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**Section C**

**Lab manual 10**

**Q#1**

#include<bits/stdc++.h>

using namespace std;

int main() {

int arr[] = {1, 2, 3, 4};

vector<int> vec(arr, arr + sizeof(arr) / sizeof(int));

for(vector<int>::iterator it = vec.begin(); it != vec.end(); ++it) {

cout << \*it << " ";

}

cout << endl;

vec.push\_back(5);

if(vec.size() > 5) {

vec.erase(vec.begin() + 5);

}

for(vector<int>::iterator it = vec.begin(); it != vec.end(); ++it) {

cout << \*it << " ";

}

cout << endl;

return 0;

}

**Q#2**

#include<bits/stdc++.h>

using namespace std;

double calculateMean(vector<int>& grades) {

double sum = 0;

for(size\_t i = 0; i < grades.size(); i++) {

sum += grades[i];

}

return sum / grades.size();

}

double calculateMedian(vector<int>& grades) {

sort(grades.begin(), grades.end());

if(grades.size() % 2 == 0) {

return (grades[grades.size()/2 - 1] + grades[grades.size()/2]) / 2.0;

} else {

return grades[grades.size()/2];

}

}

int calculateMode(vector<int>& grades) {

map<int, int> frequency;

for(size\_t i = 0; i < grades.size(); i++) {

frequency[grades[i]]++;

}

int mode = grades[0];

int maxCount = 0;

for(map<int, int>::iterator i = frequency.begin(); i != frequency.end(); i++) {

if(i->second > maxCount) {

maxCount = i->second;

mode = i->first;

}

}

return mode;

}

int main() {

int n;

cout << "Enter the number of name/grade pairs: ";

cin >> n;

vector<string> names(n);

vector<int> grades(n);

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

cout << "Enter name and grade for student " << i+1 << ": ";

cin >> names[i] >> grades[i];

}

cout << "Mean of grades: " << calculateMean(grades) << endl;

cout << "Median of grades: " << calculateMedian(grades) << endl;

cout << "Mode of grades: " << calculateMode(grades) << endl;

return 0;

}