Pseudocode SBC Optimization

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1 Pseudocode of Program

1.1 Main

```
# Init phase
Set R=100                          # Number of replications
Set T=100                          # Set length of simulation
Set λ=[0 0 ... ]                   # Initial population

# Run ga optimizer on simulation with initial population l
ga(simulation_sbc(λ))
```

1.2 Simulation

```
# Simulation
def simulation_sbc(λ):
    for r=1 to R:

        # 1. generate λs for all periods T
        D = exprnd(λ)

        # 2. Calculate inventory and costs for all periods
        b_r(0)=0
        for t=1 to T:
            λ̄_r(t)=λ(t)+b_r(t−1)
            X_r(t)=λ̄_r(t)/(1+λ̄_r(t))
            b_r(t)=b_r(t−1)+λ(t)−X_r(t)
            W_r(t)=b_r(t)
            I_r(t)=I_r(t−1)+X_r(t)−D(t)
            cost_r(t)=h∗W_r(t)+g∗I_r(t)

    # Average over periods T
    for t=1 to T:
        avgI(t)=0
        for r=1 to R:
            avgI(t) = avgI(t) + I_r(t)

    # Average over replications R
```

```
for r=1 to R:
    avgCosts(r)=0
    for t=0 to T:
        avgCosts(r) = avgCosts(r) + Costs_r(t)

# Mean Costs
costs=mean(avgCosts)

# Constraints
if any (< 0) of avgI or any (< 0) of X or
   any (< 0) b or any (< 0) of W:
    raise optimizer constraints error
```