Algorithm 5: 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

N $\leftarrow 0$
repeat
  cost.m, cost.sd, $\overrightarrow{p.m}, \overrightarrow{p.sd} \leftarrow$ `MonteCarloSimulation` ($\vec{X}, \vec{B}, \vec{\sigma}, \mathcal{D}$, noSimulations)
  $O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N $\leftarrow$ `UpdateCandidateStats` (cost.m, cost.sd, $\overrightarrow{p.m}, \overrightarrow{p.sd}$, noSimulations)
  $\overrightarrow{conf} \leftarrow$ `Confidence` ($\overrightarrow{SC.m} \geq \overrightarrow{PB}$)
  $\overrightarrow{refConf} \leftarrow$ `Confidence` ($\overrightarrow{SC.m} \leq \overrightarrow{PB} - \epsilon$) `//` $\epsilon \ll probabilityBound$. `e.g.,`$\epsilon$ `= 0.15`
  N $\leftarrow$ N + noSimulations
until $\forall_{i \in \mathcal{D}}\ conf_i \geq CB$ *or* $\exists_{i \in \mathcal{D}}\ refConf_i \geq CB$ *or* $budget \geq maxSimBudget$
if $\forall_{i \in \mathcal{D}}\ conf_i \geq CB$ **then**
  result $\leftarrow$ accept
else if $\exists_{i \in \mathcal{D}}\ refConf_i \geq CB$ **then**
  result $\leftarrow$ reject
else if $budget \geq maxSimBudget$ **then**
  result $\leftarrow$ not-reject
end
return result, $O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N