

Simple Calculations



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#prgm-for-qa

1. Statements
2. Arithmetic Operators
 - **Add (+)**
 - **Subtract (-)**
 - **Multiply (*)**
 - **Division (/)**
3. Expressions





Statements

- The **actions** that a program takes, are expressed as **statements**
- Basic **statements** (actions / commands) include:

- **Declaring** a variable

```
int counter;
```

- **Assigning** a value

```
counter = 1;
```

- Declaring + **initializing**

```
int counter = 1;
```

- **Printing** a value

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

- **Modifying** a value

```
counter++;
```

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

■ If-else statement

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

■ Method definition statement

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

■ Loop statement

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

■ 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
```

- 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
```

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

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

$7 = 3 * 2 + \text{remainder } 1$

```
Console.WriteLine(37 % 10);  // 7
```

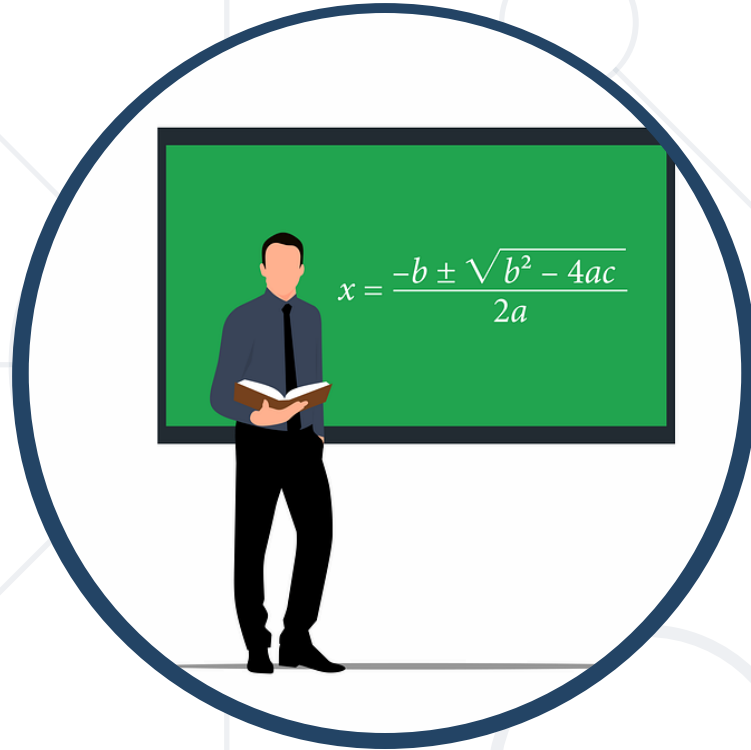
$37 = 10 * 3 + \text{remainder } 7$

```
Console.WriteLine(4 % 2);    // 0
```

$4 = 2 * 2 + \text{remainder } 0$

```
Console.WriteLine(3.5 % 1);  // 0.5
```

$3.5 = 3 * 1 + \text{remainder } 0.5$



Expressions

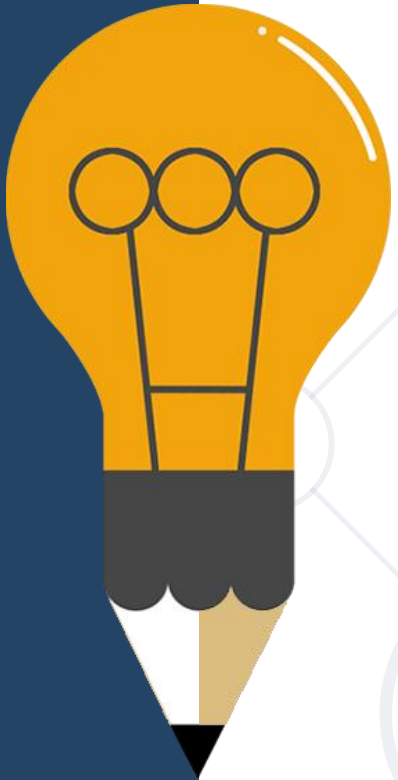
Expressions

- **Expressions** == 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";
```

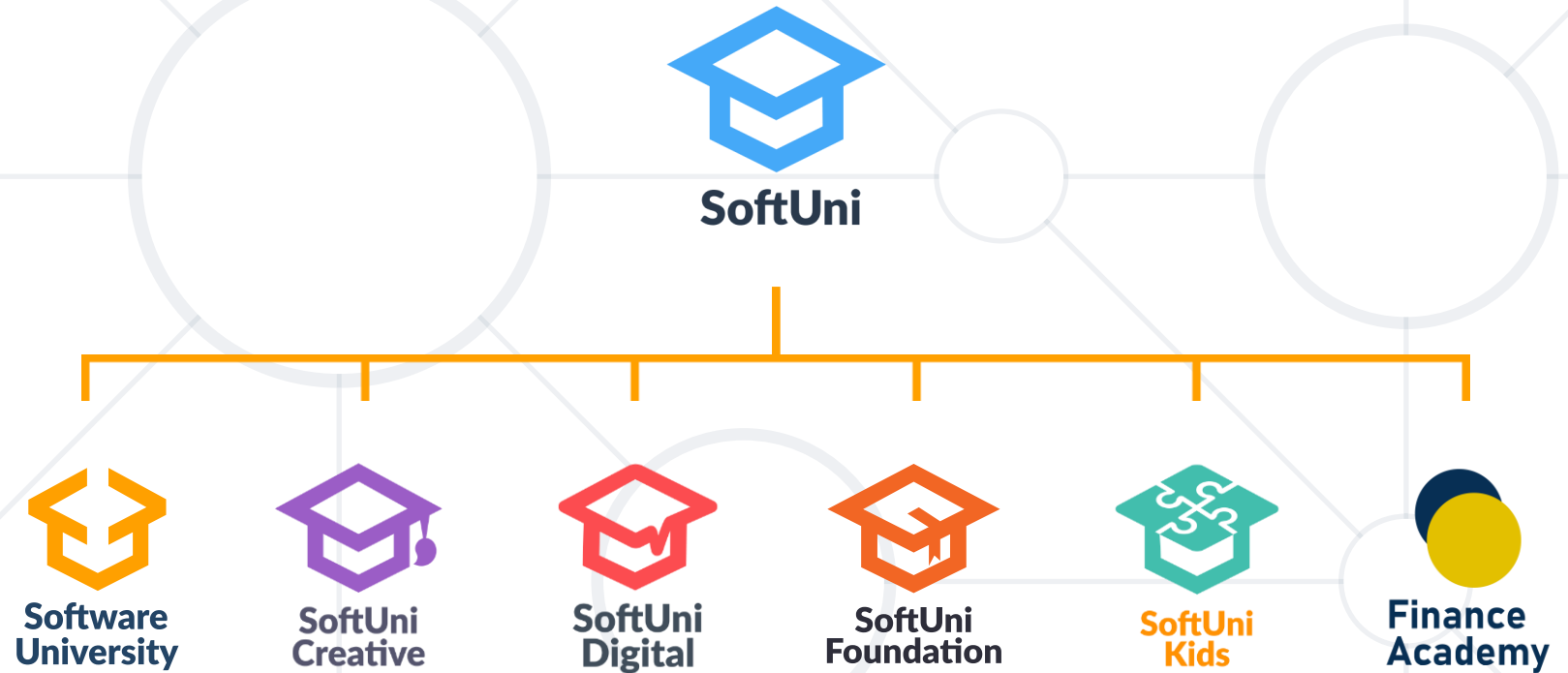
```
int r = (150-20) / 2 + 5;
```



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



Questions?



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