

## INF 551 – Fall 2017 (Afternoon section)

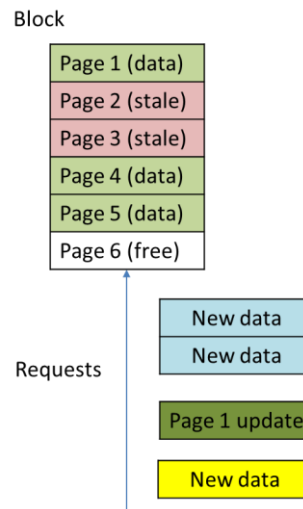
## Quiz 2: SSD (10 points), 15 minutes

Consider an SSD with the following specification on its read/write performance.

Operation	Time
Read a page	25 microseconds
Write a page	250 microseconds
Erase a block	2 milliseconds

Consider the following block and requests in this order: (1) inserting two new pages at the same time; (2) update page 1; and (3) insert another new page.

State the read/write/erase operations needed to perform the above requests. How long does it take for them to complete?



Answer:

(1) Inserting two new pages

1. Read 6 pages, rearrange page order and remove stale pages
2. Erase all pages
3. Write 5 new pages

(2) Update page 1

4. Write new page1 and mark original page1 as stale

(3) Insert another new page

5. Read 6 pages and rearrange page order and remove stale pages
6. Erase all pages
7. Write 6 new pages

So in total there are 12 reads, 12 writes and 2 erasures. It takes  $12 \times 25\mu s + 12 \times 250\mu s + 2 \times 2\text{ms} = 7.3\text{ms}$  to complete.