Discrete Structure Using Python

Exe_py_2

Definisikan Fungsi Boolean

Figure 1.2: The Nand function illustrated over 00, 01, 10, and 11

x	y	z
0	0	1
0	1	1
1	0	1
1	1	0

```
def nand(x,y):
    return 0 if (x & y) else 1

>> nand(0,0)
1
>> nand(1,1)
0
>> nand(0,1)
1
>> nand(1,0)
1
```

```
def nand(x,y):
    return {(0,0):1,
            (0,1):1,
            (1,0):1,
            (1,1):0}[(x,y)]

>> nand(0,0)
1
>> nand(1,1)
0
>> nand(0,1)
1
>> nand(1,0)
1
```

- Buat program dalam python yang berisi fungsi-fungsi gerbang Boolean pada gambar berikut →

  (contoh seperti di atas)
- Main program dapat memanggil semua fungsi

Constant 0

x	y	z
0	0	0
0	1	0
1	0	0
1	1	0

$z = x.y$ AND

x	y	z
0	0	0
0	1	0
1	0	0
1	1	1

$z = x.!y$

x	y	z
0	0	0
0	1	0
1	0	1
1	1	0

$z = x$

x	y	z
0	0	0
0	1	0
1	0	1
1	1	1

$z = !x.y$

x	y	z
0	0	0
0	1	1
1	0	0
1	1	0

$z = y$

x	y	z
0	0	0
0	1	1
1	0	0
1	1	1

$z = !x.y + x.!y$ XOR

x	y	z
0	0	0
0	1	1
1	0	1
1	1	0

$z = x + y$ OR

x	y	z
0	0	0
0	1	1
1	0	1
1	1	1

z = !(x+y) NOR

x	y	z
0	0	1
0	1	0
1	0	0
1	1	0

$z = xy + !x.!y$ XNOR or =

x	y	z
0	0	1
0	1	0
1	0	0
1	1	1

$z = !y$

x	y	z
0	0	1
0	1	0
1	0	1
1	1	0

$z = x + !y$

x	y	z
0	0	1
0	1	0
1	0	1
1	1	1

$z = !x$

x	y	z
0	0	1
0	1	1
1	0	0
1	1	0

$z = !x + y$ IMPLICATION

x	y	z
0	0	1
0	1	1
1	0	0
1	1	1

$z = !(x.y)$ NAND

x	y	z
0	0	1
0	1	1
1	0	1
1	1	0

Constant 1

x	y	z
0	0	1
0	1	1
1	0	1
1	1	1