|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 1 | 2 | 3 | 4 |  |
| **P** | **0** | 2 | 3 | 1 | 4 |  |
|  |  |  |  |  |  |  |
|  | 0 | 1 | 2 | 3 | 4 |  |
| **W** | **0** | 3 | 4 | 6 | 5 |  |
|  |  |  |  |  |  |  |
|  |  |  | **m** | **8** |  |  |
|  |  |  | **n** | 4 |  |  |

|  |  |
| --- | --- |
| **p** | **w** |
| 2 | 3 |
| 3 | 4 |
| 1 | 6 |
| 4 | 5 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **k** |  |  |  |  |  |  |  |  |
| **I** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **1** | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 |
| **2** | 0 | 0 | 0 | 3 | 3 | 3 | 5 | 5 | 5 |
| **3** | 0 | 0 | 0 | 2 | 3 | 3 | 1 | 5 | 5 |
| **4** | 0 | 0 | 0 | 2 | 3 | 4 | 4 | 5 | 6 |

Final optimal Solution : 6

Formula for last RC : Value[I,w] = Max { Value [i-1,w],Value[i-1,w-w[i]]+Profit[i]}

Here w = weight,

Example :

Value[4,1] = Max{Value[4-1,1],Value[4-1,5]+4}

Value at position [4,1] = Max{3,0+4}

Value[4,1] = 4 at weight 5 = 4

**Possible selections:**

**Maximum number at X4 : 6 we will check if 6 is present in X3 if it is not present X4 will be true.**

**Now,**

**Max – Profit at X4 = 6 – 4 : 2**

**Now we have to check if 2 is present in X3 and X2 respectively if it is present Value of Respective will be false,**

**So, X3 : False**

**And X2 : False**

**But 2 is not present in X1 so it will be X1 : True**

**All possible ways**

**X1 X2 X3 X4**

**True False False True**

**Table can also be obtained by Dynamic Programming:**

**Dynamic Programming:**

**int P[5] = {0,2,3,1,4};**

**int WT[5] = {0,3,4,6,5};**

**int m = 8;**

**int n = 4;**

**int table[5][9];**

**for(int i = 0;i<=n;i++)**

**{**

**for( int w = 0;w<=m;w++)**

**{**

**if(i == 0 || w == 0)**

**{**

**table[i][w] = 0;**

**}**

**else if(WT[i] <= w)**

**{**

**table[i][w] = max(P[i]+table[i-1][w-wt[i]]);**

**table[i-1][w];**

**}**

**else**

**{**

**table[i][w] = table[i-1][w];**

**}**

**}**

**}**