



FOP HOME TASK 10



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Task 1

```
main.cpp
1  #include <iostream>
2  #include <vector>
3
4  using namespace std;
5
6  int main() {
7
8      vector<int> vec = {1, 2, 3, 4, 5};
9      vector<int>::iterator it;
10
11     for(it = vec.begin(); it != vec.end(); ++it) {
12         cout << *it << " ";
13     }
14     cout<< endl;
15
16     vec.push_back(5);
17
18     for(it = vec.begin(); it != vec.end(); ++it) {
19         cout << *it << " ";
20     }
21     cout<< endl;
22
23     vec.pop_back();
24
25     for(it = vec.begin(); it != vec.end(); ++it) {
26         cout << *it << " ";
27     }
28     return 0;
29 }
```

Task 2

```
1  #include <iostream>
2  #include <vector>
3  using namespace std;
4
5  double calculateMean(vector<int>& grades) {
6      double sum = 0;
7      for(int grade : grades) {
8          sum += grade;
9      }
10     return sum / grades.size();
11 }
12
13 double calculateMedian(vector<int>& grades) {
14     vector<int> sortedGrades = grades;
15     int n = sortedGrades.size();
16     for(int i = 0; i < n; i++) {
17         for(int j = 0; j < n - i - 1; j++) {
18             if(sortedGrades[j] > sortedGrades[j + 1]) {
19                 swap(sortedGrades[j], sortedGrades[j + 1]);
20             }
21         }
22     }
23     if(n % 2 == 0) {
24         return (sortedGrades[n / 2 - 1] + sortedGrades[n / 2]) / 2.0;
25     } else {
26         return sortedGrades[n / 2];
27     }
28 }
29
30 int calculateMode(vector<int>& grades) {
31     int mode = grades[0];
32     int maxCount = 0;
33     for(int grade : grades) {
34         int count = 0;
35         for(int g : grades) {
36             if(g == grade) {
37                 count++;
38             }
39         }
40         if(count > maxCount) {
41             mode = grade;
42             maxCount = count;
43         }
44     }
45     return mode;
46 }
47
48 int main() {
49     int n;
50     cout << "Enter the number of name/grade pairs: ";
51     cin >> n;
52
53     vector<string> names(n);
54     vector<int> grades(n);
55
56     for(int i = 0; i < n; i++) {
57         cout << "Enter name and grade for student " << (i+1) << ": ";
58     }
```

