演算法Homework 20191003

山下夏輝（Yamashita Natsuki）

R08922160

A screenshot of a cell phone

Description automatically generated

1.

KS(n, W)

If DP[n][W] != undefined

Return DP[n][W]

If n == 0 || W == 0

DP[n][W] = 0

Else if w[n] > W

DP[n][W] = KS(n-1, W)

Else:

DP[n][W] = Max(KS(n-1, W), KS(n-1, W-w[n])+v[n])

Return DP[n][W]

2.

//reference: <https://www.geeksforgeeks.org/space-optimized-dp-solution-0-1-knapsack-problem/>

KS\_SpaceOpt(n, W)

If DP[n][W] != undefined

Return DP[n][W]

If n == 0 || W == 0

DP[n][W] = 0

If n%2 = 0

Else if w[n] > W

DP[0][W] = KS(1, W)

Else

DP[0][W] = Max(KS(1, W), KS(1, W-w[n])+v[n])

Else

Else if w[n] > W

DP[1][W] = KS(0, W)

Else

DP[1][W] = Max(KS(0, W), KS(0, W-w[n])+v[n])

Return (n%2 = 0) ? DP[1][W] : DP[0][W]