## 1. StringConcatenate

 Write a program which asks the user for their first name and last name to enter separately .

 Concatenate these strings, with a space in-between them, putting the resulting concatenation into a single string variable named fullName and output the concatenated string to the console.

**SAMPLE INPUT / OUTPUT :**

Enter first name  
Alice  
Enter last name  
Maria  
  
Full name : Alice Maria

## 2. Quiz Competition Report

IQA, an International Quizzing Association conducted a quiz competition where several teams participated.

The competition consists of multiple rounds and each round carries a maximum point of 500 and minimum of 0.

IQA wants to take a report on the number of rounds participated by each team and their scores in each round.

 The report should contain number of times each team participated and their scores in each attempt.  Finally, it should display all the teams with their scores and its total.

 How can you help them to generate the report using jagged arrays in C#. (Hint: The number of attempts taken by each team varies.)

From the Main method get input from the user and call the below method to return the results and display the result.

**public static String GetTotalScore(int[][] array)   //**Method should accept a jagged array and return the result as given in the sample output.

**Sample Input:**

Enter the number of teams:

2

No.of attempts for team 1:

2

No.of attempts for team 2:

3

Enter the score for team 1:

100

120

Enter the score for team 2:

200

150

150

**Sample Output:**

Team 1 Total Score is 220 . Team 2 Total Score is 500

## 3. Reverse a Sentence

Jona and Helen are playing a game.When one person says a sentence in English , the other person should repeat the sentence in the reverse order. One who does it perfectly gets a score.

Write a C# program to help them found whether the sentence is reversed perfectly.

Get the input string from the user and display the phrase in reverse order.

**Sample input 1**

Enter a string

Here We Go Round the Mulberry Bush

**Sample output 1**

Bush Mulberry the Round Go We Here

**Sample input 2**

Enter a string

JACK and JILL went up the HILL

**Sample output 2**

HILL the up went JILL and JACK

## 4. AccountDetails

Create a public class Account with the following members:

* private attributes

    int id;

   String  accountType;

   double balance;

* Add  public properties for the all above three fields.

**Constructors**

* Create an empty parameter constructor.
* Also create a  3- parameter constructor to set the values for the given properties.

**Methods**

* Create a method WithDraw which should take amount as input and return a boolean .
* public bool Withdraw (double amount) --

This method should deduct the amount from the balance and return true. Before deducting the amount from the balance ensure there is enough balance. If there is no enough balance return false.

* Add a method GetDetails that returns  the details exactly as given in the sample output.

public String GetDetails()

* Create a public class Program for the Main method .

a) From the Main method create object for Account and call the GetDetails method and display the details.

b) In the Main method, enter the amount to be withdrawn from user and call WithDraw method by passing this amount. If WithDraw method returns 'true' then display new balance(i.e after deduction)

**Note:**

**Don't create any new namespace.**

**Create classes with pubic access specifier**

**Sample Input 1:**

Enter account id

111

Enter account type

savings

Enter account balance

5000

Enter amount to withdraw

3000

**Sample Output 2:**

Account Id: 111

Account Type: savings

Balance: 5000

New Balance : 2000

**Sample Input 2:**

Enter account id

123

Enter account type

current

Enter account balance

3567

Enter amount to withdraw

4000

**Sample Output:**

Account Id: 123

Account Type: current

Balance: 3567

## 5. OpenableInterface

During the birthday party of Brian, The children were asked to pick a folded sheet of paper with handwritten fortunes inside. If the paper is marked with a letter T, a toy treasure box is gifted, and if it contains a letter P, a toy parachute is gifted to the children.

Simulate the scenario using C# classes and interface.

Create an interface named IOpenable. It should contain a single method named OpenSesame with the following signature.

**Interface IOpenable**

|  |  |  |
| --- | --- | --- |
| Member type | Identifier Name | Description |
| Method | String OpenSesame() | The method contains zero parameter list and returns a string |

Create classes named TreasureBox, and Parachute that  implements IOpenable.

**class TreasureBox  // should implement IOpenable**

|  |  |  |
| --- | --- | --- |
| Member type | Identifier Name | Description |
| Method | String OpenSesame() | method should  return a string  "Congratulations , Here is your lucky win". (return the  string exactly as specified .) |

**class  Parachute // should implement IOpenable**

|  |  |  |
| --- | --- | --- |
| Member type | Identifier Name | Description |
| Method | String OpenSesame() | method should return a string  “Have a thrilling experience flying in air”  (return the  string exactly as specified .) |

**class Program  // class for the Main method**

|  |  |  |
| --- | --- | --- |
| Member type | Identifier Name | Description |
| Method | Main | Create instances for Parachute and TreasureBox and  call the OpenSesame method to display the fortunes. |

Write a program that declares an object for each of the implementing classes and calls its OpenSesame() method . Display the String to the console.

Note:

Don't create any new namespace.

Create classes with public access specifier.

The Main method should be defined in public class Program.

Declare the interface as public

Sample Input

Enter the letter found in the paper

T

Sample Output:

Congratulations, Here is your lucky win

Sample Input

Enter the letter found in the paper

P

Sample Output:

Have a thrilling experience flying in air

## 6. GameInheritance

Reena  has to teach  a lesson  on various sports and games that are played around the world , to her grade 4 students..

To make the class interactive, she  decided to call each student and ask them  the name of a game  they knew ,number of players needed to play the game and about games that are played with  a time limit.

Help her by writing a C# Program that prompts the user for the said details and display them on the console.

Create the classes , along with the specified members  as mentioned below.

**1. class  Game** //  parent class  that describes the games properties

Include **Auto-implemented properties** for the game’s name and maximum number of players.

|  |  |
| --- | --- |
| Property Name | Description |
| public string Name | property to store the name of the game. |
| public int MaxNumPlayers | Maximum number of players   included for the game |

|  |  |
| --- | --- |
| Method Name | Description |
| ToString() | Should overrides the Object class’s ToString() method and returns a string that contains the nameof the Game, and the number of players as  given in the sample output. |

**2. class  GameWithTimeLimit** // child class that should inherit class Game

Generate an auto-implemented integer property for  Minutes to store the game’s time limit in minutes.

|  |  |
| --- | --- |
| Property Name | Description |
| Public int TimeLimit | store the game’s time limit in minutes. |

|  |  |
| --- | --- |
| Method Name | Description |
| ToString() | Should overrides the Object class’s ToString() method and returns a string .  Should call the base parent class ToString and print the name and number of players . In addition this method should print the time limit for the game.  (Refer the sample output.) |

**3. class Program**

Create a class named Program  with Main method to  instantiate  objects for the above mentioned  classes and Display the output as given in the sample.

**Note:**

Do not  create any new namespace.

Create classes with public access specifier.

The Main method should be defined in public class Program.

**Sample Input:**

Enter a game

Cricket

Enter the maximum number of players

11

Enter a game that has time limit

Football

Enter the maximum number of players

11

Enter the time limit in minutes

90

**Sample Output:**

Maximum number of players for Cricket is 11

Maximum number of players for Football is 11

Time Limit for Football is 90 minutes

## 7. Find the Age of a person

Write a C# program that gets a person's date of birth as input   and calculates his/her age and display the age. The program should also check whether the person is an adult or child. Display the results as given in the sample output.

 Create a class called Person.

 1.      Populate the Person class with the following private fields. :

·         String   firstName   // stores the first name of the person

·         String  lastName   //stores the last name of the person.

·         DateTime  dob   // stores the date of birth of the person

2.      Add **read-write** properties for the above three instance fields and store the information

3.      Add **read-only**propertiy Adult   that return the following computed information:

public String Adult  // Check the age ,of the person , and if he is  18 or above   return a string "Adult"  and  if he is below 18 return  "Child".

4.      Include a Method DisplayDetails

         public void DisplayDetails() // Displays the details of the person.

5.      Include a method with the below signature that returns the age of the person.

public int GetAge(DateTime dob)

Create objects for person  from a class called Program that contains the Main method and display the details from the DisplayDetails method.

**Note:**

**Don't create new namespaces.**

**Create classes with pubic access specifier.**

**Follow the naming conventions strictly.**

**Sample input:**

Enter first name

Alice

Enter last name

Moses

Enter date of birth in yyyy/mm/dd/ format

1998/12/23

**Sample Output:**

First Name: Alice

Last Name: Moses

Age: 19

Adult

Enter first name

Joe

Enter last name

Noel

Enter date of birth in yyyy/mm/dd/ format

2002/10/15

**Sample Output:**

First Name: Alice

Last Name: Moses

Age: 17

Child

## 8. CalculatorProgram

Create a class called Calculator which contains methods for arithmetic operations such as Addition, Subtraction ,Multiplication and Division. Division method should return the Quotient and Remainder(hint:use out parameter).

Follow the method signatures as given below:

public int Addition(int a, int b)

public int Subtraction(int a, int b)

public int Multiplication(int a, int b)

public double Division(int a, int b, out double remainder).  //The method should  return the Quotient and Remainder  should be  passed through the out parameter.

The methods should return the appropriate result.

Create a class Program with Main Method . Prompt for 2 operands and operator from the user, Call the appropriate method for operation and display the results.

**Note:**

**Don't create any new namespace.**

**Create classes with pubic access specifier**

**Sample Input**

Enter the operator

+

Enter the operands

12

10

**Sample Output**

Result of 12 + 10 is 22

**Sample Input**

Enter the operator

/

Enter the operands

11

2

**Sample Output**

Result of 11 / 2 is 5

Remainder =1

**Sample Input**

Enter the operator

&

Enter the operands

12

10

**Sample Output**

Invalid Operator

## 9. Extract Book Code - Hands -On

Universal Library wants to extract the book code for the arrangements and easy retrieval .

Write a program to implement this scenario to help them to extract.

**Business Rules:**

The book code should be length of 18 . else print “ Invalid Book Code “

1 – The first 3 position is for Department Code .

2 – The next 4 position is for Publication Years

3 – The next 5 position is for Number of Pages.

4 – The next 6 position is for Book Id

The valid Department code is  101, 102, 103 else print “ Invalid Department Code”

The valid Year of Publication is 1900 to 2020 else print “ Invalid Year “

The valid Page Number is from 00001 to 99999 else print “ Invalid Page Numbers”

The valid Book ID is character followed by numbers else print “ Invalid Book ID”

Create a class Program and get the book code as input and implement the above functionalities

**Sample Input 1 :**

Enter the book code of length 18

101202012345J12345

**Sample Output 1:**

Department Code        : 101

Year of Publication     : 2020

Number of Pages        : 12345

Book ID                      : J12345

**Sample Input 2 :**

Enter the book code of length 18

102201945678G54321

**Sample Output 2:**

Department Code        : 102

Year of Publication     : 2019

Number of Pages        : 45678

Book ID                      : G54321

**Sample Input 3 :**

Enter the book code of length 18

102201945678G

**Sample Output 3:**

Invalid Book Code

**Sample Input 4:**

Enter the book code of length 18

104201945678G54321

**Sample Output 4:**

Invalid Department Code

Year of Publication     : 2019

Number of Pages        : 45678

Book ID                      : G54321

## 10. MultiplicationTablesChart

Jane  is in grade 4. Her teacher wants her to prepare a chart for teaching multiplication tables to the students. Help her to  print multiplication table up to 10 times for any given input number.

Sample Input:

Enter the number:

6

Sample Output:

1 2 3 4 5 6 7 8 9 10

2 4 6 8 10 12 14 16 18 20

3 6 9 12 15 18 21 24 27 30

4 8 12 16 20 24 28 32 36 40

5 10 15 20 25 30 35 40 45 50

6 12 18 24 30 36 42 48 54 60