COMP123 – Programming II
Test 1

Evaluation: 100 points (25%)

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Academic Integrity

What is allowed:

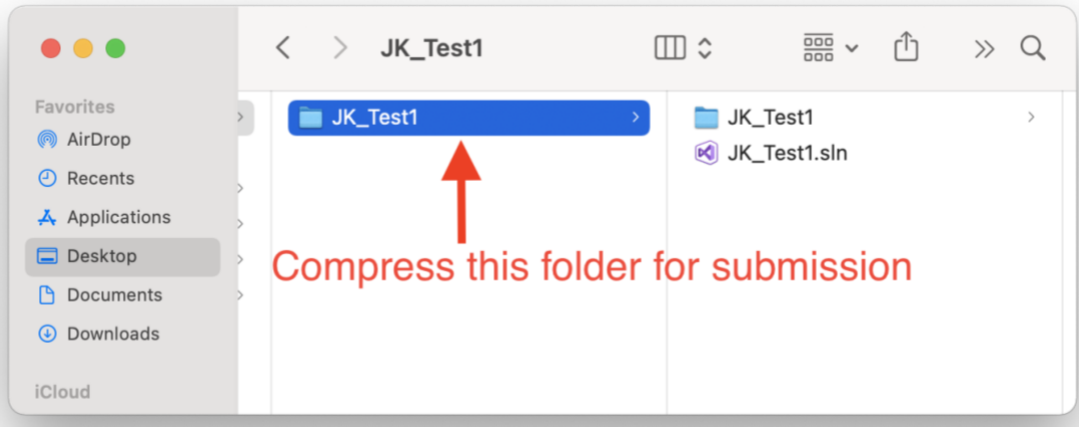
- Looking up **syntax** related to C#
- You can refer the code and classwork created in this course

What is **NOT** allowed:

- Searching for partial or full solutions of the main problem description
- Communication with others, either inside or outside the class
- Sharing of resources, including but not limited to links, computers, Orders, etc.

Submission Checklist:

- Once you are done, write your name and Applicant number at the top of each **.cs** file.
- Compress your ***entire project folder*** into a .zip file. Your .zip file name must be **YourFirstName_Test1.zip** such as John_Test1. **Please don't submit .rar or .7zip file.**
- If you don't understand what it means by entire project folder, have a look at the image below:



- Upload **the zip file** in the submission folder in eCentennial under **Assessments menu -> Assignments** in appropriate folder.

- Take a **screen-recording video** **(.mp4 or .mov)** of your visual studio and terminal showing the execution of the code and output of the program. Create a screen recording even if you have errors. Upload the video in the submission folder.
- Only if your video size is too big and you couldn't upload it to dropbox; upload your video to your Google Drive and share the link in the comment section of your submission.
- Your submission folder should have two individual files: 1) the zip file, 2) a screen recording video file or link to video.

Task:

In a Visual Studio, create a new project (C# Console Application (.Net Framework)) named **YourFirstName_Test1** (where YourFirstName is your first name, such as John_Test1) to accomplish the following task:

Applicant Class (25 points)

This class consists of the following members. All the properties have public getters.

- **DriverID: int**
  - An integer property to store Applicant ID number
- **Name: string**
  - A string property to store applicant's name
- **Age: int**
  - An int property to store applicant's age
- **SpeedingTicket: bool**
  - A boolean property to indicate if applicant has received speeding ticket in past (true) or not (false)
- **DrivingTest: bool**
  - A boolean property to indicate if applicant has taken driving test in past (true) or not (false)
- **Eligible: bool**
  - A boolean property to indicate if applicant is eligible for the isurance (true) or not (false)
  - This property must have a setter
- **InsuranceAmount: double**
  - A double property to store the insurance amount the applicant would have to pay
  - This property must have a setter

Define the following constructors for this class:

- **Applicant (int ID, string name, int age, bool ticket = false, bool test = false)**
  - This constructor will assign received parameters to the respective class properties
  - It will also call the function name FindEligibility() which will determine the eligibility and insurance amount.

Implement the following methods in the class:

- **Void FindEligibility()**
  - this method must determine the applicant's eligibility as per the following criteria and set the Eligible and InsuranceAmount properties accordingly.

Age	Speeding Ticket	Driving Test	Eligible	Insurance Amount
25 or more	True	Doesn't matter	True	1000
	False		True	500
Less than 25	True	True	True	1500
	False	True	True	1000
All other possibilities	Doesn't matter	Doesn't matter	False	0.0

- **override string ToString()**
  - this method should display all the Applicant details in appropriate format.

Officer_Applicant.txt file

This text file contains the Applicant information that each insurance officer should help. The file records are structured using CSV (Comma Separated Values) format. The following is the sample record from file:

498,003,Andrew Kim,25,False,True

In the record above, 498 indicates insurance officer ID who will be managing Applicant Andrew Kim who's age is 25, doesn't have speeding ticket and have taken driving test.

InsuranceOfficer class (45 points)

This class consists of the following members. All the properties have public getters and no setters.

- **ID : int**
  - An int property to store ID of each officer

- **ApplicantList : List<Applicant>**
  - This is property holds a list of Applicant objects that the officer will help.

Define the following constructors for this class:

- **InsuranceOfficer(int ID)**
  - This constructor will assign received ID parameters to the respective class property
  - It will initialize the ApplicantList with empty List by default.
  - It will then open and read file named "Officer_Applicant.txt" which is provided with this file.
  - It will read one line at a time, and extract all the fields from the records.
  - If the first field obtained from each file record matches officer ID provided as parameter in constructor, create an object of Applicant class with the help of remaining fields obtained from file record.
  - Add the created Applicant class object, to the ApplicantList variable.

Implement the following methods in the class:

- **void AddApplicant(int ID, string name, int age, bool ticket = false, bool test = false)**
  - this method will create an object of the Applicant class with the help of provided parameters and add the object to ApplicantList.
  - It should also print the newly created object values
- **void ShowAll()**
  - this method will display all the Applicant details for the current officer.
- **void ShowAll(bool eligibilityStatus)**
  - this method will display all the Applicant details for the current officer if applicant's eligibility status matches with the parameter provided to this function.

Testing (30 points)

To test your application, get the start-up code provided in the attached file Startup.cs, copy-paste the code to your class and execute. You may alter/change the test harness provided in the start-up code while creating program. However, your assessment will be graded for the execution and output against provided test harness. At the end of your work, the output should like below:

```
----------------------------------Insurance Application----------------------------------
---------------------------Applicant details of officer 729 ----------------------------
DriverID        Name           Age  Ticket    Test      Eligible  Insurance Amount
-----------------------------------------------------------------------------------------
1               Jamy Doe       23   Yes       Yes       Yes       $1,500.00
2               Amy Virk       35   Yes       Yes       Yes       $1,000.00
5               Melody Lynn    20   No        Yes       Yes       $1,000.00
546             Alex Du        19   Yes       No        No        $0.00
-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------
Successfully added applicant 921 to the list.
921             Dolly Lively   27   No        No        Yes       $500.00
-----------------------------------------------------------------------------------------
---------------------------Applicant details of officer 729 ----------------------------
DriverID        Name           Age  Ticket    Test      Eligible  Insurance Amount
-----------------------------------------------------------------------------------------
1               Jamy Doe       23   Yes       Yes       Yes       $1,500.00
2               Amy Virk       35   Yes       Yes       Yes       $1,000.00
5               Melody Lynn    20   No        Yes       Yes       $1,000.00
546             Alex Du        19   Yes       No        No        $0.00
921             Dolly Lively   27   No        No        Yes       $500.00
-----------------------------------------------------------------------------------------
--------------------Applicant who are Eligible managed by officer 729  -------------------
DriverID        Name           Age  Ticket    Test      Eligible  Insurance Amount
-----------------------------------------------------------------------------------------
1               Jamy Doe       23   Yes       Yes       Yes       $1,500.00
2               Amy Virk       35   Yes       Yes       Yes       $1,000.00
5               Melody Lynn    20   No        Yes       Yes       $1,000.00
921             Dolly Lively   27   No        No        Yes       $500.00
-----------------------------------------------------------------------------------------
---------------------------Applicant details of officer 498 ----------------------------
DriverID        Name           Age  Ticket    Test      Eligible  Insurance Amount
-----------------------------------------------------------------------------------------
3               Andrew Kim     25   No        Yes       Yes       $500.00
2               Justin Tims    32   Yes       Yes       Yes       $1,000.00
6               Lily Blake     17   No        No        No        $0.00
576             Dale           45   No        Yes       Yes       $500.00
-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------
Successfully added applicant 847 to the list.
847             Jack Gibbs     18   No        No        No        $0.00
-----------------------------------------------------------------------------------------
---------------------------Applicant details of officer 498 ----------------------------
DriverID        Name           Age  Ticket    Test      Eligible  Insurance Amount
-----------------------------------------------------------------------------------------
3               Andrew Kim     25   No        Yes       Yes       $500.00
2               Justin Tims    32   Yes       Yes       Yes       $1,000.00
6               Lily Blake     17   No        No        No        $0.00
576             Dale           45   No        Yes       Yes       $500.00
847             Jack Gibbs     18   No        No        No        $0.00
-----------------------------------------------------------------------------------------
--------------------Applicant who are Not Eligible managed by officer 498  ----------------
DriverID        Name           Age  Ticket    Test      Eligible  Insurance Amount
-----------------------------------------------------------------------------------------
6               Lily Blake     17   No        No        No        $0.00
847             Jack Gibbs     18   No        No        No        $0.00
-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------
```