Assignment-4

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#include <bits/stdc++.h>

using namespace std;

using namespace std::chrono;

int dp[1000] = {0};

int findminCoins(int coins[], int N, int M)

{

    for (int i = 0; i <= N; i++)

        dp[i] = INT\_MAX;

    dp[0] = 0;

    for (int i = 1; i <= N; i++)

    {

        for (int j = 0; j < M; j++)

        {

            if (coins[j] <= i)

            {

                dp[i] = min(dp[i], 1 + dp[i - coins[j]]);

            }

        }

    }

    return dp[N];

}

int main()

{

    int demn, coins[100], n;

    cout << "Enter the number of denomination you have:";

    cin >> demn;

    cout << "\nEnter the coin denominations: ";

    for (int i = 0; i < demn; i++)

    {

        cin >> coins[i];

    }

    cout << "\nThe amount for which you need to find minimum no of coins:";

    cin >> n;

    steady\_clock::time\_point c1 = steady\_clock::now();

    cout << "\nMinimum no of coins we need: " << findminCoins(coins, n, demn);

    steady\_clock::time\_point c2 = steady\_clock::now();

    duration<double> ctimespan = duration\_cast<duration<double>>(c2 - c1);

    cout<<"\n\nTime Taken to find the min of coins through DP : "<<ctimespan.count() << "seconds";

    return 0;

}

