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CPSC 230

Exam Part 2

(Production Problem)

#include <iostream>

using namespace std;

double profit[4];

double nor\_profit[4];

void calculate (int production[4][4]);

int max\_profit(double profit[4]);

int input()

{

int x;

cin >> x;

return x;

}

void calculate (int production[4][4])

{

profit[0] = (production[0][2]-production[0][1])\*production[0][3];

profit[1] = (production[1][2]-production[1][1])\*production[1][3];

profit[2] = (production[2][2]-production[2][1])\*production[2][3];

profit[3] = (production[3][2]-production[3][1])\*production[3][3];

}

int max\_profit(double profit[4]) //print out the company with the highest profit

{

if (profit[0] > profit[1])

{

if (profit[0] > profit[2])

{

if (profit[0] > profit[3])

{

cout<<"\nThe company with the highest profit is company 1, with a profit of: $"<<profit[0];

}

}

}

if (profit[1] > profit[0])

{

if (profit[1] > profit[2])

{

if (profit[1] > profit[3])

{

cout<<"\nThe company with the highest profit is company 2, with a profit of: $"<<profit[1];

}

}

}

if (profit[2] > profit[0])

{

if (profit[2] > profit[1])

{

if (profit[2] > profit[3])

{

cout<<"\nThe company with the highest profit is company 3, with a profit of: $"<<profit[2];

}

}

}

if (profit[3] > profit[0])

{

if (profit[3] > profit[1])

{

if (profit[3] > profit[2])

{

cout<<"\nThe company with the highest profit is company 4, with a profit of: $"<<profit[3];

}

}

}

return 0;

}

void min\_profit(double profit[4]) //normalize profits - incomplete

{

if (profit[0] < profit[1])

{

if (profit[0] < profit[2])

{

if (profit[0] < profit[3])

{

cout<<"\nThe company with the lowest profit is company 1, with a profit of: $"<<profit[0];

}

}

}

if (profit[1] < profit[0])

{

if (profit[1] < profit[2])

{

if (profit[1] < profit[3])

{

cout<<"\nThe company with the lowest profit is company 2, with a profit of: $"<<profit[1];

}

}

}

if (profit[2] < profit[0])

{

if (profit[2] < profit[1])

{

if (profit[2] < profit[3])

{

cout<<"\nThe company with the lowest profit is company 3, with a profit of: $"<<profit[2];

}

}

}

if (profit[3] < profit[0])

{

if (profit[3] < profit[1])

{

if (profit[3] < profit[2])

{

cout<<"\nThe company with the lowest profit is company 4, with a profit of: $"<<profit[3];

}

}

}

}

void normalize\_profit(double profit[4])

{

nor\_profit[0] = ( profit[0] - profit[0] / ((profit[3]) - (profit[0])) + 1.0 \* 10.0);

nor\_profit[1] = ( profit[1] - profit[0] / ((profit[3]) - (profit[0])) + 1.0 \* 10.0);

nor\_profit[2] = ( profit[2] - profit[0] / ((profit[3]) - (profit[0])) + 1.0 \* 10.0);

nor\_profit[3] = ( profit[3] - profit[0] / ((profit[3]) - (profit[0])) + 1.0 \* 10.0);

cout<<"\nNormalized Profits for companies 1-4: \n";

for(int i=0;i<4;i++){ //display nor\_profit array

cout<<"Company "<<i+1<<": $"<<nor\_profit[i]<<"\t";

}

}

int main()

{

int production[4][4]; //creates a 4\*4 matrix

for(int i=0; i<4; i++) //loop rows

{

for(int j=0; j<4; j++) //loop columns

{

production[i][j] = input();

}

}

cout<<std::left<<"\n\n\n\nCompany\t\tCost\t\tSell Price\t#Sold/Year\n";

for(int i=0; i<4; i++) //loop rows

{

for(int j=0; j<4; j++) //loop columns

{

cout << std::left << production[i][j] << "\t\t";

}

cout << endl;

}

calculate(production); //calculate profit per year and save in array profit[]

max\_profit(profit);

min\_profit(profit);

normalize\_profit(profit);

}

INPUT (data from table):

1

1000

2000

100

2

1100

3000

120

3

2000

4000

180

4

5000

8000

50

**OUTPUT:**

**Company Cost Sell Price #Sold/Year**

**1 1000 2000 100**

**2 1100 3000 120**

**3 2000 4000 180**

**4 5000 8000 50**

**The company with the highest profit is company 3, with a profit of: $360000**

**The company with the lowest profit is company 1, with a profit of: $100000**

**Normalized Profits for companies 1-4:**

**Company 1: $100008 Company 2: $228008 Company 3: $360008 Company 4: $150008**