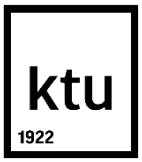


Kauno technologijos universitetas

Informatikos fakultetas

Objektinis programavimas I (P175B118)

Laboratorinių darbų ataskaita

Vytenis Kriščiūnas IFF-1/1

Docentas Giedrius Ziberkas

Kaunas 2021

TURINYS

1. Duomenų klasė

1.1. Darbo užduotis

Krepšinio rinktinė. Artėja Pasaulio vyrų krepšinio čempionatas. Turime į rinktinės stovyklą pakviestų kandidatų sąrašą. Duomenų faile pateikiama informacija apie pakviestus krepšininkus: vardas, pavardė, gimimo data, ūgis, pozicija, klubas, požymis „pakviestas“, požymis „kapitonas“ (true, false).

• Raskite jauniausią į rinktinę pakviestą krepšininką, ekrane atspausdinkite jo vardą, pavardę, amžių ir poziciją. Jei yra keli, spausdinkite visus.

• Raskite krepšininkus, žaidusius Kauno „Žalgiryje“, ekrane atspausdinkite jų vardus, pavardes bei pozicijas.

• Krepšininkai mėgsta švęsti gimtadienius. Sudarykite sąrašą krepšininkų, kurie švęs gimtadienius pasirengimo krepšinio čempionatui metu (liepos 20d. – rugsėjo 3d.), į failą „Gimtadieniai.csv“ įrašykite krepšininkų vardus, pavardes bei gimimo mėnesį ir dieną.

1.2. Programos tekstas

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace _13_uzduotis
{
    //Class that calculates given information and forms lists
    class TaskUtils
    {
        /// <summary>
        /// Creates a list to disperse the information
        /// </summary>
        /// <param name="players">Array of players</param>
        /// <returns>Formated list</returns>
       public static List<Player> Youngest(List<Player> players)
        {
            List<Player> youngest = new List<Player>();
            Player age = players[0];
            for (int i = 1; i < players.Count; i++)
            {
                if (DateTime.Compare(players[i].BirthDate, age.BirthDate) > 0)
//Searching for earliest DateTime information
                {
                    age = players[i];
                }
            }
            for (int i = 0; i < players.Count; i++)
            {
                if (age.BirthDate == players[i].BirthDate) //Comparing ealiest
DateTime information to player birth date
                {
```

```
                    youngest.Add(players[i]);
                }
            }
            return youngest;
        }

        /// <summary>
        /// Creates a list to disperse the information
        /// </summary>
        /// <param name="players">Array of players</param>
        /// <param name="team">string representing a team</param>
        /// <returns>Formated list</returns>
        public static List<Player> Zalgiris(List<Player> players, string team)
        {
            List<Player> InTheTeam = new List<Player>();
            foreach (Player player in players)
            {
                if (player.Club.Equals(team))
                {
                    InTheTeam.Add(player);
                }
            }
            return InTheTeam;
        }

        /// <summary>
        /// Creates a list to disperse the information
        /// </summary>
        /// <param name="players">Array of players</param>
        /// <returns>Formated list</returns>
        public static List<Player> CelebratesBirthDays(List<Player> players)
        {
            List<Player> Celebrates = new List<Player>();
            DateTime DateBegining = new DateTime(DateTime.Now.Year, 7, 20);
//Intodusing new DateTime variable
            DateTime DateEnding = new DateTime(DateTime.Now.Year, 9, 3); //Intodusing
new DateTime variable
            foreach (Player player in players)
            {
                if (player.BirthDate.DayOfYear >= DateBegining.DayOfYear &&
player.BirthDate.DayOfYear <= DateEnding.DayOfYear) //Converting DateTime information
to values and then comparing them
                {
                    Celebrates.Add(player);
                }
            }
            return Celebrates;
        }

    }
}


using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace _13_uzduotis
```

```
{
    //Class that saves information about one basketball player
    class Player
    {
        public string Name { get; set; }
        public string Surname { get; set; }
        public DateTime BirthDate { get; set; }
        public int Hight { get; set; }
        public int Number { get; set; }
        public string Club { get; set; }
        public bool Invited { get; set; }
        public bool CaptainOrNot { get; set; }

        /// <summary>
        /// Creates public method with the same name as class name
        /// </summary>
        /// <param name="name">Name of player</param>
        /// <param name="surname">Surname of player</param>
        /// <param name="birthDate">Birth date of player</param>
        /// <param name="hight">Hight of player</param>
        /// <param name="number">Number of player</param>
        /// <param name="club">Club of player</param>
        /// <param name="invited">Invited or not invited player</param>
        /// <param name="captainOrNot">Player who is captain or not</param>
        public Player(string name, string surname, DateTime birthDate, int hight, int
number, string club, bool invited, bool captainOrNot)
        {
            this.Name = name;
            this.Surname = surname;
            this.BirthDate = birthDate;
            this.Hight = hight;
            this.Number = number;
            this.Club = club;
            this.Invited = invited;
            this.CaptainOrNot = captainOrNot;

        }

        /// <summary>
        /// Creates int method
        /// </summary>
        /// <returns>Formated int value</returns>
        public int CalculateAge()
        {
            DateTime today = DateTime.Today;
            int age = today.Year - this.BirthDate.Year;
            if (this.BirthDate.Date > today.AddYears(-age))
            {
                age--;
            }
            return age;
        }
    }
}


using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
```

```
using System.IO;
using System.Threading.Tasks;

namespace _13_uzduotis
{
    //Class that prints or reads information
    class InOutUtils
    {
        /// <summary>
        /// Creates a list to disperse the information
        /// </summary>
        /// <param name="fileName">Specific file name</param>
        /// <returns>Formated list</returns>
        public static List<Player> ReadFile(string fileName)
        {
            List<Player> Players = new List<Player>();
            string[] Lines = File.ReadAllLines(fileName, Encoding.UTF8);
            foreach (string line in Lines)
            {
                string[] Values = line.Split(';');
                string name = Values[0];
                string surname = Values[1];
                DateTime birthDate = DateTime.Parse(Values[2]);
                int hight = int.Parse(Values[3]);
                int number = int.Parse(Values[4]);
                string club = Values[5];
                //Finding out if player is invited or not
                bool Invited = false;
                if (Values[6] == "pakviestas")
                {
                    Invited = true;
                }
                //Finding out if player is captain or not
                bool captainOrNot = false;
                if (Values[7] == "kapitonas")
                {
                    captainOrNot = true;
                }
                Player Player = new Player(name, surname, birthDate, hight, number,
club, Invited, captainOrNot);
                Players.Add(Player);
            }
            return Players;
        }

        /// <summary>
        /// Creates a void function where information is printed
        /// </summary>
        /// <param name="players">Array of players</param>
        /// <param name="fileName1">Specific file name</param>
        public static void PrintToTxt(List<Player> players, string fileName1)
        {
            string[] lines = new string[players.Count + 4];
            lines[0] = String.Format(new string('-', 121));
            lines[1] = String.Format("| {0, -8} | {1, -12} | {2, -6} | {3, 8} | {4,
8} | {5, -8} | {6, -8} | {7, -8} |", "Vardas", "Pavardė", "Gimimo data", "Žaidėjo
ūgis", "Numeris", "Klubas", "Ar pakviestas", "Komandos kapitonas ar ne");
            lines[2] = String.Format(new string('-', 121));
            for (int i = 0; i < players.Count; i++)
            {
```

```
                lines[i + 3] = String.Format("| {0, -8} | {1, -12} | {2, -11:yyyy-MM-
dd} | {3, 12} | {4, 8} | {5, -8} | {6, -13} | {7, -24} |", players[i].Name,
players[i].Surname, players[i].BirthDate, players[i].Hight, players[i].Number,
players[i].Club, players[i].Invited, players[i].CaptainOrNot);
            }
            lines[players.Count + 3] = String.Format(new string('-', 121));
            File.WriteAllLines(fileName1, lines, Encoding.UTF8);

        }

        /// <summary>
        /// Creates a void function where information is printed
        /// </summary>
        /// <param name="players">Array of players</param>
        public static void PrintYoungestPlayers(List<Player> players)
        {
            foreach (Player player in players)
            {
                Console.WriteLine("{0};{1};{2};{3}", player.Name, player.Surname,
player.CalculateAge(), player.Number);
            }
        }

        /// <summary>
        /// Creates a void function where information is printed
        /// </summary>
        /// <param name="players">Array of players</param>
        public static void PrintClubPlayers(List<Player> players)
        {
            foreach (Player player in players)
            {
                Console.WriteLine("{0};{1};{2}", player.Name, player.Surname,
player.Number);
            }

        }

        /// <summary>
        /// Creates a void function where information is printed
        /// </summary>
        /// <param name="fileName">Specific file name</param>
        /// <param name="players">Array of players</param>
        public static void PrintToCsv(string fileName, List<Player> players)
        {
            string[] lines = new string[players.Count];
            for (int i = 0; i < players.Count; i++)
            {
                lines[i] = string.Format("{0};{1};{2:MM-dd}", players[i].Name,
players[i].Surname, players[i].BirthDate);

            }
            File.WriteAllLines(fileName, lines, Encoding.UTF8);
        }

    }
}


using System;
using System.Collections.Generic;
```

```
using System.Linq;
using System.Text;
using System.IO;
using System.Threading.Tasks;
//Main function of this program is to do all kinds of calculations with different
basketball players information

//Vytenis Kriščiūnas

namespace _13_uzduotis
{
    //Main class
    class Program
    {
        const string CFd = @"Players.txt"; //Represents a .txt file from which data
will be read
        const string CFr1 = "Rezults.txt"; //Represents a .txt file where data will
be put
        const string CFr2 = "Gimtadieniai.csv"; //Represents a .csv file where data
will be put

        static void Main(string[] args)
        {
            List<Player> allPlayers = InOutUtils.ReadFile(CFd);
            InOutUtils.PrintToTxt(allPlayers, CFr1);

            //Finding and printing yougest players
            List<Player> youngest = TaskUtils.Youngest(allPlayers);
            Console.WriteLine("Jauniausi krepšininkai:");
            InOutUtils.PrintYoungestPlayers(youngest);
            Console.WriteLine();

            //Finding and printing players who play in Žalgiris
            List<Player> inTheTeam = TaskUtils.Zalgiris(allPlayers, "Žalgiris");
            Console.WriteLine("Krepšininkai žaidę Žalgiryje:");
            InOutUtils.PrintClubPlayers(inTheTeam);
            Console.WriteLine();

            //Printing players who celebrates their birthdays of a given time frame
            List<Player> whoCelebrates = TaskUtils.CelebratesBirthDays(allPlayers);
            InOutUtils.PrintToCsv(CFr2, whoCelebrates);

        }
    }
}
```

1.3. Pradiniai duomenys ir rezultatai

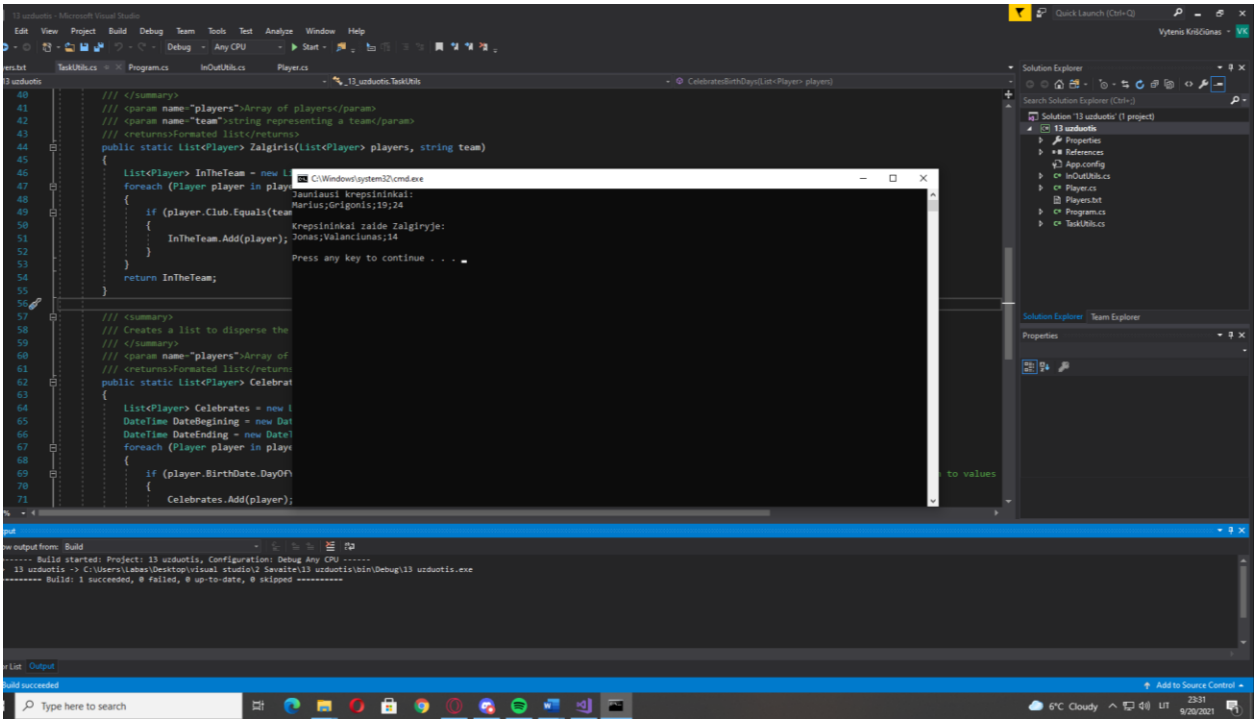
```
Jonas;Valančiūnas;2002-07-28;180;14;Žalgiris;pakviestas;kapitonas
Marius;Grigonis;2002-08-28;179;24;Rytas;pakviestas;žaidėjas

-------------------------------------------------------------------------------------
-----------------------------------
| Vardas   | Pavardė      | Gimimo data | Žaidėjo ūgis |  Numeris | Klubas    | Ar
pakviestas | Komandos kapitonas ar ne |
-------------------------------------------------------------------------------------
-----------------------------------
```

```
| Jonas     | Valančiūnas  | 2002-07-28  |          180 |       14 | Žalgiris | True
| True                     |
| Marius    | Grigonis     | 2002-08-28  |          179 |       24 | Rytas    | True
| False                    |
-------------------------------------------------------------------------------------
-----------------------------------

Jauniausi krepsininkai:
Marius;Grigonis;19;24

Krepsininkai zaide Zalgiryje:
Jonas;Valanciunas;14
```



1 Pav. Atspausdinti rezultatai ekrane

1.4. Dėstytojo pastabos