

$f(x) = \lfloor \frac{x}{i} \rfloor$ is a staircase function with $O(\frac{U}{i})$ steps. We can compute the result for each step in $O(1)$ time, using prefix sum. The total running time is $\sum_{i=1}^n O(\frac{U}{i}) = O(U \log n)$.

References