Bahria University,
Karachi Campus

LAB EXPERIMENT NO.

9
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LIST OF TASKS

TASK NO.	OBJECTIVE
1	Enter the first matrix and then display it. Secondly, enter the second matrix and then display it. In the result by apply 2D arrays show multiplication of 2 matrixes.
2	Take N number of user data input and make sure N is greater than 10, which contain name of the user, his/her nationality and his/her eye color. You have to show the max color of eye in each country.
3	Make a program in C# in which take no. of items, price of items, quantity of items and name of items as input from the user and give the discount according to the following conditions (Use 2D Array): a. If item is RICE give discount of 30%. b. Else if the total amount is greater than 50,000 and less than 100,000 give discount of 20%. c. Else if the total amount is greater than 100,000 give discount of 30%

Submitted On:

December, 2021
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(Date: DD/MM/YY)

Task 1

Enter the first matrix and then display it. Secondly, enter the second matrix and then display it. In the result by apply 2D arrays show multiplication of 2 matrixes.

Solution:

```csharp
Console.ForegroundColor=ConsoleColor.White;
Console.WriteLine("Enter no of rows: ");
int r = int.Parse(Console.ReadLine());
Console.WriteLine("Enter no of columns: ");
int c = int.Parse(Console.ReadLine());
int[,] arr = new int[r, c];
int[,] arr2 = new int[r, c];
int[,] sum = new int[r, c];
int[,] diff = new int[r, c];
int i, j;

Console.WriteLine("Input the no.of elements in matrixA: ");
for(i =0;i<r;i++)
{
    for(j =0;j<c;j++)
    {
        arr[i, j] = int.Parse(Console.ReadLine());
    }
}

for (i = 0; i < r; i++)
{
    for (j = 0; j < c; j++)
    {
        Console.Write("\t {0}",arr[i,j]);
    }
    Console.Write("\n\n");
}
Console.WriteLine("Input the no.of elements in matrixB: ");
for (i = 0; i < r; i++)
{
    for (j = 0; j < c; j++)
    {
        arr2[i, j] = int.Parse(Console.ReadLine());
    }
}

for (i = 0; i < r; i++)
{
    for (j = 0; j < c; j++)
    {
        Console.Write("\t {0}", arr2[i, j]);
    }
    Console.Write("\n\n");
}
//sum
for (i = 0; i < 3; i++)
{
    for (j = 0; j < 3; j++)
    {
```

```csharp
                sum[i, j] = arr[i, j] + arr2[i, j];
                diff[i, j] = arr[i, j] - arr2[i, j];
            }

        }

        Console.WriteLine("SUM OF BOTH MATRICES");
        for (i = 0; i < r; i++)
        {
            for (j = 0; j < c; j++)
            {
                Console.Write("\t {0}" ,sum[i, j]);
            }
            Console.Write("\n\n");
        }
        Console.WriteLine("DIFFERENCE OF BOTH MATRICES");
        for (i = 0; i < r; i++)
        {
            for (j = 0; j < c; j++)
            {
                Console.Write("\t {0}", diff[i, j]);
            }
            Console.Write("\n\n");
        }
```

Output:

Task 2

Take N number of user data input and make sure N is greater than 10, which contain name of the user, his/her nationality and his/her eye color. You have to show the max color of eye in each country.

Solution:

```csharp
Console.Write("Enter no. of users: ");
int n = int.Parse(Console.ReadLine());
string[,] info= new string[n,3];
int[,] color = new int[4, 3];
//color[0,x]=dbrown, color[1,x]=brown, color[2,x]=blue, [3,x]=grey
//color [x,0]=Pak, [x,1]=China, [x,2]=Turkey
for (int i = 0; i < n; i++)
{
    Console.WriteLine("USER {0}", i + 1);
    Console.Write("Enter your Name: ");
    info[i, 0] = Console.ReadLine();
    Console.WriteLine("Enter a number for your Nationality: \n1.Pakistani 2.Chinese 3.Turkish");
    info[i, 1] = Console.ReadLine();

    if (info[i, 1] == "1")
    {   //PAKISTAN
        Console.WriteLine("Enter a number for your Eye Color: \n1.Dark Brown 2.Brown 3.Blue 4.Grey");
        info[i, 2] = Console.ReadLine();

        if(info[i, 2] == "1") color[0, 0] += 1; //DARK BROWN
        else if (info[i, 2] == "2") color[1, 0] += 1; //BROWN
        else if (info[i, 2] == "3") color[2, 0] += 1; //BLUE
        else if (info[i, 2] == "4") color[3, 0] += 1; //GREY
    }

    if (info[i, 1] == "2")
    {   //CHINA
        Console.WriteLine("Enter a number for your Eye Color: \n1.Dark Brown 2.Brown 3.Blue 4.Grey");
        info[i, 2] = Console.ReadLine();

        if (info[i, 2] == "1") color[0, 1] += 1; //DARK BROWN
        else if (info[i, 2] == "2") color[1, 1] += 1; //BROWN
        else if (info[i, 2] == "3") color[2, 1] += 1; //BLUE
        else if (info[i, 2] == "4") color[3, 1] += 1; //GREY
    }

    if (info[i, 1] == "3")
    {   //TURKEY
        Console.WriteLine("Enter a number for your Eye Color: \n1.Dark Brown 2.Brown 3.Blue 4.Grey");
        info[i, 2] = Console.ReadLine();

        if (info[i, 2] == "1") color[0, 2] += 1; //DARK BROWN
        else if (info[i, 2] == "2") color[1, 2] += 1; //BROWN
        else if (info[i, 2] == "3") color[2, 2] += 1; //BLUE
        else if (info[i, 2] == "4") color[3, 2] += 1; //GREY
    }
} Console.Clear();
Console.WriteLine("\tNAME\t\t\tNATIONALITY\t\tEYE COLOR\n");
for (int i = 0; i < n; i++)
{
    for (int j = 0; j < 3; j++)
    {
        if (info[i, 2] == "1") info[i,2]= "DARK BROWN";
        else if (info[i, 2] == "2") info[i, 2] = "BROWN";
```

```csharp
            else if (info[i, 2] == "3") info[i, 2] = "BLUE";
            else if (info[i, 2] == "4") info[i, 2] = "GREY";
    }
    if (info[i, 1] == "1") Console.WriteLine("\t{0}\t\t\tPAKISTAN\t\t{1}",info[i, 0],info[i, 2]);
    else if (info[i, 1] == "2") Console.WriteLine("\t{0}\t\t\tCHINA\t\t\t{1}",info[i, 0],info[i, 2]);
    else if (info[i, 1] == "3") Console.WriteLine("\t{0}\t\t\tTURKEY\t\t\t{1}",info[i, 0],info[i, 2]);
}
Console.WriteLine("MOST COMMON EYE COLORS");
string clr = "0";
for (int x=0;x<3;x++)
{
    int[] max = new int[3];
    for (int y=0;y<4; y++)
    {
        if(color[y,x]>=max[x])
        {
            max[x] = color[y, x];
            if (y == 0) clr = "DARK BROWN";
            if (y == 1) clr = "BROWN";
            if (y == 2) clr = "BLUE";
            if (y == 3) clr = "GREY";
        }
    }
    if (x == 0)
        Console.WriteLine("{0} is the most common eye color of {1} PAKISTANI Users",clr,max[x]);
    if (x == 1)
        Console.WriteLine("{0} is the most common eye color of {1} CHINESE Users", clr, max[x]);
    if (x == 2)
        Console.WriteLine("{0} is the most common eye color of {1} TURKISH Users", clr, max[x]);
}
```

Output:

Task 3

Make a program in C# in which take no. of items, price of items, quantity of items and name of items as input from the user and give the discount according to the following conditions (Use 2D Array): a. If **item is RICE** give discount of 30%. b. Else if the total amount is greater than 50,000 and less than 100,000 give discount of 20%. c. Else if the total amount is greater than 100,000 give discount of 30%

Solution:

```csharp
Console.Write("State number of items: ");
int n = int.Parse(Console.ReadLine());
string[,] item = new string[n,4];
double tprice = 0 ,disc=0;
for (int i=0;i<n;i++)
{
    Console.Write ("Enter ITEM {0} & QUANTITY: ",i+1);
    item[i, 0] = Console.ReadLine().ToUpper();
    int q = int.Parse(Console.ReadLine());
    item[i, 1] =q.ToString();
    Console.Write("Enter Unit Price of {0}: ",item[i,0]);
    double up = Convert.ToDouble(Console.ReadLine());
    item[i, 2] = up.ToString();
    double price = q*up;
    item[i, 3] = price.ToString();
    tprice += price;
}
Console.Clear();
Console.WriteLine("\nITEM NO.  ITEMS\t\tQUANTITY\tUNIT PRICE\tTOTAL PRICE");
for (int i=0; i<n; i++)
{
    if (item[i, 0] == "RICE") disc = tprice * 0.3;
    else if (tprice > 50000 && tprice <= 100000) disc = tprice * 0.2;
    else if (tprice > 100000) disc = tprice * 0.3;
    Console.WriteLine("{0}\t  {1}
\t{2}\t\t{3:.00}\t\t{4:.00}",i+1,item[i,0],item[i,1],item[i,2],item[i,3]);
}
Console.WriteLine("\n SUBTOTAL: {0:0.00} \n DISCOUNT: {1:0.00} \n TOTAL:    {2:0.00}",
tprice,disc,tprice-disc);
```

Output:

```
Microsoft Visual Studio Debug Console

ITEM NO.  ITEMS        QUANTITY       UNIT PRICE     TOTAL PRICE
1         COFFEE       1              395.85         395.85
2         RICE         2              800.1          1600.2
3         EGGS         2              160.05         320.1
4         MUTTON       2              1199.99        2399.98

 SUBTOTAL: 4716.13
 DISCOUNT: 1414.84
 TOTAL:     3301.29

E:\vs\LAB 9 TASK 3\LAB 9 TASK 3\bin\Debug\net6.0\LAB 9 TASK 3.exe (process 6772) exited with code 0.
Press any key to close this window . . ._
```