AS3 CSIS1175

You can complete this final assignment either on your own or in a group. Name of the project / solution: AS3xxxxx where xxxxx is your first and last names. If you are working in a group (max 3 including yourself), just put down one member's names as the project name. You will enter other members' (and your) names in the source code as comments. **You will need to zip up the entire project and submit it to me via Blackboard on or before 11:59pm April 7, 2017. Late submission will not be accepted.** The name of your zip file must be the same as your project name. If you do not follow the above instructions, you will get marks deducted.

If for whatever reason I cannot open or execute your program, you will receive zero in this assignment. This assignment carries 10% of your course grade. Your program must be done using Visual Studio 2015. Do NOT use any other version Visual Studio for this assignment at all.

At the beginning of your source code, you must enter your section #, everyone's name and student ID as a comment. Marks will be given those names appeared on the source code only. You must use upper and lower cases for the project name. You also have to comment your code (both the main program and the class) to explain your logic like what we do in our lectures. You can refer to your textbook pages 102 for more details. You will lose marks if you do not provide sufficient comments to explain your code.

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This assignment will test your knowledge about everything that we have learned so far in this course. You will need to work on simple file input, the use of LINQ, and class/method coding. The latter two make up the core of the program and will form the major part of your final exam.

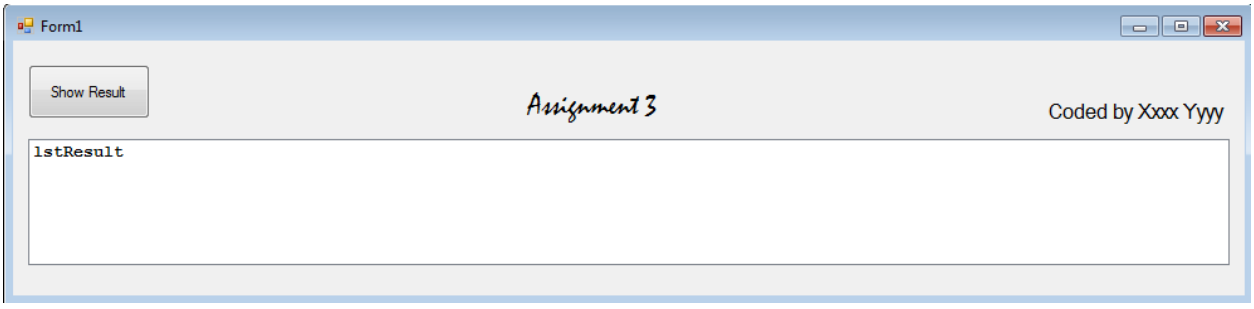
AS3customers.csv is a file containing the customer names and IDs. *AS3data.csv* contains customer transaction data and is not sorted. You must use LINQ to sort (customer IDs and rental dates) and process *AS3data.csv* contents within the program. You cannot use any other programs such as Excel to sort the files separately. You should be aware that I will be using a different set of data to test your program.

You can safely assume that there is no error in both *AS3data* and *AS3customers*.

If a file is open under the streamreader class, it must be closed at the end.

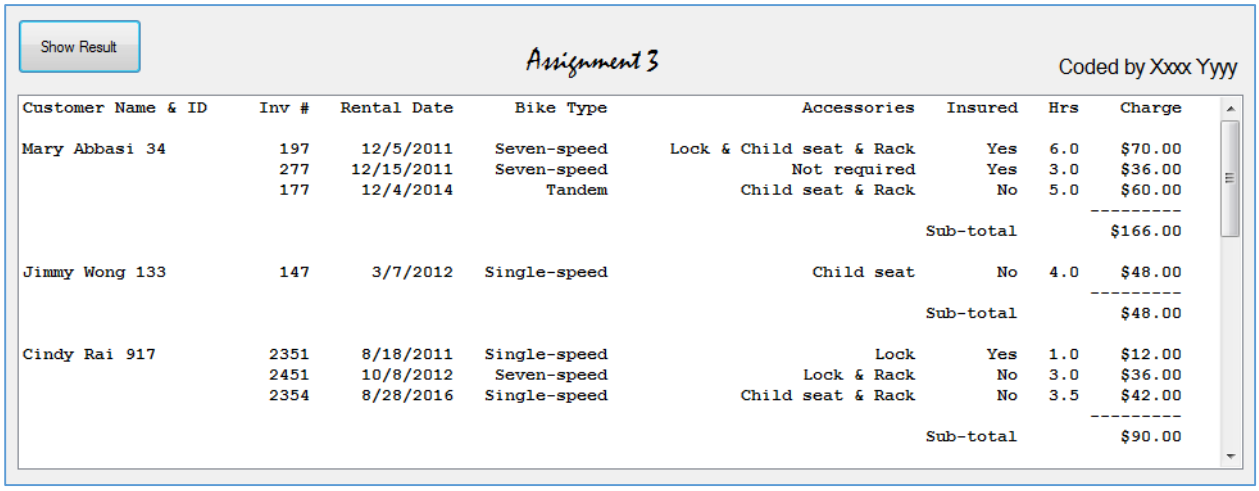
Both data files must be saved and accessed on c:\temp. Any other location will cost you 15% of the marks in this assignment.

The program user interface is very simple: one button, one listbox, and 2 labels. You must replace Xxxx Yyyyy with your (or your group members') names.



Please use upper and lower cases for your names. **Each group needs to submit one program only. If two groups/students submit a similar program, both will be treated as cheating in assignment. Douglas College's policy on academic honesty will strictly be enforced.**

There are 8 columns of informaiton to be displayed on the listbox: customer name & id, invoice #, rental date, bike type, requested accessories, Insurnace, rental hrs, and rental charge. Make sure that you line up your output properly with the correct format for each column. Refer to the partial sample output below for details. Please note that the first line of the output is for the 8 columns' headings.



Customer Name & ID	Inv #	Rental Date	Bike Type	Accessories	Insured	Hrs	Charge
Mary Abbasi 34	197	12/5/2011	Seven-speed	Lock & Child seat & Rack	Yes	6.0	$70.00
	277	12/15/2011	Seven-speed	Not required	Yes	3.0	$36.00
	177	12/4/2014	Tandem	Child seat & Rack	No	5.0	$60.00
					Sub-total		$166.00
Jimmy Wong 133	147	3/7/2012	Single-speed	Child seat	No	4.0	$48.00
					Sub-total		$48.00
Cindy Rai 917	2351	8/18/2011	Single-speed	Lock	Yes	1.0	$12.00
	2451	10/8/2012	Seven-speed	Lock & Rack	No	3.0	$36.00
	2354	8/28/2016	Single-speed	Child seat & Rack	No	3.5	$42.00
					Sub-total		$90.00

Data files (*AS3data* and *AS3customers*)

	A	B	C	D	E	F	G
1	Customer ID	Invoice #	rental date	bike type	accessories	insurance	rental hrs
2	2482	2226	8/12/2012	3	L	N	4.5
3	5941	16421	12/14/2015	3	N	Y	8
4	133	147	3/7/2012	1	C	N	4
5	5941	16384	12/4/2016	3	LCR	N	7
6	1991	22019	7/11/2015	4	N	N	3
7	917	2451	10/8/2012	2	LR	N	3
8	34	277	12/15/2011	2	N	Y	3
9	1991	22022	7/18/2013	4	L	Y	1
10	5941	16456	12/9/2014	2	LC	Y	5
11	917	2351	8/18/2011	1	L	Y	1
12	2482	2931	9/23/1998	3	N	N	3
13	2482	2061	6/12/2014	3	CRL	Y	4.5
14	34	177	12/4/2014	3	RC	N	5
15	2482	2491	9/3/2000	2	RL	N	2.5
16	1391	183	10/12/2013	3	CL	N	6
17	917	2354	8/28/2016	1	CR	N	3.5
18	1391	187	4/11/2012	4	LC	N	7
19	2482	2067	10/18/2011	4	C	Y	6
20	2482	2531	9/13/1999	2	RLC	Y	2
21	2482	1341	5/8/2011	4	CL	N	1
22	34	197	12/5/2011	2	CLR	Y	6
23	1391	180	4/2/2013	2	L	Y	5
24	2482	2113	6/22/2015	4	C	Y	4
25	1991	22078	7/21/2010	1	C	Y	2

	A	B
1	Customer Name	Customer ID
2	Joseph Park	111
3	Jimmy Wong	133
4	Sandy Johnson	1391
5	Mary Abbasi	34
6	Kathy Jones	2482
7	Cindy Rai	917
8	Judy Kaur	913
9	Candy Liu	5941
10	Louis Mack	1991

Note both data files do not have row 1 as shown here. Row 1 here is to explain what each column represents only.

Rental date is in the mm/dd/yyyy format.

Bike Type: 1: Single-speed, 2: Seven-speed, 3: Tandem, 4: Mountain. The Rental class will return the corresponding bike type description.

Accessories: **N**: not accessory requested, **C**: Child seat, **L**: Lock, **R**: Rack

A rental may consist of multiple accessories, e.g. child seat and lock, or lock, rack, and child seat. If N is in the accessory column, then there will be no accessory requested. Each accessory in the output must be separated by a & sign and a space as shown in the sample output. Please make sure that there is no $ sign or space character for the last accessory name. *Hints: you may need to use some of the functions for strings as discussed in textbook 473, 481, 482. We will talk about that this week*.

The Rental class will return the corresponding accessory descriptions.

Insured: **Y**: Yes, **N**: No

The Rental class will return the corresponding insurance description.

Charge

For the first 5 hrs or less, each hour will cost $12. Any hour beyond 5 will cost $10 per hour. For example, if a customer has rented a bike for 5.5hrs, then the charge will be 5 x 12 + 0.5 * 10 = $65. If a customer has rented a bike for 5 hrs, then the charge will be 5 x 12 = $60

The Rental class will compute and return the corresponding rental charge.

Control break

Your output must be sorted on the customer IDs (numerically) and rental dates (chronologically). Take a closer look at the sample output for reference.

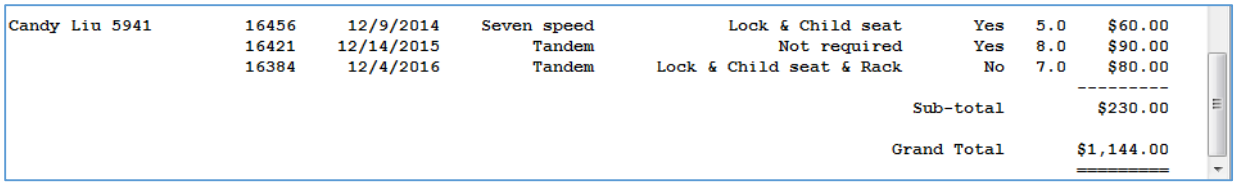
There is only one control break on the output and it is on the customer IDs. You should note that AS3data.csv does not have the customer names at all. You need to use AS3data's customer id to search for the matching customer name either from the *AS3customers.csv* file or from an array (a preferable way but carries the same marks). The matching customer name will be used to display in the listbox. The customer name is displayed only on the first rental record of the customer. For example, Mary Abbasi 34 has 3 rental records but since the first invoice 197 occurred on Dec 5, 2011 (i.e. the earliest one), the name and id will be shown on that line only. Mary's 2 other records (277 and 177) will not show her name and id on the first column.

Customer Name & ID	Inv #	Rental Date	Bike Type	Accessories	Insured	Hrs	Charge
Mary Abbasi 34	197	12/5/2011	Seven-speed	Lock & Child seat & Rack	Yes	6.0	$70.00
	277	12/15/2011	Seven-speed	Not required	Yes	3.0	$36.00
	177	12/4/2014	Tandem	Child seat & Rack	No	5.0	$60.00

					Sub-total		$166.00

When the customer does not have anymore rental record (i.e. a control break occurs), your program must display a partial dash line to separate the last rental charge and the sub-total rental charge for that customer. The sub-total charge is followed by a blank line as shown above.

When all the customers' rental records have been processed and printed, your program will display a line to show the grand total of all rental charges with all customers combined together.



```
Candy Liu 5941          16456     12/9/2014     Seven speed              Lock & Child seat       Yes   5.0     $60.00
                        16421    12/14/2015         Tandem                   Not required       Yes   8.0     $90.00
                        16384     12/4/2016         Tandem       Lock & Child seat & Rack        No   7.0     $80.00
                                                                                                                ---------
                                                                                          Sub-total                $230.00

                                                                                          Grand Total            $1,144.00
                                                                                                                 =========
```

The screen capture above shows the last customer Candy Liu 5941. Please note the last line of output that shows the total rental charges for all customers combined together. I may be using a different set of data files for my program and your results may not necessary be the same as mine.

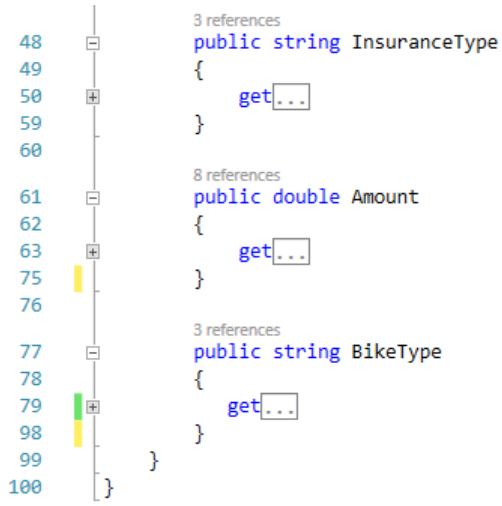
You should note that the main calling program (button click) is only responsible for the LINQ and the display of the results. It does not compute the individual rental charge, neither does it determine the bike type or requested accessories. They are all done on the Rental class. The main program will accumulate the sub-totals and grand total. If you code the main program effeciently, you can get that done in about 120 lines of code, without comments.

Class required:

Note: You have to code a class called **Rental**. This rental class will be called upon in your program to come up with the results. It returns these result back to the main program for display on the listbox. Code it carefully and efficiently.

Below is the skeleton of the Rental class that I have coded for this assignment. If you code the class effeciently, you can get that done in about 100 lines of code, without comments. You of course must comment throughout this class to explain your logic.

```
1   using System;
2   using System.Collections.Generic;
3   using System.Linq;
4   using System.Text;
5   using System.Threading.Tasks;
6
7   namespace AS3demo
8   {
        3 references
9       class Rental
10      {
11          private DateTime _date;
12          private string _type, _accessory, _insurance;
13          private double _hour,amt;
14          private string typeDec, accessoryDesc, insuranceDesc;
15
            1 reference
16          public Rental(DateTime date, string type, string accessory, string insurance, double hour)...
            3 references
24          public string AccessoryType
25          {
26              get...
46          }
47
```


3 references
public string InsuranceType
{
get...
}
8 references
public double Amount
{
get...
}
3 references
public string BikeType
{
get...
}
}
}