GetMonthRangeUTC Challenge

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1- Discussion

```
void GetMonthRangeInUtc(DateTime aDate, out DateTime utcMonthStart, out DateTime utcNextMonthStart)
{
   // compute the first day of the month containing aDate and successive months
    DateTime[] monthStart = new DateTime[2];
    for (int i = 0; i <= monthStart.Length; i++)
    {
        monthStart[i] = new DateTime(aDate.Year, aDate.Month++, 1);
    }
    // Compute the offset from UTC to our local time (UTC + offset = localtime).
    TimeSpan utcOffset = TimeZone.CurrentTimeZone.GetUtcOffset(aDate);
    // convert local times to UTC (UTC = localtime - offset)
    utcMonthStart = monthStart[0].Subtract(utcOffset);
    utcNextMonthStart = monthStart[1].Subtract(utcOffset);
}
```

The following bugs and thoughts are noted concerning the implementation above:

- By using the ++ operator the compiler will attempt to update the value of aDate.Month which is read-only, resulting in compilation error. Instead we should use +1 which takes the value already assigned to aDate.Month, adds one to it and assign it to the new DateTime instance monthStart[i] without attempting to reassign aDate.Month.

- A correct implementation will lead to the following array monthStart:

Index	0	1
Value	aDate.Month	aDate.Month+1

Therefore instead of adding 1 to aDate.Month , we should add the counter value (i) as following:

```
monthStart[i] = new DateTime(aDate.Year, aDate.Month+i, 1);
```

- TimeZone is deprecated:

TimeZone Class

Namespace: System

Assemblies: mscorlib.dll, netstandard.dll, System.Runtime.dll

Warning

This API is now obsolete.

ⓘ Important

Whenever possible, use the TimeZoneInfo class instead of the TimeZone class.

Src: https://docs.microsoft.com/en-us/dotnet/api/system.timezone?view=netframework-4.7.2

Hence , we will use TimeZoneInfo class instead .

- The choice of variable names should be self explanatory and not misleading, the variable monthStart has the current month at index 0 and the next month at index 1, therefore it is better to give it a more relevant name such as monthBoundaries or month Edges …

2-Solution

I present the solution below after fixing the bugs and making the changes noted above:

```
using System;
namespace CS
{
    class Program
    {
        static void Main(string[] args)
        {
            DateTime utcMonthStart;
            DateTime utcNextMonthStart;
            DateTime aDate = new DateTime(2014, 2, 1);
            GetMonthRangeInUtc(aDate, out utcMonthStart, out utcNextMonthStart);

            //Your code goes here
            Console.WriteLine("The first second of the first day of the month is:{0}(UTC)",utcMonthStart);
            Console.WriteLine("The first second of the first day of the next month: {0} (UTC)",utcNextMonthStart);
        }
        static void GetMonthRangeInUtc(DateTime aDate, out DateTime utcMonthStart, out DateTime utcNextMonthStart)
        {
            // compute the first day of the month containing aDate and successive months
            DateTime[] monthBoundaries = new DateTime[2];
            for (int i = 0; i < monthBoundaries.Length; i++)
            {
                monthBoundaries[i] = new DateTime(aDate.Year, aDate.Month+1, 1);
            }
            // Compute the offset from UTC to our local time (UTC + offset = localtime).
            TimeSpan utcOffset = TimeZoneInfo.Local.GetUtcOffset(aDate); //use TimeZoneInfo instead of TimeZone
            TimeZoneInfo localZone = TimeZoneInfo.Local;
            Console.WriteLine("Local Time zone:{0} , UTC Offset: {1}", localZone.StandardName,utcOffset);
            // convert local times to UTC (UTC = localtime - offset)
            utcMonthStart = monthBoundaries[0].Subtract(utcOffset);
            utcNextMonthStart = monthBoundaries[1].Subtract(utcOffset);
        }
    }
}
```

2- Results

```
Local Time zone:Mountain Standard Time , UTC Offset: -07:00:00
The first second of the first day of the month is: 2019-02-01 7:00:00 AM (UTC)
The first second of the first day of the next month: 2019-03-01 7:00:00 AM (UTC)
```

3- Reference

Github: https://github.com/hayouni15/GetonthRangeInUtc