Started on	Tuesday, 15 October 2024, 9:15 AM
State	Finished
Completed on	Tuesday, 15 October 2024, 11:38 AM
Time taken	2 hours 22 mins
Marks	94.44/102.00
Grade	**92.59** out of 100.00

Information

COMP101 Worksheet 2: Boolean Logic and Binary Notation

This worksheet is an online quiz. Complete all the questions.

You may make **multiple** attempts -- your **highest** grade will be taken.

You are strongly encouraged to complete the questions by working on pen and paper and then transferring your answers into the quiz interface. Please resist the temptation to use online converters or calculators, except to check your answers.

Most of the questions have a correct answer and will be graded automatically when you complete your attempt.

For questions which ask you to enter an 8-bit binary number, please ensure you enter your answer **without spaces** and **with leading 0s**. For example:

- `01101110` ✅
- `1101110` ❌
- `0110 1110` ❌

Question 1

Correct

Mark 2.00 out of 2.00

Convert **126** from decimal to 8-bit binary.

Answer: 01111110 ✔

The correct answer is: 01111110

Question 2

Correct

Mark 2.00 out of 2.00

Convert **225** from decimal to 8-bit binary.

Answer: 11100001 ✔

The correct answer is: 11100001

Question 3

Correct

Mark 2.00 out of 2.00

Convert **226** from decimal to 8-bit binary.

Answer: 11100010 ✔

The correct answer is: 11100010

Question 4

Correct

Mark 2.00 out of 2.00

Convert **243** from decimal to 8-bit binary.

Answer: 11110011 ✔

The correct answer is: 11110011

Question 5

Correct

Mark 2.00 out of 2.00

Convert **60** from decimal to 8-bit binary.

Answer: 00111100 ✔

The correct answer is: 00111100

Question 6

Correct

Mark 2.00 out of 2.00

Convert **01010111** from 8-bit binary to decimal.

Answer: 87 ✔

The correct answer is: 87

Question 7

Correct

Mark 2.00 out of 2.00

Convert **01001101** from 8-bit binary to decimal.

Answer: 77 ✔

The correct answer is: 77

Question 8

Correct

Mark 2.00 out of 2.00

Convert **01011100** from 8-bit binary to decimal.

Answer: 92 ✔

The correct answer is: 92

Question 9

Correct

Mark 2.00 out of 2.00

Convert **10111011** from 8-bit binary to decimal.

Answer: 187 ✔

The correct answer is: 187

Question 10

Correct

Mark 2.00 out of 2.00

Convert **10000001** from 8-bit binary to decimal.

Answer: 129 ✔

The correct answer is: 129

Question 11

Correct

Mark 4.00 out of 4.00

Calculating 67 + 105

Convert 67 to 8-bit binary: 01000011 ✔

Convert 105 to 8-bit binary: 01101001 ✔

Add these two numbers together: 10101100 ✔

Convert your answer from binary to decimal: 172 ✔

Question 12

Correct

Mark 4.00 out of 4.00

Calculating 90 + 24

Convert 90 to 8-bit binary: 01011010 ✔

Convert 24 to 8-bit binary: 00011000 ✔

Add these two numbers together: 01110010 ✔

Convert your answer from binary to decimal: 114 ✔

Question 13

Correct

Mark 4.00 out of 4.00

Calculating 98 + 91

Convert 98 to 8-bit binary: 01100010 ✔

Convert 91 to 8-bit binary: 01011011 ✔

Add these two numbers together: 10111101 ✔

Convert your answer from binary to decimal: 189 ✔

Question 14

Correct

Mark 4.00 out of 4.00

Calculating 49 + 14

Convert 49 to 8-bit binary: 00110001 ✔

Convert 14 to 8-bit binary: 00001110 ✔

Add these two numbers together: 00111111 ✔

Convert your answer from binary to decimal: 63 ✔

Question 15

Correct

Mark 4.00 out of 4.00

Calculating 21 + 7

Convert 21 to 8-bit binary: 00010101 ✔

Convert 7 to 8-bit binary: 00000111 ✔

Add these two numbers together: 00011100 ✔

Convert your answer from binary to decimal: 28 ✔

Question 16

Correct

Mark 5.00 out of 5.00

Complete the following truth table:

A	B	C	A and B and not C
False	False	False	False ✔
False	False	True	False ✔
False	True	False	False ✔
False	True	True	False ✔
True	False	False	False ✔
True	False	True	False ✔
True	True	False	True ✔
True	True	True	False ✔

Question 17

Correct

Mark 5.00 out of 5.00

Complete the following truth table:

A	B	C	A and not (B and not C)
False	False	False	False ✔
False	False	True	False ✔
False	True	False	False ✔
False	True	True	False ✔
True	False	False	True ✔
True	False	True	True ✔
True	True	False	False ✔
True	True	True	True ✔

Question 18

Partially correct

Mark 3.75 out of 5.00

Complete the following truth table:

A	B	C	(A or not B) and (A or C)
False	False	False	False ✔
False	False	True	False ✖
False	True	False	False ✔
False	True	True	False ✔
True	False	False	True ✔
True	False	True	True ✔
True	True	False	False ✖
True	True	True	True ✔

Question 19

Partially correct

Mark 4.69 out of 5.00

Complete the following truth table:

A	B	C	D	A and not (B or not C) and (not A and D)
False	False	False	False	False ✔
False	False	False	True	False ✔
False	False	True	False	False ✔
False	False	True	True	False ✔
False	True	False	False	False ✔
False	True	False	True	False ✔
False	True	True	False	False ✔
False	True	True	True	False ✔
True	False	False	False	False ✔
True	False	False	True	False ✔
True	False	True	False	False ✔
True	False	True	True	True ✖
True	True	False	False	False ✔
True	True	False	True	False ✔
True	True	True	False	False ✔
True	True	True	True	False ✔

Question 20

Correct

Mark 10.00 out of 10.00

Show that **not (A and B) = not A or not B** by completing the following truth table:

A	B	not (A and B)	not A or not B
False	False	True ✔	True ✔
False	True	True ✔	True ✔
True	False	True ✔	True ✔
True	True	False ✔	False ✔

Question 21

Complete

Not graded

Hence explain why the following two code snippets are equivalent:

```
if not (file_exists("a.txt") and file_exists("b.txt")):
    print("A required file is missing")


if not file_exists("a.txt") or not file_exists("b.txt"):
    print("A required file is missing")
```

they are the same because De Morgan's Law states they are.

Question 22

Incorrect

Mark 0.00 out of 1.00

Consider the following two code snippets:

```
if not (file_exists("a.txt") and file_exists("b.txt")):
    print("A required file is missing")


if not file_exists("a.txt") or not file_exists("b.txt"):
    print("A required file is missing")
```

Which of the following statements **are** correct?

a. These statements do not mean the same thing because the second expression means 'NOT (A OR NOT B)'.

b. These statements do not mean the same thing because there is only one way to express each Boolean condition.

c. These statements mean the same thing because the result of 'NOT(A AND B)' is the same as 'NOT A OR NOT B'.

d. These statements mean the same thing because 'AND' is equivalent to 'OR NOT' ✖

Your answer is incorrect.

The correct answer is: These statements mean the same thing because the result of 'NOT(A AND B)' is the same as 'NOT A OR NOT B'.

Question 23

Partially correct

Mark 5.00 out of 10.00

Show that **not (A or B) = not A and not B** by completing the following truth table:

A	B	not (A or B)	not A and not B
False	False	True ✔	True ✔
False	True	True ✖	True ✖
True	False	True ✖	True ✖
True	True	False ✔	False ✔

Question 24

Complete

Not graded

Hence explain why the following two code snippets are equivalent:

```
if x == 0 and y == 0:
    do_something()
else:
    print("Do nothing")
```

```
if x != 0 or y != 0:
    print("Do nothing")
else:
    do_something()
```

they are the same because De Morgan's law states that (and) and (not or) are the same

Question 25

Correct

Mark 1.00 out of 1.00

Consider the following two code snippets:

```
if x == 0 and y == 0:
    do_something()
else:
    print("Do nothing")
```

```
if x != 0 or y != 0:
    print("Do nothing")
else:
    do_something()
```

When are these two code snippets the **same**?

- a. These code snippets are always the same ✔
- b. If only 'x' or 'y' are 0 not both
- c. Both code snippets are never the same
- d. Only when both 'x' and 'y' are 0

Your answer is correct.

The correct answer is:
These code snippets are always the same

Question 26

Correct

Mark 10.00 out of 10.00

Show that **(A and B) or (A and C) = A and (B or C)** by completing the following truth table:

A	B	C	(A and B) or (A and C)	A and (B or C)
False	False	False	False ✔	False ✔
False	False	True	False ✔	False ✔
False	True	False	False ✔	False ✔
False	True	True	False ✔	False ✔
True	False	False	False ✔	False ✔
True	False	True	True ✔	True ✔
True	True	False	True ✔	True ✔
True	True	True	True ✔	True ✔

Question 27

Complete

Not graded

Hence explain why the following two code snippets are equivalent:

```
if (type(x) == int and x > 7) or (type(x) == float and x > 7):
    print("Hello")
```

```
if (type(x) == int or type(x) == float) and x > 7:
    print("Hello")
```

they are the same because the distributive law states that they are the same.

Question 28

Correct

Mark 10.00 out of 10.00

Show that **(A or B) and (A or C) = A or (B and C)** by completing the following truth table:

A	B	C	(A or B) and (A or C)	A or (B and C)
False	False	False	False ✔	False ✔
False	False	True	False ✔	False ✔
False	True	False	False ✔	False ✔
False	True	True	True ✔	True ✔
True	False	False	True ✔	True ✔
True	False	True	True ✔	True ✔
True	True	False	True ✔	True ✔
True	True	True	True ✔	True ✔

Question 29

Complete

Not graded

Hence explain why the following two code snippets are equivalent:

```
if x > 10 or (x > 0 and y > 0):
    do_something()
```

```
if x > 0 and (x > 10 or y > 0):
    do_something()
```

they are the same because distributive law says they are.

◄ Worksheet 2 Brief

Jump to...

Worksheet 2 Template Repo ►