Natural Computing, Assignment 3

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(a)

- The probability that all three doctors give the correct answer is $0.8^3 = 0.512$.
- The probability that exactly 2 doctors make the right call is $0.8 * 0.8 * 0.2 + 0.8 * 0.2 * 0.8 + 0.2 * 0.8 * 0.8 = 0.384$. Therefore, the probability that *at least* two doctors make the right call is $0.512 + 0.384 = 0.896$.
- The probability that this group makes the right decision based on majority voting is $0.512 + 0.384 = 0.896$.

(b)

The general formula is

$$P(\text{correct predictions} > c/2) \sum_{i=\lfloor n/2 \rfloor}^{n} p^i (1-p)^{n-i} \binom{n}{i}.$$

Using this formula, we find a probability of about 0.826.

(c)

If we use 10000 runs of the simulations, we get an approximately equal result.
(TODO !!!!) (DO SOMETHING WITH HOW GOOD THE APPROXIMATION IS?)

(d)

In the comments is a stacklink how to make a nice table