

# Assignment 1

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February 8, 2022

1. Schemata A1 has more wildcards than A2:  $o(A1) < o(A2)$ . Since both schemata have the same amount of bits, the chance of a non-wildcard bit flipping in A1 is less than the chance of that happening in A2.

Mathematically, this can be computed as follows (with  $p_m = 0.01$ ):

- Probability of a bit not being flipped after mutation:  $1 - p_m = 0.99$ .
- Probability that A1 survives:  $S_m(A1) = (1 - p_m)^{o(A1)} = 0.99^4 \approx 0.961$ .
- Probability that A2 survives:  $S_m(A2) = (1 - p_m)^{o(A2)} = 0.99^5 \approx 0.951$ .