Algorithm 9: PerformStochasticSimulations

    Input   : $\vec{X}, \vec{B}, \vec{\sigma}, \mathcal{D}$
    ConfigParams: noSimulations, maxSimBudget, $\overrightarrow{PB}$, CB
    Output   : result, $O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N

1   N $\leftarrow$ 0
2 **repeat**
3   cost.m, cost.sd, $\overrightarrow{p.m}, \overrightarrow{p.sd} \leftarrow$ MonteCarloSimulation $(\vec{X}, \vec{B}, \vec{\sigma}, \mathcal{D}$, noSimulations)
4     $O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N $\leftarrow$ UpdateCandidateStats (cost.m, cost.sd, $\overrightarrow{p.m}$,
                                          $\overrightarrow{p.sd}$, noSimulations)
5     $\overrightarrow{conf} \leftarrow$ Confidence $(\overrightarrow{SC.m} \geq \overrightarrow{PB})$
       // $\epsilon \ll probabilityBound$.   e.g., $\epsilon = 0.15$
6     $\overrightarrow{refConf} \leftarrow$ Confidence $(\overrightarrow{SC.m} \leq \overrightarrow{PB} - \epsilon)$
7   N $\leftarrow$ N + noSimulations
8 **until** $\forall_{i \in \mathcal{D}}$ $conf_i \geq CB$ or $\exists_{i \in \mathcal{D}}$ $refConf_i \geq CB$ or $budget \geq maxSimBudget$
9 **if** $\forall_{i \in \mathcal{D}}$ $conf_i \geq CB$ **then**
10 | result $\leftarrow$ accept
11 **else if** $\exists_{i \in \mathcal{D}}$ $refConf_i \geq CB$ **then**
12 | result $\leftarrow$ reject
13 **else if** $budget \geq maxSimBudget$ **then**
14 | result $\leftarrow$ not-reject
15 **end**
16 **return** result, $O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N