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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();
```

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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;
}

```

```

V:\DAA_Lab>cd "v:\DAA_Lab\" && g++ ass4.cpp -o ass4 && "v:\DAA_Lab\ass4
Enter The number of denomination you have:4

Enter the coin denominations: 1 3 5 6 7

The amount for which you need to find minimum no of coins:
Minimum no of coins we need: 2

Time Taken to find the min of coins through DP : 0seconds

```