3(ii)

Samstag, 19. Juni 2021 02:15

- One update of S always happens in line 1
- The other updates depend on how often HEAD happens
- Let $HEAD_i \in \{0,1\}$ be a random variable that is 1 if HEAD-event happens when processing a_i and 0 otherwise for $i \geq 2$
- The expected number of updates is:

$$1 + E\left(\sum_{i=2}^{m} HEAD_i\right) = 1 + \sum_{i=2}^{m} E(HEAD_i) = 1 + \sum_{i=2}^{m} \frac{1}{i} = \sum_{i=1}^{m} \frac{1}{i}$$