ALG - 17/10/23

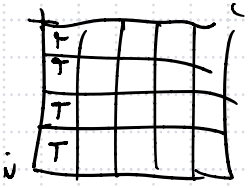
$V_n = \{x_1, x_2 \dots x_n\}$ $\quad C \in \mathbb{N}$ $\quad \exists\, S_i \subseteq V_n$ t.c. $\sum_{x_j \in S_i}^{i} x_j = C$?

C.B.

$i = 1$	$c \neq x_i$	F	
	$c = x_i$	T	
$c = 0$	$\forall i$	T	

P.R.

$i > 1$ $c > 0$	$c < x_i$	$f(i-1, c)$
	$c \geq x_i$	$f(i-1, c-x_i)$




```
int main() {
    int n = 6;
    int v[6] = {1, 3, 5, 8, 9, 10};
    int C = 10;
    bool M[n][C+1];

    for (int i = 0; i<n; i++)
        M[i][0] = true;

    for (int c = 1; c<C+1; c++)
        M[0][c] = (v[0]==c);

    for (int i=1; i<n; i++)
        for (int c = 1; c<C+1; c++)
        {
            if (c < v[i])
                M[i][c] = M[i-1][c];
            else
                M[i][c] = M[i-1][c-v[i]];
        }

    cout << M[n-1][C];
    return 0;
}
```

$c \in \{0, 1, \dots, C\}$

$c = 0, \forall i$

$i = 1, \forall c$

$i > 1$ $c > 0$

$i \in \{1, \dots, N\}$

$= opt[n, C]$

$\{0, \dots, n\}$

FOR $i = 1$ TO n

$M[i, 0] = T$

FOR $c = 1$ TO C

$M[1, c] = (c = V[1])$

FOR $i = 2$ TO N

FOR $c = 1$ TO C

IF $c < V[i]$

$M[i, c] = M[i-1, c]$

ELSE

$M[i, c] = M[i-1, c - V[i]]$