

Practical-10

Aim:“Making Change” using Dynamic Programming.

Code:

```
#include<stdio.h>
const int INF = 100000;
int coin_change_modified(int d[], int n, int k)
{
    int M[n+1];
    M[0] = 0;
    int S[n+1];
    S[0] = 0;
    int i, j;
    for(j=1; j<=n; j++)
    {
        int minimum = INF;
        int coin=0;
        for(i=1; i<=k; i++)
        {
            if(j >= d[i])
            {
                if((1+M[j-d[i]]) < minimum)
                {
                    minimum = 1+M[j-d[i]];
                    coin = i;
                }
            }
        }
        M[j] = minimum;
        S[j] = coin;
    }
    int l = n;
    printf("\nRequired change is : ");
    while(l>0) {
        printf(" %d ",d[S[l]]);
        l = l-d[S[l]];
    }
```

```
}  
return M[n];  
}  
int main()  
{  
    int z;  
    printf("Enter the number of coins : ");  
    scanf("%d",&z);  
  
    int d[z];  
    for(int i=0;i<z;i++)  
    {  
        printf("\nEnter the %d coin : ",i+1);  
        scanf("%d",&d[i]);  
    }  
    int n;  
    printf("\nEnter the amount : ");  
    scanf("%d",&n);  
    coin_change_modified(d,n, 3);  
    return 0;  
}
```

Output:

Status Successfully executed Date 2022-05-24 04:50:52 Time 0.007085 sec Mem 5468 kB

Input

```
3  
6  
4  
5  
10
```

Output

```
Enter the number of coins :  
Enter the 1 coin :  
Enter the 2 coin :  
Enter the 3 coin :  
Enter the amount :  
Required change is : 5 5
```