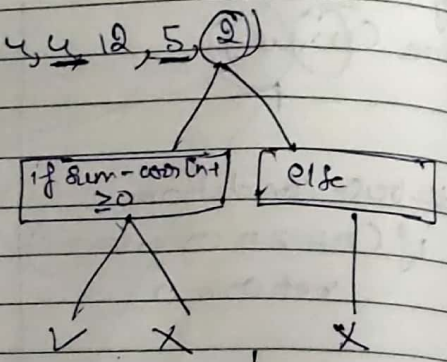
Subset sum problem (Recursive / memoization)

arr[] = [3, 34, 4, 12, 5, 2]

sum = 9

① choice diagram



② Solve(n, sum)

return Solve(n-1, sum) or Solve(n-1, sum - arr[n-1])

return Solve(n-1, sum)

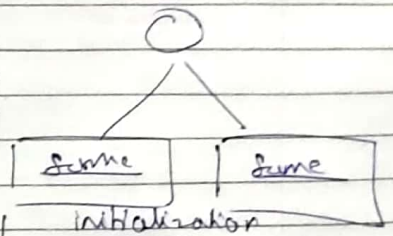
③ Base Condn

arr → empty } smallest i/p
sum → zero

if sum == 0:
    return True
if n == 0:
    return False

Subset sum problem (bottom-up)

① choice diagram



Solve(n, sum) ↓

② for n in range(N+1):
    for sum in range(S+1):
        # memo[n][sum]

memo[n][w] = memo[n-1, sum] or memo[n-1, sum - arr[n-1]]

initialization
memo = [[None for (sum+1)] for (N+1)]

memo[n][sum] = memo[n-1][sum]

③ Base Condn

for n in range (N+1)
    for sum in range (S+1):
        if (n == 0):
            memo[n][sum] = False
        if (sum == 0)
            memo[n][sum] = True