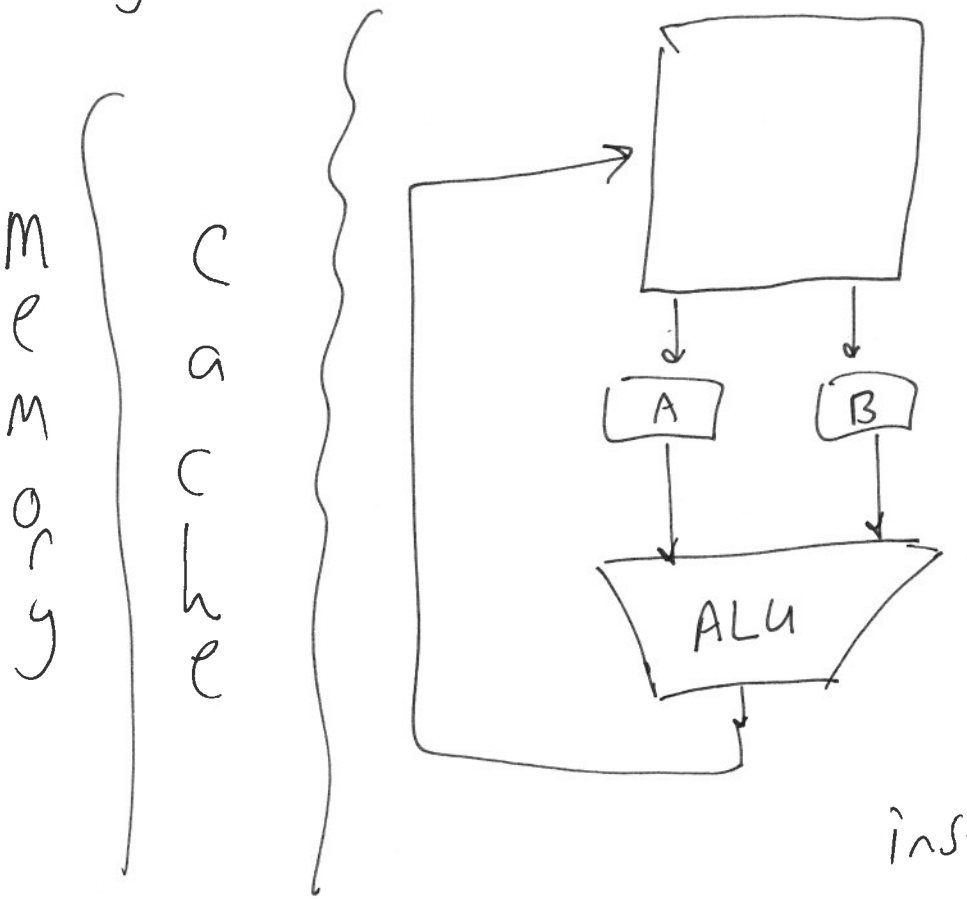
pg 1-8
28-30
49-50

diagrams - pg 5

tuesday

start of lab

Pg 57: Von-Neumann datapath : inside cpu



Registers : - general-purpose
and
- specific purpose

eg PC : program counter
a register : holds ~~a~~ the
main-memory address
of the next ~~word~~
instruction to be FDE

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eg IR : instruction register
holds the currently-
executing instruction

Chapter 4: revisit
in detail