Part 1:

Question 1:

1. Lower case letter (a-z) -> 26 possibilities
2. Upper case letter (A-Z) -> 26 possibilities
3. A valid digit (0-9) -> 10 possibilities
4. A valid digit (0-9) -> 10 possibilities
5. Compulsory “@” -> 1 possibility
6. Upper/Lower case letter (a-z + A-Z) -> 52 possibilities
7. Upper/Lower case letter (a-z + A-Z) -> 52 possibilities
8. A symbol from set {$,9,5,v,w,J} -> 6 possibilities
9. A symbol from set {$,9,5,v,w,J} -> 6 possibilities
10. A symbol from set {$,9,5,v,w,J} -> 6 possibilities

Chosen password: aZ96@Bc$9$

Entropy = L log2N

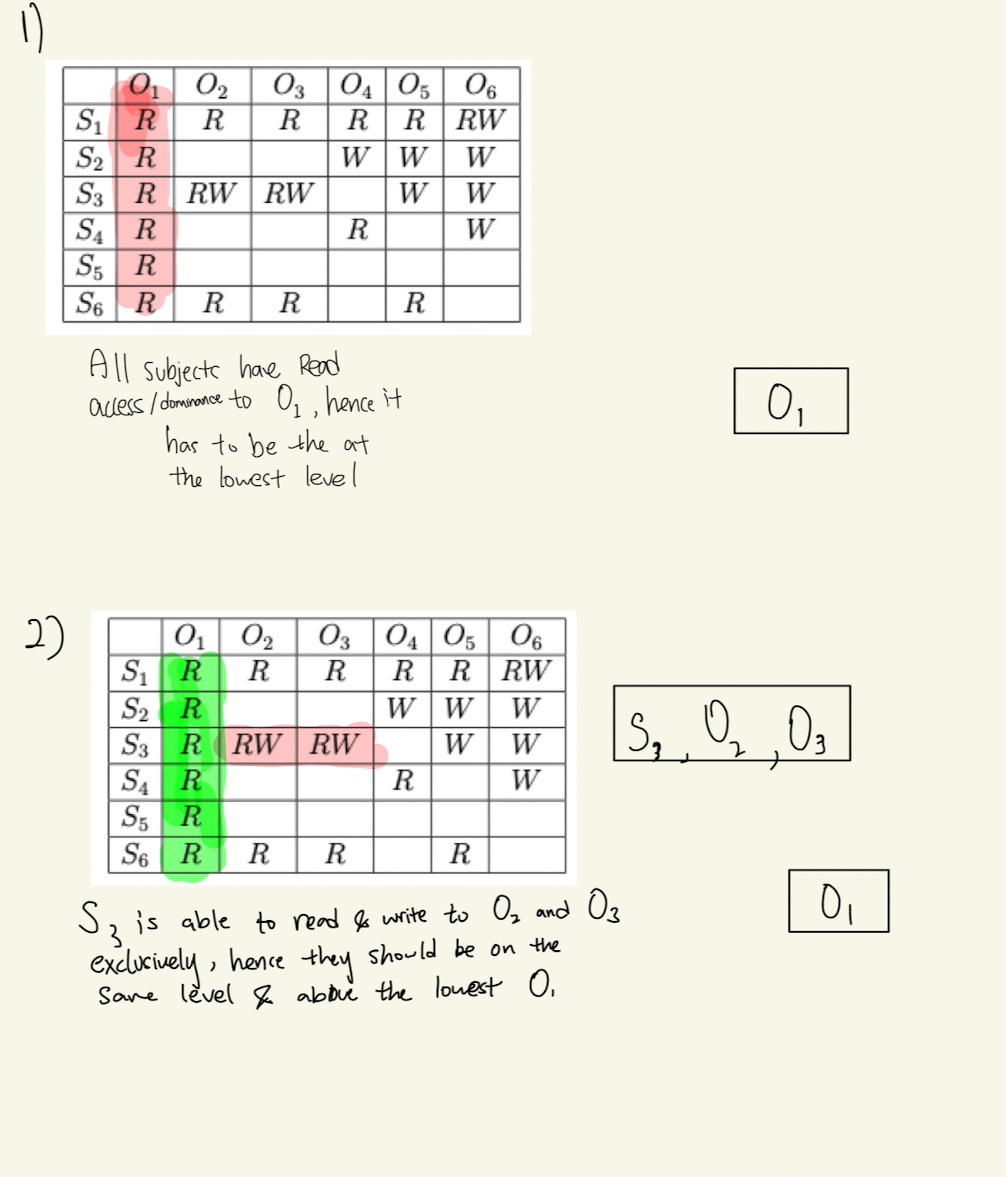
L = 1

N = 26­­2 ­ x 102  x 1 x 522 x 62

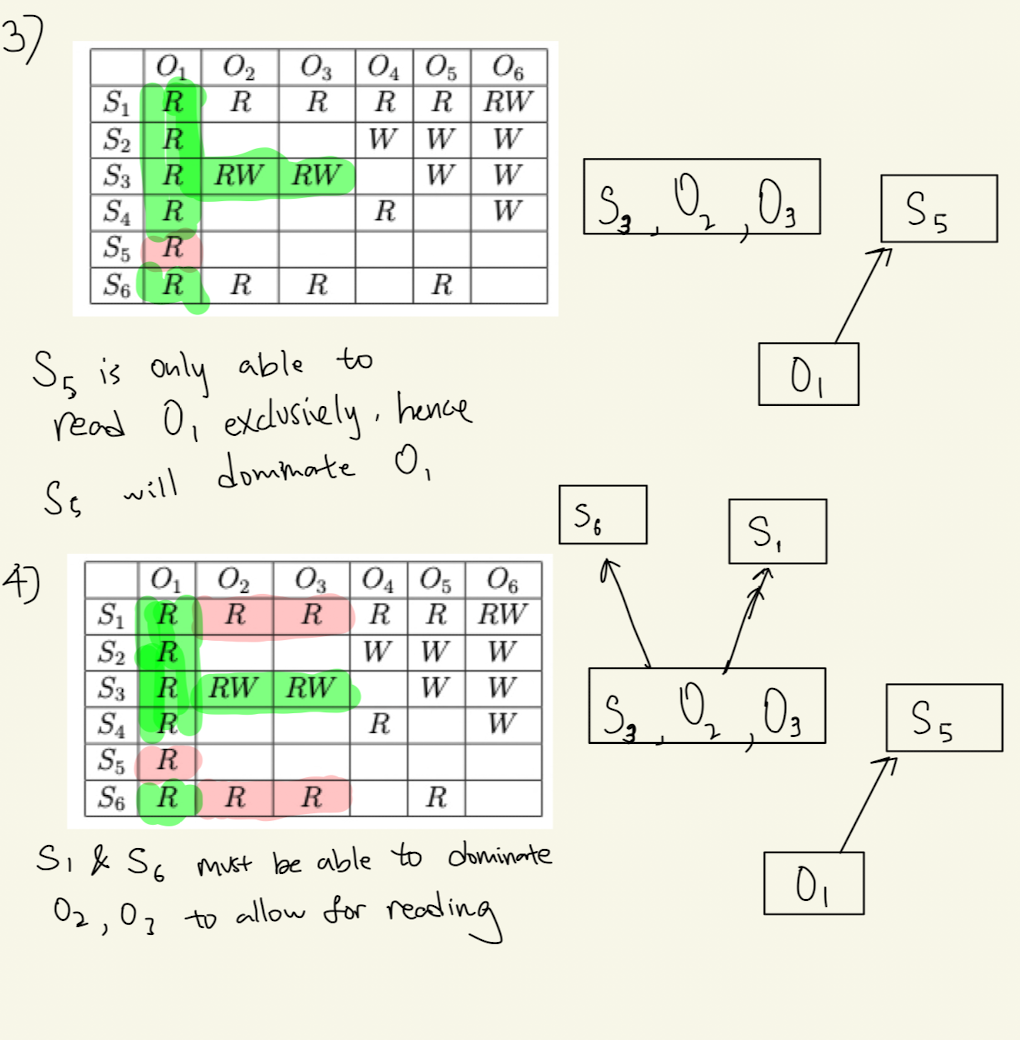
Entropy = 1log(26­­2 ­ x 102  x 1 x 522 x 62) = 1log(39482726400) ≈ 35.2bits

As Tiger hash is deterministic and will not additionally entropy to the current associated password pattern.

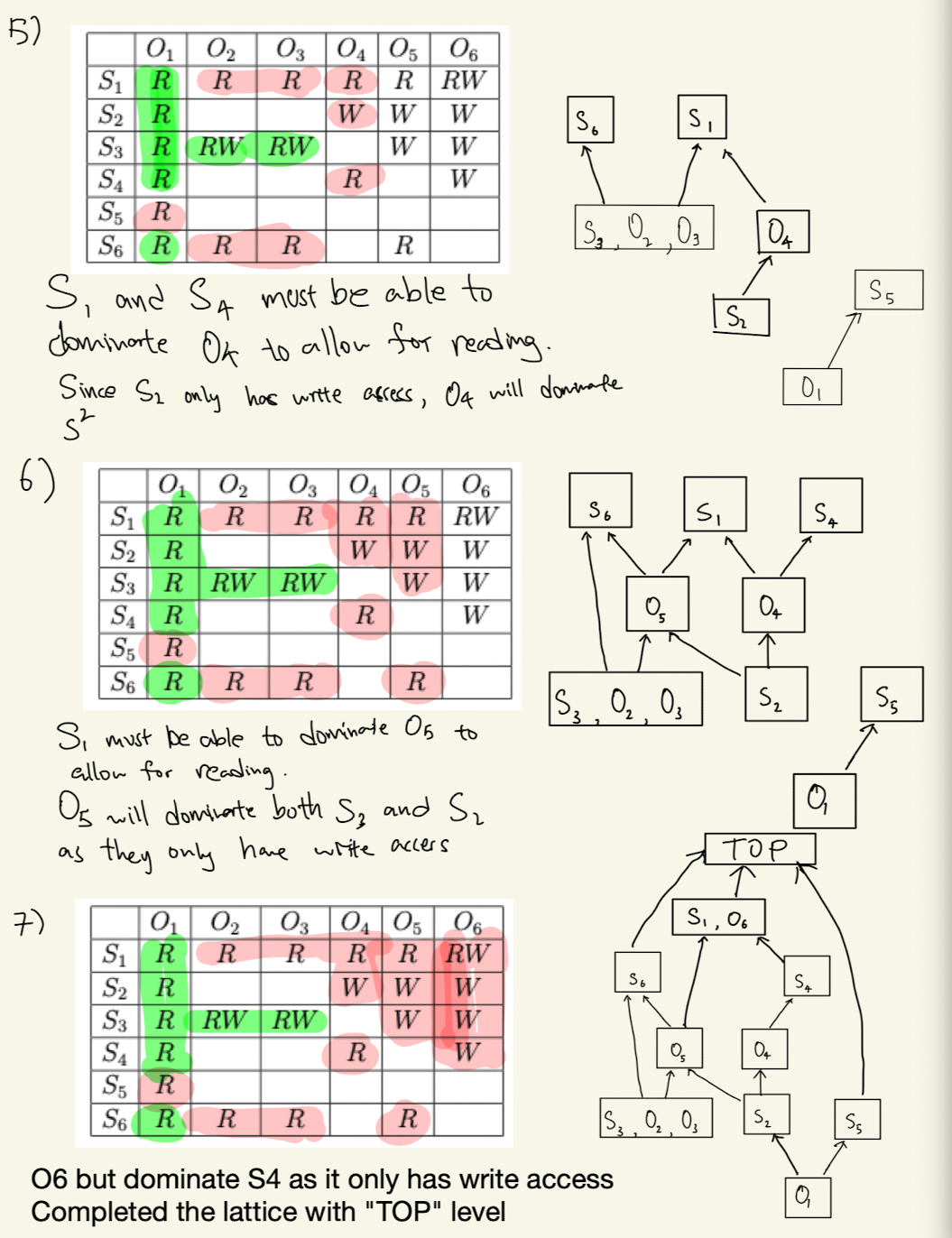
Question 2:



Question 2 (cont):



Question 2 (cont):



Question 3:

|  |  |  |  |
| --- | --- | --- | --- |
| Statement | Subject | Objects | Actions |
| Alice can climb trees and eat apples. | Alice | Trees, Apples | Climb, Eat |
| Bob can climb fences, eat apples, and wave flags. | Bob | Fences, Apples, Flags | Climb, Eat, Wave |
| Trees can hurt apples. | Trees | Apples | Hurt |
| Carol can jumps waves and wave flags. | Carol | Waves, Flags | Jump, Wave |

Action set: Climb, Eat, Wave, Hurt, Jump

Rows: Subject

Column: Objects

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Apples | Trees | Fences | Waves | Flags |
| Alice | Eat | Climb |  |  |  |
| Bob | Eat |  | Climb |  | Wave |
| Trees | Hurt |  |  |  |  |
| Carol |  |  |  | Jump | Wave |