|  |
| --- |
| #include<iostream> |
|  | #include<bits/stdc++.h> |
|  | #include<math.h> |
|  | #include<omp.h> |
|  | using namespace std; |
|  |  |
|  | class Person |
|  | { |
|  | public: |
|  | int height,weight; |
|  | float ED; |
|  | int group; |
|  |  |
|  | }; |
|  |  |
|  | bool comparison(Person a, Person b) |
|  | { |
|  | return (a.ED < b.ED); |
|  | } |
|  |  |
|  | int classifyPerson(Person arr[], int n, int k, Person p) |
|  | { |
|  | // Fill EDs of all points from p |
|  | #pragma omp parallel for |
|  | for (int i = 0; i < n; i++) |
|  | arr[i].ED = |
|  | sqrt((arr[i].height - p.height) \* (arr[i].height - p.height) + |
|  | (arr[i].weight - p.weight) \* (arr[i].weight - p.weight)); |
|  |  |
|  | sort(arr, arr+n, comparison); |
|  |  |
|  | int freq1 = 0; // Frequency of group 0 |
|  | int freq2 = 0; // Frequency of group 1 |
|  | for (int i = 0; i < k; i++) |
|  | { |
|  | if (arr[i].group == 0) |
|  | freq1++; |
|  | else if (arr[i].group == 1) |
|  | freq2++; |
|  | } |
|  |  |
|  | return (freq1 > freq2 ? 0 : 1); |
|  | } |
|  |  |
|  | int main() |
|  | { |
|  | int n = 11; // Number of persons |
|  | Person arr[n]; |
|  |  |
|  | arr[0].height = 178; |
|  | arr[0].weight = 59; |
|  | arr[0].group = 0; |
|  |  |
|  | arr[1].height = 179; |
|  | arr[1].weight = 62; |
|  | arr[1].group = 0; |
|  |  |
|  | arr[2].height = 179; |
|  | arr[2].weight = 90; |
|  | arr[2].group = 1; |
|  |  |
|  | arr[3].height = 160; |
|  | arr[3].weight = 65; |
|  | arr[3].group = 1; |
|  |  |
|  | arr[4].height = 165; |
|  | arr[4].weight = 50; |
|  | arr[4].group = 0; |
|  |  |
|  | arr[5].height = 170; |
|  | arr[5].weight = 80; |
|  | arr[5].group = 1; |
|  |  |
|  | arr[6].height = 172; |
|  | arr[6].weight = 75; |
|  | arr[6].group = 1; |
|  |  |
|  | arr[7].height = 185; |
|  | arr[7].weight = 85; |
|  | arr[7].group = 1; |
|  |  |
|  | arr[8].height = 176; |
|  | arr[8].weight = 70; |
|  | arr[8].group = 1; |
|  |  |
|  |  |
|  | arr[9].height = 170; |
|  | arr[9].weight = 65; |
|  | arr[9].group = 0; |
|  |  |
|  | arr[10].height = 177; |
|  | arr[10].weight = 68; |
|  | arr[10].group = 0; |
|  |  |
|  | /\*Testing Point\*/ |
|  | Person p; |
|  |  |
|  | cout<<"\n Enter Height of Person : "; |
|  | cin>>p.height; |
|  | cout<<"\n Enter Weight of Person : "; |
|  | cin>>p.weight; |
|  |  |
|  |  |
|  |  |
|  | // Parameter to decide group of the testing person |
|  | int k = 3; |
|  | cout<<"\nThe group classified to unknown person" |
|  | " is : "<< classifyPerson(arr, n, k, p); |
|  | cout<<endl; |
|  | return 0; |
|  | } |