CODE

#include <iostream>

#include <vector>

#include <iomanip>

using namespace std;

float case1=0,case2=0,case3=0;

float c11=0,c12=0,c13=0,c21=0,c22=0,c23=0,c31=0,c32=0,c33=0;

void persentage(float a);

int main()

{

int n=12;

cout<<"Enter 12 average temperatures for the desired month during the last 12 years"<<endl;

float mat[12];

for (int l;l<12;l++)

cin>>mat[l];

for(int i=0;i<n-1;i++)

{

if (mat[i]>=20.0&&mat[i]<23.0)

case1++;

if (mat[i]>=23.0&&mat[i]<26.0)

case2++;

if (mat[i]>=26.0&&mat[i]<29.0)

case3++;}

/\* Transition matrix \*/

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

if (mat[i]>=20&&mat[i]<23&&mat[i+1]>=20&&mat[i+1]<23){c11++;}

if (mat[i]>=20&&mat[i]<23&&mat[i+1]>=23&&mat[i+1]<26){c12++;}

if (mat[i]>=20&&mat[i]<23&&mat[i+1]>=26&&mat[i+1]<29){c13++;}

if (mat[i]>=23&&mat[i]<26&&mat[i+1]>=20&&mat[i+1]<23){c21++;}

if (mat[i]>=23&&mat[i]<26&&mat[i+1]>=23&&mat[i+1]<26){c22++;}

if (mat[i]>=23&&mat[i]<26&&mat[i+1]>=26&&mat[i+1]<29){c23++;}

if (mat[i]>=26&&mat[i]<29&&mat[i+1]>=20&&mat[i+1]<23){c31++;}

if (mat[i]>=26&&mat[i]<29&&mat[i+1]>=23&&mat[i+1]<26){c32++;}

if (mat[i]>=26&&mat[i]<29&&mat[i+1]>=26&&mat[i+1]<29){c33++;}

}

float trans[3][3]{(c11/case1),(c12/case2),(c13/case3),(c21/case1),(c22/case2),(c32/case3),(c31/case1),(c23/case2),(c33/case3)};

/\* initial matrix matrix \*/

float in[3] {0,0,0};

if (mat[11]>=20.0&&mat[11]<23.0)

in[1]=1;

if (mat[11]>=23.0&&mat[11]<26.0)

in[2]=1;

if (mat[11]>=26.0&&mat[11]<29.0)

in[3]=1;

/\* multiplication \*/

float mul [3][1];

for(int i=0;i<3;i++)

{

for(int j=0;j<1;j++)

{

mul[i][j]=0;

for(int k=0;k<3;k++)

{

mul[i][j]+=trans[i][k]\*in[k];

}

}

}

for(int i=0;i<3;i++)

{

for(int j=0;j<1;j++)

{

cout<< "The probability that the average temperature in the next year will be in the first case is "<<mul[i][j]\*100.0<<" %"<<endl;

}

}

}

/\*The data used in our experiment :

26.2

23.45

20.5

25.76

23.65

22.4

26.85

22.85

28.5

22

22

23.85

\*/