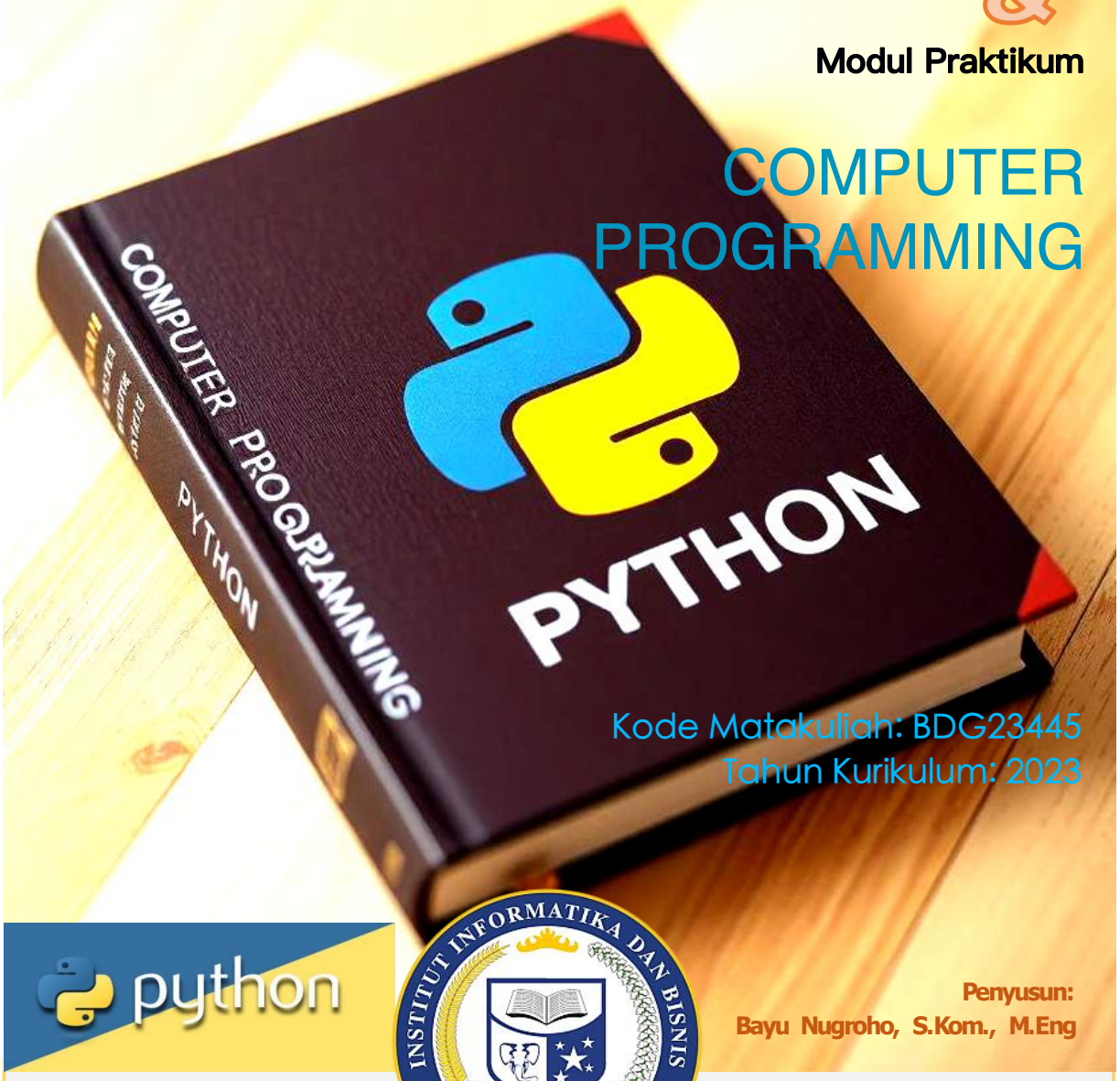
Halaman Judul

Bahan Ajar

&

Modul Praktikum

COMPUTER PROGRAMMING



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python

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INSTITUT INFORMATIKA DAN BISNIS DARMAJAYA

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Modul 4

Operator & Experssions Type in python programming

1. Operator Matematika

Python Operators

Operators are used to perform operations on variables and values.

In the example below, we use the + operator to add together two values:

Example

```
print(10 + 5)
```

Python divides the operators in the following groups:

Arithmetic operators, Assignment operators, Comparison operators, Logical operators And Bitwise operators

Python Arithmetic Operators

Arithmetic operators are used with numeric values to perform common mathematical operations:

Operator	Name	Example
+	Addition	x + y
-	Subtraction	x - y
*	Multiplication	x * y
/	Division	x / y
%	Modulus	x % y
**	Exponentiation	x ** y
//	Floor division	x // y

Python Assignment Operators

Assignment operators are used to assign values to variables

Operator	Example	Same As
=	x = 5	x = 5
+=	x += 3	x = x + 3
-=	x -= 3	x = x - 3
*=	x *= 3	x = x * 3
/=	x /= 3	x = x / 3
%=	x %= 3	x = x % 3
//=	x //= 3	x = x // 3
**=	x **= 3	x = x ** 3
&=	x &= 3	x = x & 3
|=	x |= 3	x = x | 3
^=	x ^= 3	x = x ^ 3
>>=	x >>= 3	x = x >> 3
<<=	x <<= 3	x = x << 3
:=	print(x := 3)	x = 3 print(x)

2. Python Comparison Operators

Comparison operators are used to compare two values:

Operator	Name	Example
==	Equal	x == y
!=	Not equal	x != y
>	Greater than	x > y
<	Less than	x < y
>=	Greater than or equal to	x >= y
<=	Less than or equal to	x <= y

3. Logic Operator

Logical operators are used to combine conditional statements:

Operator	Description	Example
and	Returns True if both statements are true	x < 5 and x < 10
or	Returns True if one of the statements is true	x < 5 or x < 4
not	Reverse the result, returns False if the result is true	not(x < 5 and x < 10)

4. Operator Precedence

Operator precedence describes the order in which operations are performed.

Example

Parentheses has the highest precedence, meaning that expressions inside parentheses must be evaluated first:

```
print((6 + 3) - (6 + 3))
```

Example

Multiplication * has higher precedence than addition +, and therefore multiplications are evaluated before additions:

```
print(100 + 5 * 3)
```

The precedence order is described in the table below, starting with the highest precedence at the top:

Operator	Description
`()`	Parentheses
`**`	Exponentiation
`+x` `-x` `~x`	Unary plus, unary minus, and bitwise NOT
`*` `/` `//` `%`	Multiplication, division, floor division, and modulus
`+` `-`	Addition and subtraction
`<<` `>>`	Bitwise left and right shifts
`&`	Bitwise AND
`^`	Bitwise XOR
`|`	Bitwise OR
`==` `!=` `>` `>=` `<` `<=` `is` `is not` `in` `not in`	Comparisons, identity, and membership operators
`not`	Logical NOT
`and`	AND
`or`	OR

If two operators have the same precedence, the expression is evaluated from left to right.

Example

Addition + and subtraction - has the same precedence, and therefore we evaluate the expression from left to right:

```
print(5 + 4 - 7 + 3)
```

5. Bitwise Operator

Bitwise operators are used to compare (binary) numbers:

Operator	Name	Description	Example
&	AND	Sets each bit to 1 if both bits are 1	x & y
|	OR	Sets each bit to 1 if one of two bits is 1	x | y
^	XOR	Sets each bit to 1 if only one of two bits is 1	x ^ y
~	NOT	Inverts all the bits	~x
<<	Zero fill left shift	Shift left by pushing zeros in from the right and let the leftmost bits fall off	x << 2
>>	Signed right shift	Shift right by pushing copies of the leftmost bit in from the left, and let the rightmost bits fall off	x >> 2