CS3402 later part cheatsheet

1. (a) Record size (R):

$$\mathrm{R} = \text{sum of all fields}$$

2. (b) Blocks needed to be searched:

$$Sequential\ search = \frac{bfr}{2}$$

$$Binary\ search = \log_2 bfr$$

3. Blocking factor (bfr) (take the floor as the final result):

$$bfr = \lfloor \frac{blocking\ factor(B)}{Record\ size(R)} \rfloor$$

4. Number of index blocks (blocks needed to store the records):

$$Number\ of\ blocks(I) = \left\lceil \frac{fixed\ length}{bfr} \right\rceil$$

5. Number of hard disk blocks that will be occupied (single-level primary index):

$$Index\ entry\ size(R_i) = field + block\ pointer(P)$$

$$Index\ of\ blocking\ factor(bfri) = \left\lfloor \frac{blocking\ factor(B)}{Index\ entry\ size(R_i)} \right\rfloor$$

$$Number\ of\ index\ blocks(B_i) = \left\lceil \frac{Number\ of\ blocks(I)}{Index\ entry\ size(R_i)} \right\rceil$$

$$Single\ level\ block(L_1) = \left\lceil \frac{Number\ of\ blocks(I)}{Index\ entry\ size(R_i)} \right\rceil$$

5. Multi-level primary index:

$$Multi\ level(L_2) = \frac{L_1}{Index\ entry\ size(R_i)}$$

$$\text{If } L_2 > 1$$

$$L_3 = \frac{L_2}{Index\ entry\ size(R_i)}$$

6. Number of (index) levels:

$$= Total\ number\ of\ levels + 1$$

7. Number of blocks(sum of values in each level):

$$= \sum_{i=1}^{n} blocks(L_i) + 1$$