**«Платформа Microsoft .NET та мова програмування C#»**

**Тема: Основи LINQ**

Є компанія, в ній є відділи. В кожному відділі є скажімо так бізнес юніти на чолі з менеджером. В кожному юніті є робітники з зарплатами, ім’ям і т.д.

Вичислити:

1. який відділ заробляє найбільше

2. середній заробіток кожного відділу

3. який бізнес юніт заробляє найбільше

4. який відділ має найменший розкид по зарплаті

5. процент чоловіків в кожному відділі.

using System;

using System.Collections.Generic;

using System.Linq;

namespace Company

{

class Company

{

string name;

List<Division> divisions;

public Company()

{

divisions = new List<Division>();

}

public string Name {

get { return name; }

set { name = value; }

}

public List<Division> Divisions

{ get { return divisions; }

set { divisions = value; }

}

public void DivisionMaxSalary()

{

var res = divisions.Max(t => t.Unities.Sum(x => x.Workers.Sum(a => a.Salary)));

Division div = divisions.Where(t => t.Unities.Sum(x => x.Workers.Sum(a => a.Salary)) == res).FirstOrDefault();

Console.WriteLine("========================== Max salary of divisions ==========================");

Console.WriteLine($"Division: {div.Name}");

Console.WriteLine($"Salary: {res}");

}

public void DivisionAvgSalary()

{

Console.WriteLine("========================== Average salary of divisions ==========================");

foreach (Division divv in divisions)

{

divv.AvgSalary();

}

}

public void MaxSalaryOfUnities()

{

List<BusinessUnity> unities\_all = new List<BusinessUnity>();

foreach (Division div in divisions)

{

unities\_all.Add(div.MaxSalary());

}

var res = unities\_all.Max(x => x.Workers.Sum(a => a.Salary));

BusinessUnity unt = unities\_all.Where(x => x.Workers.Sum(a => a.Salary) == res).FirstOrDefault();

Console.WriteLine("========================== Max salary of unity ==========================");

Console.WriteLine($"Unity: {unt.Name}");

Console.WriteLine($"Salary: {res}");

}

public void MinIntervalSalary()

{

int index = 0;

List<int> intervals = new List<int>();

foreach (Division div in divisions)

{

intervals.Add(div.Unities.Max(x => x.Workers.Max(a => a.Salary)) - div.Unities.Min(x => x.Workers.Min(a => a.Salary)));

}

for (int i = 0; i < intervals.Count; i++)

{

if (intervals.Min() == intervals[i])

index = i;

}

Console.WriteLine("========================== Min interval salary of divisions ==========================");

Console.WriteLine($"Division: {divisions[index].Name}");

Console.WriteLine($"Salary interval: {intervals.Min()}");

}

public void MansPercent()

{

Console.WriteLine("========================== Percent mans of workers ==========================");

foreach (Division div in divisions)

{

div.MansPercent();

}

}

}

class Division

{

string name;

List<BusinessUnity> unities;

public Division()

{

unities = new List<BusinessUnity>();

}

public List<BusinessUnity> Unities

{

get { return unities; }

set { unities = value; }

}

public string Name

{

get { return name; }

set { name = value; }

}

public void AvgSalary()

{

var res = Unities.Average(x => x.Workers.Sum(a => a.Salary));

Console.WriteLine($"{Name}: {Math.Round(res, 0)}");

}

public BusinessUnity MaxSalary()

{

var res = Unities.Max(x => x.Workers.Sum(a => a.Salary));

BusinessUnity unt = Unities.Where(x => x.Workers.Sum(a => a.Salary) == res).FirstOrDefault();

return unt;

}

public void MansPercent()

{

int count\_workers = Unities.Sum(d => d.Workers.Count);

int res = Unities.Sum(s => s.Workers.Where(a => a.Stat == "Male").Count());

double percent = (Convert.ToDouble(res) / Convert.ToDouble(count\_workers)) \* 100;

Console.WriteLine($"{Name}: {Math.Round(percent, 1)}%");

}

}

class BusinessUnity

{

string name;

List<Worker> workers;

public BusinessUnity()

{

workers = new List<Worker>();

}

public List<Worker> Workers

{

get { return workers; }

set { workers = value; }

}

public string Name

{

get { return name; }

set { name = value; }

}

}

class Worker

{

string fio;

int salary;

string posada;

string stat;

public string FIO

{

get { return fio; }

set { fio = value; }

}

public int Salary

{

get { return salary; }

set { salary = value; }

}

public string Posada

{

get { return posada; }

set { posada = value; }

}

public string Stat

{

get { return stat; }

set { stat = value; }

}

}

class Program

{

static void Main(string[] args)

{

System.Console.OutputEncoding = System.Text.Encoding.UTF8;

Company company = new Company();

company.Name = "YoungCoders";

company.Divisions.Add(new Division());

company.Divisions.Add(new Division());

company.Divisions.Add(new Division());

company.Divisions[0].Name = "HTML";

company.Divisions[1].Name = "C#";

company.Divisions[2].Name = "Python";

company.Divisions[0].Unities.Add(new BusinessUnity());

company.Divisions[1].Unities.Add(new BusinessUnity());

company.Divisions[2].Unities.Add(new BusinessUnity());

company.Divisions[0].Unities[0].Name = "Розробка";

company.Divisions[1].Unities[0].Name = "Тестування";

company.Divisions[2].Unities[0].Name = "Реліз";

company.Divisions[0].Unities[0].Workers.Add(new Worker());

company.Divisions[1].Unities[0].Workers.Add(new Worker());

company.Divisions[2].Unities[0].Workers.Add(new Worker());

company.Divisions[0].Unities[0].Workers[0].FIO = "Лащ Антон Вадимович";

company.Divisions[0].Unities[0].Workers[0].Posada = "Менеджер";

company.Divisions[0].Unities[0].Workers[0].Salary = 2100;

company.Divisions[0].Unities[0].Workers[0].Stat = "Male";

company.Divisions[1].Unities[0].Workers[0].FIO = "Деркач Іван Русланович";

company.Divisions[1].Unities[0].Workers[0].Posada = "Кодер";

company.Divisions[1].Unities[0].Workers[0].Salary = 1900;

company.Divisions[1].Unities[0].Workers[0].Stat = "Female";

company.Divisions[2].Unities[0].Workers[0].FIO = "Балик Андрій Вікторович";

company.Divisions[2].Unities[0].Workers[0].Posada = "Кодер";

company.Divisions[2].Unities[0].Workers[0].Salary = 1500;

company.Divisions[2].Unities[0].Workers[0].Stat = "Male";

company.DivisionMaxSalary();

company.DivisionAvgSalary();

company.MaxSalaryOfUnities();

company.MinIntervalSalary();

company.MansPercent();

}

}

}