input: S, T, j
algorithm implementation:

1. if $j = 0$
   - return $u\left(S, (0, T)\right)$
2. $C \leftarrow [\lceil d \rceil \mid d \in S]$ # list
3. $D \leftarrow [\lfloor d \rfloor \mid d \in S]$ # list
4. $CD \leftarrow C \cup D$
5. $P \leftarrow list\left(\{x \in CD \mid 0 \leq x \leq T\}\right)$ # remove duplicates and points out of range
6. $S \leftarrow \left[min\left(Q\left(S, i\right), Q\left(S, i + 2^j - 1\right)\right) \mid i \in P\right]$ # list
7. $E \leftarrow \left[min\left(Q\left(S, i - 2^j + 1\right), Q\left(S, i\right)\right) \mid i \in P\right]$ # list
8. $m \leftarrow max\left(S \cup E\right)$
9. return m