Simple Calculations

SoftUni Team

Technical Trainers

Software University

SoftUni

Software University

sli.do

#prgm-for-qa

Table of Contents

Statements

Statements

- The **actions** that a program takes, are expressed as **statements**

- Basic **statements** (actions / commands) include:

  - **Declaring** a variable

    ```
    int counter;
    ```

  - **Printing** a value

    ```
    Console.WriteLine(counter);
    ```

  - **Assigning** a value

    ```
    counter = 1;
    ```

  - **Modifying** a value

    ```
    counter++;
    ```

    ```
    sum = a + b;
    ```

  - Declaring + **initializing**

    ```
    int counter = 1;
    ```

Complex Statements

- **If-else** statement

```
if (a == 5)
  Console.WriteLine("Five");
else
  Console.WriteLine("Not Five");
```

- **Loop** statement

```
int a = 5;
while (a > 0)
{
    a--;
}
```

- **Method definition** statement

```
static int Sum(int a, int b)
{
    return a + b;
}
```

- **Method call** statement

```
int s = Sum(5, 3);
```

Arithmetic Operators

Arithmetic Operators: + and -

- **Adding** numbers (operator **+**)

```
int a = 5;
int b = 7;
int sum = a + b;
Console.WriteLine(sum); // 12
```

- **Subtracting** numbers (operator **-**)

```
int a = 15;
int b = 7;
Console.WriteLine(a - b); // 8
```

Arithmetic Operators: * and /

- **Multiplying** numbers (operator *)

```
int a = 5;
int b = 7;
Console.WriteLine(a * b); // 35
```

- **Dividing** numbers (operator /)

```
int a = 25;
int b = 4;
Console.WriteLine(a / b); // 6
```

Division Behavior

- When **dividing integers**, the result is also **integer**:

```
int a = 25;
Console.WriteLine(a / 4);   // Integer result: 6
Console.WriteLine(a / 0);   // Error: division by 0
```

- When **dividing floating-points**, the result is also **floating-point**:

```
double a = 25;
Console.WriteLine(a / 4.0);  // 6.25
Console.WriteLine(a / 0.0); // Infinity
Console.WriteLine(0 / 0.0); // NaN
```

Arithmetic Operators: %

- **Modulo** / **remainder** from integer division (operator **%**)

```
int a = 7;
int b = 2;
Console.WriteLine(a % b);    // 1
```

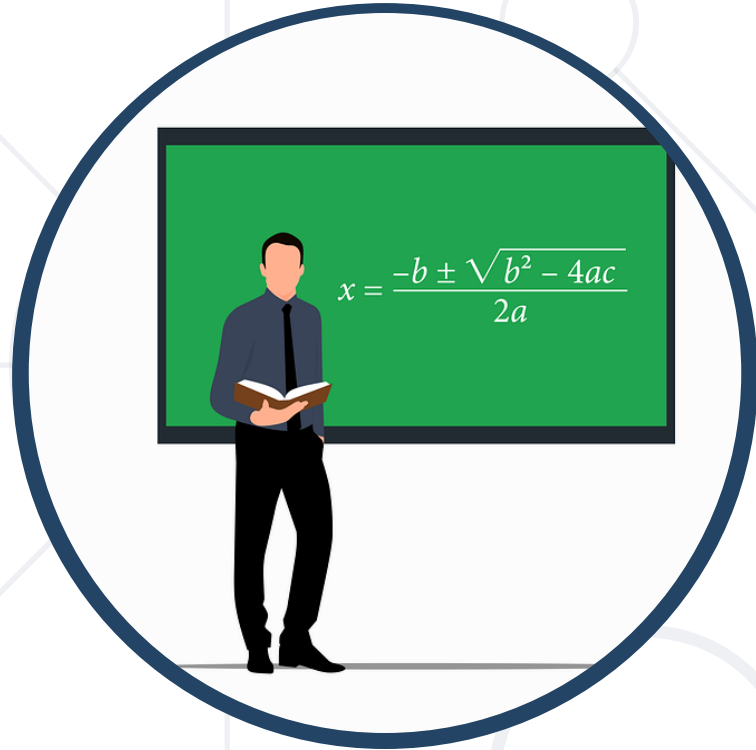**7** = 3 * **2** + remainder **1**

```
Console.WriteLine(37 % 10); // 7
Console.WriteLine(4 % 2);    // 0
Console.WriteLine(3.5 % 1); // 0.5
```

37 = 10 * **3** + remainder **7**

4 = 2 * **2** + remainder **0**

3.5 = 3 * **1** + remainder **0.5**

Expressions

Expressions

- **Expressions** are sequences of **operators**, **literals** and **variables** which are evaluated to a **value**

    - Consist of at **least one operand**

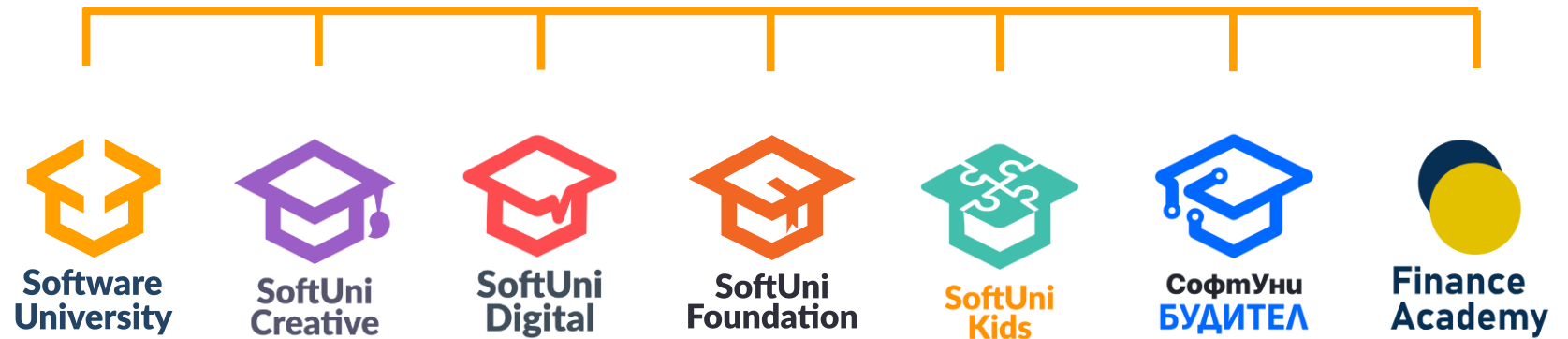   - Can use **one** or **more operators**

```
int y = x + 5;
```

```
string name = "John Doe";
```

```
int r = (150-20) / 2 + 5;
```

Summary

- **Statements**
- **Arithmetic Operations (+, -, *, /, %)**
- **Statements**

Questions?

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