

SEQUENCE - PLAYING WITH NUMBERS

We've just seen how you can use variables to store the name of the user. In the next few programs, we'll see how we can store and manipulate numbers in variables. Let's start with a really simple program.

Example: + Operator

```
static void Main(string[] args)
{
    string message1 = "Hello";

    string message2 = message1 + " World!!";

    Console.WriteLine(message2);

    int i = 10, j = 20;

    int sum = i + j;

    Console.WriteLine("{0} + {1} = {2}", i, j, sum);
}
```

The program above demonstrates adding strings and integers.

The program below demonstrates the main arithmetic operations, add, subtract, multiply and divide.

```
9      class Program
10     {
11     static void Main(string[] args)
12     {
13         // Variables
14         int Number1;
15         int Number2;
16         int AnswerAdd, AnswerSub, AnswerMult;
17         double AnswerDiv;
18         //INPUT
19         Console.Write("Please enter the first number - ");
20         Number1 = int.Parse(Console.ReadLine());
21         Console.Write("Please enter the second number - ");
22         Number2 = int.Parse(Console.ReadLine());
23
24         //PROCESS
25         AnswerAdd = Number1 + Number2; // Add
26         AnswerSub = Number1 - Number2; // Subtract
27         AnswerDiv = (double) Number1 / Number2; // Divide
28         AnswerMult = Number1 * Number2; // Multiply
29
30         //OUTPUT
31         Console.WriteLine("Add = " + AnswerAdd);
32         Console.WriteLine("Subtract = " + AnswerSub);
33         Console.WriteLine("Divide = {0}", AnswerDiv.ToString("0.0#"));
34         Console.WriteLine("Multiply = " + AnswerMult);
35
36         // Pause the program
37         Console.ReadLine();
38     }
```

This program asks the user to enter two numbers, adds, subtracts, divides and multiplies them and then displays the answers.

The program consists of a SEQUENCE of instructions – INPUT – PROCESS – OUTPUT.
 The variables are declared as Integer data type; an integer is a whole number, except for AnswerDiv which is declared as double because the result could be a decimal number.

Build the application and test the program.

ARITHMETIC OPERATIONS

The basic arithmetic operations are:

Operation	Symbol	Example
Addition	+	Answer = Number1 + Number2
Subtraction	-	Answer = Number1 – Number2
Multiplication	*	Answer = Number1 * Number2
Division	/	Answer = Number1 / Number2

SIMPLE TEMPERATURE CONVERTER

For the next program we'll use the formula below to convert Fahrenheit temperatures to Celsius temperatures.

$$C = \frac{5(F - 32)}{9}$$

C = Celsius, F = Fahrenheit

```

1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace Temperature
8  {
9      class Program
10     {
11         static void Main(string[] args)
12         {
13             // Variables
14             int Cel;
15             int Fah;
16             // INPUT
17             Console.WriteLine("Fahrenheit to Celcius");
18             Console.WriteLine("");
19             Console.Write("Enter the temperature in Fahrenheit ... ");
20             Fah = int.Parse(Console.ReadLine());
21             // PROCESS
22             Cel = ((Fah - 32) / 9) * 5;
23             // OUTPUT
24             Console.WriteLine("The temperature in Celcius is {0}", Cel);
25             Console.ReadLine();
26         }
27     }
28 }
    
```

Build and test this application. How do you know this program works?
 You will need to test the program with a range of values where you know the results.

ACTIVITY 1

1. Write a console application to calculate a part time workers pay. The user enters the number of hours worked and the rate of pay. The program calculates the gross, tax and net pay. Assume the tax rate is 20%.
2. Write a console application to calculate the loan repayments for an amount borrowed. The user will enter the amount, loan period and the interest rate. The application will display the monthly repayment.