МИНИСТЕРСТВО ЦИФРОВОГО РАЗВИТИЯ,

СВЯЗИ И МАССОВЫХ КОММУНИКАЦИЙ РОССИЙСКОЙ ФЕДЕРАЦИИ

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ

«САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ ТЕЛЕКОММУНИКАЦИЙ ИМ. ПРОФ. М.А. БОНЧ-БРУЕВИЧА» (СПбГУТ)

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##### Лабораторно-практическая работа № 22

по профессиональному модулю

**ПМ.01 «ПРИКЛАДНОЕ ПРОГРАММИРОВАНИЕ»**

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Санкт-Петербург

2022 год

**Обмен значениями переменных объекта (своппинг) средствами** **языка C#**

Код:

using System;

namespace Main

{// BEGIN of user namespace

public class Program

{ // BEGIN of 'Program' class

public class TimeInDay

{// BEGIN of 'TimeInDay' class TTTTTTTTTTTTTTT

private int \_time\_value = 0; // hh mm ss

private string \_time\_name = "Unknown";

public TimeInDay(int time\_value, string time\_name)

{ \_time\_value = time\_value; \_time\_name = time\_name; }

public string Name { get { return \_time\_name; } }

public int Hours

{ // BEGIN of 'Hours' property HHHHHHHHHHHHHHHH

get

{

return (\_time\_value & 0x00FF0000) >> 16;

}

set

{

if (value < 0) value = 0;

if (value > 23) value += (value - 24) \* 24;

\_time\_value = (\_time\_value & 0x7F00FFFF) | ((value << 16) & 0x00FF0000);

}

} // END of 'Hours' property HHHHHHHHHHHHHHHHHH

public int Minutes

{ // BEGIN of 'Minutes' property MMMMMMMMMMMMMM

get

{

return (\_time\_value & 0x0000FF00) >> 8;

}

set

{

if (value < 0) value = 0;

if (value > 59) value += (value - 60) \* 60;

\_time\_value = (\_time\_value & 0x7FFF00FF) | ((value << 8) & 0x0000FF00);

}

} // END of 'Minutes' property MMMMMMMMMMMMMMMM

public int Seconds

{ // BEGIN of 'Seconds' property SSSSSSSSSSSSSS

get

{

return \_time\_value & 0x000000FF;

}

set

{

if (value < 0) value = 0;

if (value > 59) value += (value - 60) \* 60;

\_time\_value = (\_time\_value & 0x7FFFFF00) | (value & 0x000000FF);

}

} // END of 'Seconds' property SSSSSSSSSSSSSSSS

} // END of 'TimeInDay' class TTTTTTTTTTTTTTT

static public bool SwapHours<T>(ref T a, ref T b)

{ // BEGIN of 'SwapHours'

if (a.GetType() == typeof(TimeInDay) && b.GetType() == typeof(TimeInDay))

{

int hours\_temp = (a as TimeInDay).Hours;

(a as TimeInDay).Hours = (b as TimeInDay).Hours;

(b as TimeInDay).Hours = hours\_temp;

return true;

}

else

{

T temp = a; a = b; b = temp;

return false;

}

} // END of 'SwapHours'

static public bool SwapMinutes<T>(ref T a, ref T b)

{// BEGIN of 'SwapMinutes'

if (a.GetType() == typeof(TimeInDay) && b.GetType() == typeof(TimeInDay))

{

int minutes\_temp = (a as TimeInDay).Minutes;

(a as TimeInDay).Minutes = (b as TimeInDay).Minutes;

(b as TimeInDay).Minutes = minutes\_temp;

return true;

}

else

{

T temp = a; a = b; b = temp;

return false;

}

} // END of 'SwapMinutes'

static public bool SwapSeconds<T>(ref T a, ref T b)

{// BEGIN of 'SwapMinutes'

if (a.GetType() == typeof(TimeInDay) && b.GetType() == typeof(TimeInDay))

{

int seconds\_temp = (a as TimeInDay).Seconds;

(a as TimeInDay).Seconds = (b as TimeInDay).Seconds;

(b as TimeInDay).Seconds = seconds\_temp;

return true;

}

else

{

T temp = a; a = b; b = temp;

return false;

}

} // END of 'SwapSeconds'

public static void Main(string[] args)

{

TimeInDay td\_1 = new TimeInDay(0x50202, "td\_1");

TimeInDay td\_2 = new TimeInDay(0x50303, "td\_2");

Console.WriteLine("{0}: Hours: {1}, Minutes {2}, Seconds {3}",

td\_1.Name, td\_1.Hours, td\_1.Minutes, td\_1.Seconds);

Console.WriteLine("{0}: Hours: {1}, Minutes {2}, Seconds {3}",

td\_2.Name, td\_2.Hours, td\_2.Minutes, td\_2.Seconds);

SwapHours<TimeInDay>(ref td\_1, ref td\_2);

SwapMinutes<TimeInDay>(ref td\_1, ref td\_2);

SwapSeconds<TimeInDay>(ref td\_1, ref td\_2);

Console.WriteLine("{0}: Hours: {1}, Minutes {2}, Seconds {3}",

td\_1.Name, td\_1.Hours, td\_1.Minutes, td\_1.Seconds);

Console.WriteLine("{0}: Hours: {1}, Minutes {2}, Seconds {3}",

td\_2.Name, td\_2.Hours, td\_2.Minutes, td\_2.Seconds);

}

}

}

Результат:

