**ASSIGNMENT NO.**

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CLASS: BE COMP-1 ROLL NO.: 402006

PROGRAM:

#include<iostream>

#include<math.h>

using namespace std;

int main()

{

int l,att,el,cst;

int i,j;

cout<<"Enter number of elements:\n";

cin>>el;

cout<<"Enter number of attributes:\n";

cin>>att;

int a[el][att];

int cc[el];

for (i = 0; i < el; i++)

{

cout<<"Enter "<<att<<" Attributes of "<<(char)(65+i)<<":\n";

for (j = 0; j < att; j++)

{

{

cin>>a[i][j];

}

}

}

cout<<"Enter number of clusters:\n";

cin>>cst;

double c[cst][att];

cout<<"\nInput data is:\n";

cout<<" \t";

for (j = 1; j <= att; j++)

{

cout<<"att"<<j<<"\t";

}

cout<<"\n";

for (i = 0; i < el; i++)

{

cout<<(char)(65+i)<<"\t";

for (j = 0; j < att; j++)

{

cout<<" "<<a[i][j]<<"\t";

}

cout<<"\n";

}

for(i=0;i<el;i++)

{

cc[i]=0;

}

int oldcc[el];

double d[el][cst];

for (j = 0; j < att; j++)

{

for (i = 0; i < cst; i++)

{

c[i][j]=a[i][j];

}

}

do{

for(i=0;i<el;i++)

{

oldcc[i]=cc[i];

}

for (i = 0; i < el; i++)

{

for (j = 0; j < cst; j++)

{

d[i][j]=0;

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

{

d[i][j]=d[i][j]+(c[j][k]-a[i][k])\*(c[j][k]-a[i][k]);

}

d[i][j]=sqrt(d[i][j]);

}

}

double tmp=999.99;

for (j = 0; j < el; j++)

{

tmp=999.99;

for(i=0;i<cst;i++)

{

if(d[j][i]<tmp)

{

cc[j]=i;

tmp=d[j][i];

}

}

}

int m=0;

cout<<"\n";

for(int cl=0;cl<cst;cl++)

{

m=0;

for (i = 0; i < att; i++)

{

c[cl][i]=0;

}

cout<<"Entries of Cluster "<<(cl+1)<<" : ";

for (j = 0; j < el; j++)

{

if(cc[j]==cl)

{

cout<<(char)(65+j)<<" ";

for (i = 0; i < att; i++)

{

c[cl][i]=c[cl][i]+a[j][i];

}

m++;

}

}

for (i = 0; i < att; i++)

{

c[cl][i]=c[cl][i]/m;

}

cout<<"\n";

}

for (l = 0; l < el; l++)

{

if(cc[l]!=oldcc[l])

{

break;

}

}

if(l!=el)

{

cout<<"\nNew values:\n";

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

{

cout<<"Cluster "<<(i+1)<<":\t";

for(j=0;j<att;j++)

{

cout<<c[i][j]<<"\t";

}

cout<<"\n";

}

}

}while(l!=el);

}