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Assignment#7 - Gold Mine Problem Implementation using Dynamic Programming in any of your preferred Programming Language (C/C++/Java)

Code :

#include<bits/stdc++.h>

using namespace std;

int getMax(int num1, int num2)

{

if(num1<num2)

{

return num2;

}

else

{

return num1;

}

}

int Max(int num1,int num2,int num3)

{

if(num1>num2 && num1>num3)

{

return num1;

}

else if(num2>num1 && num2>num3)

{

return num2;

}

else if(num3>num2 && num3>num1)

{

return num3;

}

}

int maximum\_value\_sell(int c, int r, int matrix[50][50])

{

int mat[r][c];

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

{

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

{

mat[i][j]=matrix[i][j];

}

}

int j=0;

while(j<c)

{

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

{

if(i==0 && j==0)

{

continue;

}

else if(i!=0 && j==0)

{

continue;

}

else if(i==0 && j!=0)

{

mat[i][j] = mat[i][j] + getMax(mat[i][j-1],mat[i+1][j-1]);

}

else if(i==(r-1) && j!=0)

{

mat[i][j] = mat[i][j]+getMax(mat[i-1][j-1],mat[i][j-1]);

}

else

{

mat[i][j]=mat[i][j]+Max(mat[i-1][j-1],mat[i][j-1],mat[i+1][j-1]);

}

}

j++;

}

int maximum=0;

}

int Gold\_mine(int c, int r, int matrix[50][50])

{

int mat[r][c];

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

{

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

{

mat[i][j]=matrix[i][j];

}

}

int j=0;

while(j<c)

{

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

{

if(i==0 && j==0)

{

continue;

}

else if(i!=0 && j==0)

{

continue;

}

else if(i==0 && j!=0)

{

mat[i][j] = mat[i][j] + getMax(mat[i][j-1],mat[i+1][j-1]);

}

else if(i==(r-1) && j!=0)

{

mat[i][j] = mat[i][j]+getMax(mat[i-1][j-1],mat[i][j-1]);

}

else

{

mat[i][j]=mat[i][j]+Max(mat[i-1][j-1],mat[i][j-1],mat[i+1][j-1]);

}

}

j++;

}

cout<<"Gold mine table : "<<endl;

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

{

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

{

cout<<mat[i][j]<<" ";

}

cout<<endl;

}

cout<<endl;

int maximum=0;

int f=c-1;

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

{

if(maximum<=mat[i][f])

{

maximum = mat[i][f];

}

}

return maximum;

}

int main()

{

int row,col;

cout<<"Enter Row and Column of the matrix\n";

cout<<"enter Row= ";

cin>>row;

cout<<"enter column= ";

cin>>col;

int matrix[50][50];

cout<<"enter matrix: "<<endl;

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

{

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

{

cout<<"inputArray["<<i<<"]["<<j<<"] = ";

cin>>matrix[i][j];

}

cout<<endl;

}

cout<<"maximum gold found is = "<<Gold\_mine(col, row, matrix)<<endl;

cout<<"one of the sell that we return in main faction is = ("<<maximum\_value\_sell(col,

row, matrix)<<","<<row-1<<")"<<endl;

return 0;

}

Output:

