```cpp
#include <iostream>
using namespace std;

int coin_change(int n, int* d, int numD, int** output) {
 if (n == 0) {
  return 1;
 }
 if (n < 0) {
  return 0;
 }
 if (numD == 0) {
  return 0;
 }
 if (output[n][numD] > -1) {
  return output[n][numD];
 }
 int first = coin_change(n - d[0], d, numD);
 int second = coin_change(n, d + 1, numD - 1);
 output[n][numD] = first + second;
 return first + second;
}

int main() {
 int d[2] = {1,2};
 // allocate 2d array here, n + 1 * numD + 1
 // put all -1
 cout << coin_change(4, d, 2) << endl;
}
```