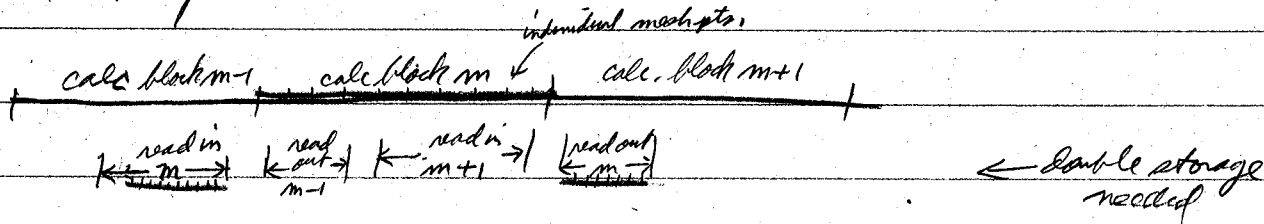
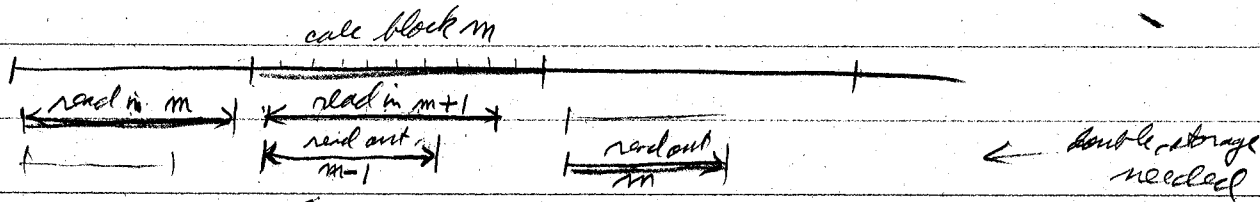


# various methods of using High Speed Disk:

I. Buffered, sequential read-write  $t_c > t_s(\text{in} + \text{out})$

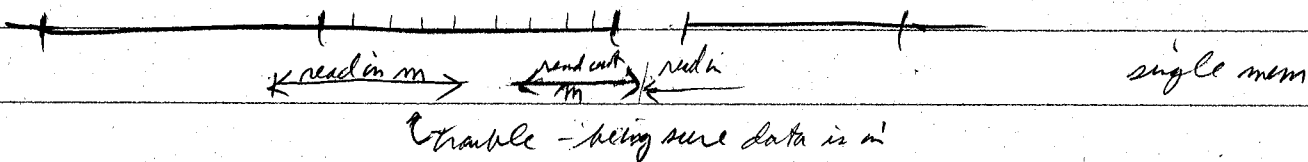


II. Buffered: simultaneous read write

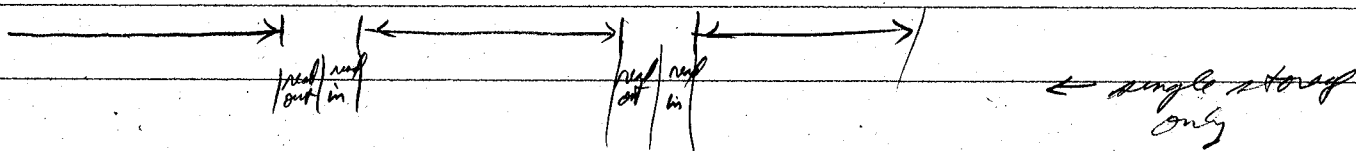


note: records must be of same length, or the non changing data must be stored - - - ?

III. Buffered Simultaneous Read-write:



Simplest case logically



1. Define difference between buffered external mem. and closely coupled. (4 in between)
  - 1. rapidly in sync
  - 2. long chains.
 ← note one can ignore access time on closely coupled.
2. For closely coupled, work out conditions on timing - introduce mesh pt quantities - discuss clearing gaps - interlacing problem
3. Discuss Timing for problems, compare rates of 5, 10, 20 (4  $\mu$ s, 8  $\mu$ s, 16  $\mu$ s) compare simult. read/write vs separate
4. conclusions
  1. region of 5-20  $\mu$ s is very sensitive
  2. separate read/write is def better - for disk storage & commands

### difficulties of closely coupled calc.

1. there must be some time lost due to fluctuations in size, operations, (Running over causes one to wait a whole revolution  $\sim 40,000$  operations)
2. One cannot take advantage of time savings in calc. e.g. bypassing sections of <sup>the</sup> code when certain conditions are satisfied (- a very common trick for speeding up hydrodynamic calculations) because a fixed time is allotted to each pt.
3. Branching of any sort is very difficult. It must either be done in the same time, or take the loss of getting out of sync.
4. One cannot conveniently sweep a mesh in different directions - the direction of sweep must be that <sup>in</sup> which the data is stored. (over)

5, One must be very careful in making small changes which lengthen  
The code or it ~~will~~ may go over the timing limit.