

Experiment D18

```
#include <bits/stdc++.h>
using namespace std;

int sum(int frequency[], int i, int j)
{
    int sum = 0;
    for (int x = i; x <= j; x++)
        sum += frequency[x];
    return sum;
}

int optimalCost(int frequency[], int i, int j)
{
    if (j < i)
        return 0;
    if (j == i)
        return frequency[i];

    int frequencySum = sum(frequency, i, j);

    int min = INT_MAX;

    for (int r = i; r <= j; ++r)
    {
        int cost = optimalCost(frequency, i, r - 1) + optimalCost(frequency, r + 1, j);
        if (cost < min)
            min = cost;
    }

    return min + frequencySum;
}

int optimalSearchTree(int keys[], int frequency[], int n)
{
    return optimalCost(frequency, 0, n - 1);
}

int main()
{
    int keys[] = {10, 12, 20};
    int frequency[] = {34, 8, 50};

    int n = sizeof(keys) / sizeof(keys[0]);

    cout << "Cost of Optimal BST is " << optimalSearchTree(keys, frequency, n);
}
```

```
    return 0;  
}
```