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Section – A8_B2

Roll number – 31

Practical – 6

Code –

```
3  #include <stdio.h>
4  #include <float.h>
5
6  #define MAX_KEYS 100
7
8  double calculateOptimalCost(int n, double p[], double q[]) {
9      double e[MAX_KEYS + 2][MAX_KEYS + 1];
10     double w[MAX_KEYS + 2][MAX_KEYS + 1];
11
12     for (int i = 1; i <= n + 1; i++) {
13         e[i][i - 1] = q[i - 1];
14         w[i][i - 1] = q[i - 1];
15     }
16
17     for (int length = 1; length <= n; length++) {
18         for (int i = 1; i <= n - length + 1; i++) {
19             int j = i + length - 1;
20             e[i][j] = DBL_MAX;
21             w[i][j] = w[i][j - 1] + p[j] + q[j];
22
23             for (int r = i; r <= j; r++) {
24                 double t = e[i][r - 1] + e[r + 1][j] + w[i][j];
25                 if (t < e[i][j]) {
26                     e[i][j] = t;
27                 }
28             }
29         }
30     }
31     return e[1][n];
32 }
33
34 int main() {
35     int n = 4;
36     int keys[] = {0, 10, 20, 30, 40};
37     double p[] = {0, 0.1, 0.2, 0.4, 0.3};
38     double q[] = {0.05, 0.1, 0.05, 0.05, 0.1};
39
40     double minCost = calculateOptimalCost(n, p, q);
41
42     printf("%.4f\n", minCost);
43
44     return 0;
45 }
```

Output –

```
2.9000
```

```
PS C:\Users\jkagr\OneDrive\Desktop\New folder (2)>
```