Algorithm 2: Anabolism

Function `Anabolize(`$\boldsymbol{S}$, $\mathcal{C}$, $\mathcal{B}$, $\mathcal{B}_T$, R_{obj}, $\mathcal{O}$`)`**:**

z = maximize R_{obj}
subject to
$\mathbf{S}\cdot\mathbf{v} = 0$
$y_{i,lb} \leq v_i \leq y_{i,ub} \quad \forall i \in \mathcal{C}$
$0 \leq v_j \leq 1000 \quad \forall j \in \mathcal{B}$
if $z \geq 0$ **then**
$\mathbf{z} \leftarrow$ z
else
z = maximize R_{obj}
subject to
$\mathbf{S}\cdot\mathbf{v} = 0$
$y_{i,lb} \leq v_i \leq y_{i,ub} \quad \forall i \in \mathcal{C} \setminus \mathcal{M}$
$0 \leq v_j \leq 1000 \quad \forall j \in \mathcal{B}$
if $z \geq 0$ **then**
$\mathbf{z} \leftarrow$ z
else
z = maximize R_{obj}
subject to
$\mathbf{S}\cdot\mathbf{v} = 0$
$y_{i,lb} \leq v_i \leq y_{i,ub} \quad \forall i \in \mathcal{C} \setminus \mathcal{M}$
$0 \leq v_j \leq 1000 \quad \forall j \in \mathcal{B} \setminus \mathcal{B}_T$
$y_{k,lb} \leq v_k \leq 1000 \quad \forall k \in \mathcal{B}_T$
if $z \geq 0$ **then**
$\mathbf{z} \leftarrow$ z
else
return failure
for $i \leftarrow 0$ **to** *len(*$\mathcal{O}$*)* **do**
$\hat{z}$ = maximize $\mathcal{O}_i$
subject to
$\mathbf{S}\cdot\mathbf{v} = 0$
$v_{j,lb} \leq v \leq v_{j,ub} \forall j \in \mathbf{v}$
R_{obj} = z
$v_{obj,k} = \hat{z}_{obj,k} \forall k < i$
return z, **v**