

Exercise Sheet # 2 - Solution

(03-10-2001)

Exercise 1:

Rewrite each of the following statements:

a. `SumOfSquares = SumOfSquares + x * x`
`SumOfSquares += x * x;`

b. `count = count + 1`
`count++;`
or
`++count;`

c. `count = count - 1`
`count--;`
or
`--count;`

Exercise 2:

a. Define and give an example of type coercion and type casting

Type Coercion: The implicit (automatic) conversion of a value from one data type to another.

e.g.

```
float SomeFloat;  
SomeFloat = 12;
```

Type Casting: The explicit conversion of a value from one data type to another; also called type conversion.

e.g.

```
float SomeFloat = 12.0;  
int SomeInt;  
SomeInt = int(24.0 / SomeFloat);
```

b. Name two things that contribute to the readability of a program

Comments and indentation

c. Define and give an example of precedence and associativity

Precedence: The order used to evaluate the expression. Operators have different precedence levels.

e.g.

$$4 + 5 * 6 = (4 + (5*6))$$

Associativity: The order used to evaluate the expression in case of equal operator precedence, it can be either left-to-right or right-to-left.

e.g.

$$4 \% 3 * 2 = (4 \% 3) * 2$$

Exercise 3:

True or False ?

- a. $0 \% 7.0$ yields the value 0. **False**
- b. If floatValue is a float containing 5.0, the expression
 $\text{float}(\text{int}(\text{floatValue} * 10.0 + 2.0)) / 10.0;$
gives 5.2 as its result. **True**
- c. The program becomes more readable if type casting is used instead of type coercion. **True**
- d. Promotion and demotion may cause loss of information. **False**

Exercise 4:

Compute the value of each legal expression. Indicate whether the value is an integer or a floating point value. If the expression is not legal, explain why.

- a. $10 + 3$
Integer: 13
- b. $-9.4 - 6.2$
Floating point: -15.6
- c. $10.0 / 3.0$
Floating point: 3.3333
- d. $10 / 3$
Integer: 3
- e. $10 \% 3$
Integer: 1
- f. $10.0 \% 3.0$
Illegal: Both operands of the % operator must be of integer type
- g. $4 / 8$
Integer: 0
- h. $10.0 / 3.0 + 5 * 2$
Floating point: 13.3333
- i. $10 \% 3 + 5 \% 2$
Integer : 2
- j. $10 / 3 + 5 / 2$
Integer: 5
- k. $12.5 + (2.5 / (6.2 / 3.1))$
Floating point: 13.75
- l. $-4 * (-5 + 6)$
Integer: -4
- m. $13 \% 5 / 3$
Integer: 1
- n. $(10.0 / 3.0 \% 2) / 3$
Illegal: 10.0 / 3.0 is a floating point expression, but the % operator requires integer operands