

PRIYANSHI

2016927

E – 26

Q1.

```
#include <bits/stdc++.h>
```

```
using namespace std;
```

```
int main() {
```

```
    int n, i, j, k, w;
```

```
    cin >> n;
```

```
    int graph[n][n];
```

```
    string temp;
```

```
    for (i = 0; i < n; i++) {
```

```
        for (j = 0; j < n; j++) {
```

```
            cin >> temp;
```

```
            if (temp != "INF") {
```

```
                graph[i][j] = stoi(temp);
```

```
            } else {
```

```
                graph[i][j] = 1e8;
```

```
            }
```

```
        }
```

```
    }
```

```
    for (k = 0; k < n; k++) {
```

```
        for (i = 0; i < n; i++) {
```

```

    for (j = 0; j < n; j++) {
        if (graph[i][k] + graph[k][j] < graph[i][j]) {
            graph[i][j] = graph[i][k] + graph[k][j];
        }
    }
}

cout << "The shortest path matrix: " << endl;
for (i = 0; i < n; i++) {
    for (j = 0; j < n; j++) {
        if(graph[i][j] >= 1e8) cout << "INF";
        else cout << graph[i][j];
        cout << " ";
    }
    cout << endl;
}

return 0;
}

```

OUTPUT

```
main.cpp
1 - /*****
2  PRIYANSHI
3  2016927
4  E
5  *****/
6  #include <bits/stdc++.h>
7  using namespace std;
8
9  int main() {
10     int n;
11     cin >> n;
12     vector<double> items(n);
13     vector<double> val(n);
14     vector<vector<double>> job;
15     for (int i = 0; i < n; i++) {
16         cin >> items[i];
17     }
18     for (int i = 0; i < n; i++) {
19         cin >> val[i];
20         job.push_back({ val[i] / items[i], items[i], (double)(i + 1) });
21     }
22     double k;
23     // ... (rest of the code)
24 }
```

input

```
5
0 10 5 5 INF
INF 0 5 5 5
INF INF 0 INF 10
INF INF INF 0 20
INF INF INF 5 0
The shortest path matrix:
0 10 5 5 15
INF 0 5 5 5
INF INF 0 15 10
INF INF INF 0 20
INF INF INF 5 0
...Program finished with exit code 0
Press ENTER to exit console.
```

Q2.

```
#include <bits/stdc++.h>
```

```
using namespace std;
```

```
int main() {
```

```
    int n;
```

```
    cin >> n;
```

```
    vector<double> items(n);
```

```
    vector<double> val(n);
```

```
    vector<vector<double>> job;
```

```
    for (int i = 0; i < n; i++) {
```

```
        cin >> items[i];
```

```
    }
```

```
    for (int i = 0; i < n; i++) {
```

```
        cin >> val[i];
```

```
        job.push_back({ val[i] / items[i], items[i], (double)(i + 1) });
```

```
    }
```

```
    double k;
```

```

cin >> k;

sort(job.rbegin(), job.rend());

vector<pair<double, double>> ls;

float profit = 0;

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

    if (job[i][1] >= k) {

        profit += k * job[i][0];

        ls.push_back(make_pair(k, job[i][2]));

        break;

    } else {

        profit += job[i][1] * job[i][0];

    }

    ls.push_back(make_pair(job[i][1], job[i][2]));

    k = k - job[i][1];

}

cout << "Maximum Value : " << profit << endl;

cout << "Item - Weight" << endl;

for (auto it : ls)

    cout << it.second << " - " << it.first << endl;

return 0;

}

```

OUTPUT

```
main.cpp
1 - /*****
2 PRIYANSHI
3 2016927
4 E
5 *****/
input
6
6 10 3 5 1 3
6 2 1 8 3 5
16
Maximum Value : 22.3333
Item - Weight
5 - 1
6 - 3
4 - 5
1 - 6
3 - 1

...Program finished with exit code 0
Press ENTER to exit console.
```

Q3.

```
#include <bits/stdc++.h>
```

```
using namespace std;
```

```
int main() {
```

```
    int n;
```

```
    cin >> n;
```

```
    vector<int> a(n);
```

```
    for (int i = 0; i < n; i++) {
```

```
        cin >> a[i];
```

```
    }
```

```
    priority_queue<int, vector<int>, greater<int>> minheap;
```

```
    for (int i = 0; i < n; i++) {
```

```
        minheap.push(a[i]);
```

```
    }
```

```
    int ans = 0;
```

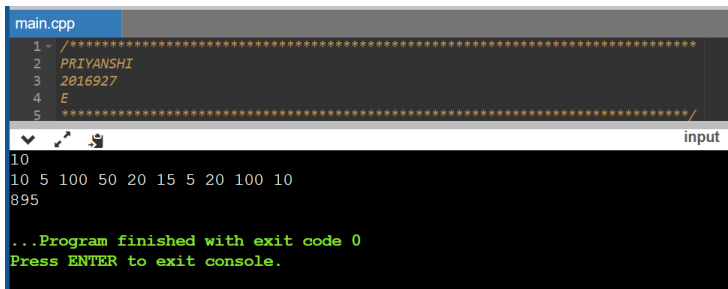
```
    while (minheap.size() > 1) {
```

```
        int e1 = minheap.top();
```

```
        minheap.pop();
```

```
    int e2 = minheap.top();  
  
    minheap.pop();  
  
    ans += e1 + e2;  
  
    minheap.push(e1 + e2);  
  
}  
  
cout << ans;  
  
return 0;  
  
}
```

OUTPUT



The screenshot shows a code editor with a file named 'main.cpp' containing five lines of C++ code. The code includes a header comment with the author's name 'PRIYANSHI', a date '2016927', and a compiler flag '-E'. Below the code editor is a terminal window titled 'input' which displays the output of the program. The output consists of two lines: '10' and '895'. At the bottom of the terminal, a green message states '...Program finished with exit code 0' and 'Press ENTER to exit console.'

```
main.cpp  
1 - /******  
2 PRIYANSHI  
3 2016927  
4 E  
5 *****/  
  
input  
10  
10 5 100 50 20 15 5 20 100 10  
895  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```