

```
/Library/Java/JavaVirtualMachines/jdk-13.0.1.jdk/Contents/Home/bin/java "-javaagent:/Applications/IntelliJ
IDEA CE.app/Contents/lib/idea_rt.jar=57187:/Applications/IntelliJ IDEA CE.app/Contents/bin" -
Dfile.encoding=UTF-8 -classpath /Users/lanshunfang/Documents/NEU-Classes-Courses/JAVA/alg-
hw/out/production/alg-hw org.neu.alg.hw.hw4.TruthTable
```

TruthTable.java Starts

-----Truth table of 1 inputs function -----

0

1

[INFO] The Truth Table Length is 2

Cpu time for n = 1 is 0.001069146 seconds

-----Truth table of 2 inputs function -----

00

01

10

11

[INFO] The Truth Table Length is 4

Cpu time for n = 2 is 2.06975E-4 seconds

-----Truth table of 3 inputs function -----

000

001

010

011

100

101

110

111

[INFO] The Truth Table Length is 8

Cpu time for n = 3 is 3.39283E-4 seconds

-----Truth table of 4 inputs function -----

0000

0001

0010

0011

0100

0101

0110

0111

1000

1001

1010

1011

1100

1101

1110

1111

[INFO] The Truth Table Length is 16

Cpu time for n = 4 is 0.001693522 seconds

-----Truth table of 5 inputs function -----

00000

00001

00010

00011

00100

00101

00110

00111

01000

01001

01010

01011

01100

01101

01110

01111

10000

10001

10010

10011

10100

10101

10110

10111

11000

11001

11010

11011

11100

11101

11110

11111

[INFO] The Truth Table Length is 32

Cpu time for n = 5 is 0.001839631 seconds

-----Truth table of 6 inputs function -----

000000

000001

000010

000011

000100

000101

000110

000111

001000

001001

001010

001011

001100

001101

001110

001111

010000

010001

010010

010011

010100

010101

010110

010111

011000

011001

011010

011011

011100

011101

011110

011111

100000

100001

100010

100011

100100

100101

100110

100111

101000
101001
101010
101011
101100
101101
101110
101111
110000
110001
110010
110011
110100
110101
110110
110111
111000
111001
111010
111011
111100
111101
111110
111111

[INFO] The Truth Table Length is 64

Cpu time for n = 6 is 0.004411508000000001 seconds

-----Truth table of 7 inputs function -----

0000000
0000001
0000010
0000011
0000100
0000101
0000110
0000111
0001000
0001001
0001010
0001011
0001100
0001101

0001110
0001111
0010000
0010001
0010010
0010011
0010100
0010101
0010110
0010111
0011000
0011001
0011010
0011011
0011100
0011101
0011110
0011111
0100000
0100001
0100010
0100011
0100100
0100101
0100110
0100111
0101000
0101001
0101010
0101011
0101100
0101101
0101110
0101111
0110000
0110001
0110010
0110011
0110100
0110101
0110110

0110111
0111000
0111001
0111010
0111011
0111100
0111101
0111110
0111111
1000000
1000001
1000010
1000011
1000100
1000101
1000110
1000111
1001000
1001001
1001010
1001011
1001100
1001101
1001110
1001111
1010000
1010001
1010010
1010011
1010100
1010101
1010110
1010111
1011000
1011001
1011010
1011011
1011100
1011101
1011110
1011111

1100000
1100001
1100010
1100011
1100100
1100101
1100110
1100111
1101000
1101001
1101010
1101011
1101100
1101101
1101110
1101111
1110000
1110001
1110010
1110011
1110100
1110101
1110110
1110111
1111000
1111001
1111010
1111011
1111100
1111101
1111110
1111111

[INFO] The Truth Table Length is 128

Cpu time for n = 7 is 0.004726923 seconds

-----Truth table of 8 inputs function -----

00000000
00000001
00000010
00000011
00000100
00000101

00000110
00000111
00001000
00001001
00001010
00001011
00001100
00001101
00001110
00001111
00010000
00010001
00010010
00010011
00010100
00010101
00010110
00010111
00011000
00011001
00011010
00011011
00011100
00011101
00011110
00011111
00100000
00100001
00100010
00100011
00100100
00100101
00100110
00100111
00101000
00101001
00101010
00101011
00101100
00101101
00101110

00101111
00110000
00110001
00110010
00110011
00110100
00110101
00110110
00110111
00111000
00111001
00111010
00111011
00111100
00111101
00111110
00111111
01000000
01000001
01000010
01000011
01000100
01000101
01000110
01000111
01001000
01001001
01001010
01001011
01001100
01001101
01001110
01001111
01010000
01010001
01010010
01010011
01010100
01010101
01010110
01010111

01011000
01011001
01011010
01011011
01011100
01011101
01011110
01011111
01100000
01100001
01100010
01100011
01100100
01100101
01100110
01100111
01101000
01101001
01101010
01101011
01101100
01101101
01101110
01101111
01110000
01110001
01110010
01110011
01110100
01110101
01110110
01110111
01111000
01111001
01111010
01111011
01111100
01111101
01111110
01111111
10000000

10000001
10000010
10000011
10000100
10000101
10000110
10000111
10001000
10001001
10001010
10001011
10001100
10001101
10001110
10001111
10010000
10010001
10010010
10010011
10010100
10010101
10010110
10010111
10011000
10011001
10011010
10011011
10011100
10011101
10011110
10011111
10100000
10100001
10100010
10100011
10100100
10100101
10100110
10100111
10101000
10101001

10101010
10101011
10101100
10101101
10101110
10101111
10110000
10110001
10110010
10110011
10110100
10110101
10110110
10110111
10111000
10111001
10111010
10111011
10111100
10111101
10111110
10111111
11000000
11000001
11000010
11000011
11000100
11000101
11000110
11000111
11001000
11001001
11001010
11001011
11001100
11001101
11001110
11001111
11010000
11010001
11010010

11010011
11010100
11010101
11010110
11010111
11011000
11011001
11011010
11011011
11011100
11011101
11011110
11011111
11100000
11100001
11100010
11100011
11100100
11100101
11100110
11100111
11101000
11101001
11101010
11101011
11101100
11101101
11101110
11101111
11110000
11110001
11110010
11110011
11110100
11110101
11110110
11110111
11111000
11111001
11111010
11111011

11111100

11111101

11111110

11111111

[INFO] The Truth Table Length is 256

Cpu time for n = 8 is 0.010803232 seconds

-----Truth table of 9 inputs function -----

000000000

000000001

000000010

000000011

000000100

000000101

000000110

000000111

000001000

000001001

000001010

000001011

000001100

000001101

000001110

000001111

000010000

000010001

000010010

000010011

000010100

000010101

000010110

000010111

000011000

000011001

000011010

000011011

000011100

000011101

000011110

000011111

000100000

000100001

000100010
000100011
000100100
000100101
000100110
000100111
000101000
000101001
000101010
000101011
000101100
000101101
000101110
000101111
000110000
000110001
000110010
000110011
000110100
000110101
000110110
000110111
000111000
000111001
000111010
000111011
000111100
000111101
000111110
000111111
001000000
001000001
001000010
001000011
001000100
001000101
001000110
001000111
001001000
001001001
001001010

001001011
001001100
001001101
001001110
001001111
001010000
001010001
001010010
001010011
001010100
001010101
001010110
001010111
001011000
001011001
001011010
001011011
001011100
001011101
001011110
001011111
001100000
001100001
001100010
001100011
001100100
001100101
001100110
001100111
001101000
001101001
001101010
001101011
001101100
001101101
001101110
001101111
001110000
001110001
001110010
001110011

001110100
001110101
001110110
001110111
001111000
001111001
001111010
001111011
001111100
001111101
001111110
001111111
010000000
010000001
010000010
010000011
010000100
010000101
010000110
010000111
010001000
010001001
010001010
010001011
010001100
010001101
010001110
010001111
010010000
010010001
010010010
010010011
010010100
010010101
010010110
010010111
010011000
010011001
010011010
010011011
010011100

010011101
010011110
010011111
010100000
010100001
010100010
010100011
010100100
010100101
010100110
010100111
010101000
010101001
010101010
010101011
010101100
010101101
010101110
010101111
010110000
010110001
010110010
010110011
010110100
010110101
010110110
010110111
010111000
010111001
010111010
010111011
010111100
010111101
010111110
010111111
011000000
011000001
011000010
011000011
011000100
011000101

011000110
011000111
011001000
011001001
011001010
011001011
011001100
011001101
011001110
011001111
011010000
011010001
011010010
011010011
011010100
011010101
011010110
011010111
011011000
011011001
011011010
011011011
011011100
011011101
011011110
011011111
011100000
011100001
011100010
011100011
011100100
011100101
011100110
011100111
011101000
011101001
011101010
011101011
011101100
011101101
011101110

011101111
011110000
011110001
011110010
011110011
011110100
011110101
011110110
011110111
011111000
011111001
011111010
011111011
011111100
011111101
011111110
011111111
100000000
100000001
100000010
100000011
100000100
100000101
100000110
100000111
100001000
100001001
100001010
100001011
100001100
100001101
100001110
100001111
100010000
100010001
100010010
100010011
100010100
100010101
100010110
100010111

100011000
100011001
100011010
100011011
100011100
100011101
100011110
100011111
100100000
100100001
100100010
100100011
100100100
100100101
100100110
100100111
100101000
100101001
100101010
100101011
100101100
100101101
100101110
100101111
100110000
100110001
100110010
100110011
100110100
100110101
100110110
100110111
100111000
100111001
100111010
100111011
100111100
100111101
100111110
100111111
101000000

101000001
101000010
101000011
101000100
101000101
101000110
101000111
101001000
101001001
101001010
101001011
101001100
101001101
101001110
101001111
101010000
101010001
101010010
101010011
101010100
101010101
101010110
101010111
101011000
101011001
101011010
101011011
101011100
101011101
101011110
101011111
101100000
101100001
101100010
101100011
101100100
101100101
101100110
101100111
101101000
101101001

101101010
101101011
101101100
101101101
101101110
101101111
101110000
101110001
101110010
101110011
101110100
101110101
101110110
101110111
101111000
101111001
101111010
101111011
101111100
101111101
101111110
101111111
110000000
110000001
110000010
110000011
110000100
110000101
110000110
110000111
110001000
110001001
110001010
110001011
110001100
110001101
110001110
110001111
110010000
110010001
110010010

110010011
110010100
110010101
110010110
110010111
110011000
110011001
110011010
110011011
110011100
110011101
110011110
110011111
110100000
110100001
110100010
110100011
110100100
110100101
110100110
110100111
110101000
110101001
110101010
110101011
110101100
110101101
110101110
110101111
110110000
110110001
110110010
110110011
110110100
110110101
110110110
110110111
110111000
110111001
110111010
110111011

110111100
110111101
110111110
110111111
111000000
111000001
111000010
111000011
111000100
111000101
111000110
111000111
111001000
111001001
111001010
111001011
111001100
111001101
111001110
111001111
111010000
111010001
111010010
111010011
111010100
111010101
111010110
111010111
111011000
111011001
111011010
111011011
111011100
111011101
111011110
111011111
111100000
111100001
111100010
111100011
111100100

111100101
111100110
111100111
111101000
111101001
111101010
111101011
111101100
111101101
111101110
111101111
111110000
111110001
111110010
111110011
111110100
111110101
111110110
111110111
111111000
111111001
111111010
111111011
111111100
111111101
111111110
111111111

[INFO] The Truth Table Length is 512

Cpu time for n = 9 is 0.011217763 seconds

-----Truth table of 10 inputs function -----

0000000000
0000000001
0000000010
0000000011
0000000100
0000000101
0000000110
0000000111
0000001000
0000001001
0000001010

0000001011
0000001100
0000001101
0000001110
0000001111
0000010000
0000010001
0000010010
0000010011
0000010100
0000010101
0000010110
0000010111
0000011000
0000011001
0000011010
0000011011
0000011100
0000011101
0000011110
0000011111
0000100000
0000100001
0000100010
0000100011
0000100100
0000100101
0000100110
0000100111
0000101000
0000101001
0000101010
0000101011
0000101100
0000101101
0000101110
0000101111
0000110000
0000110001
0000110010
0000110011

0000110100
0000110101
0000110110
0000110111
0000111000
0000111001
0000111010
0000111011
0000111100
0000111101
0000111110
0000111111
0001000000
0001000001
0001000010
0001000011
0001000100
0001000101
0001000110
0001000111
0001001000
0001001001
0001001010
0001001011
0001001100
0001001101
0001001110
0001001111
0001010000
0001010001
0001010010
0001010011
0001010100
0001010101
0001010110
0001010111
0001011000
0001011001
0001011010
0001011011
0001011100

0001011101
0001011110
0001011111
0001100000
0001100001
0001100010
0001100011
0001100100
0001100101
0001100110
0001100111
0001101000
0001101001
0001101010
0001101011
0001101100
0001101101
0001101110
0001101111
0001110000
0001110001
0001110010
0001110011
0001110100
0001110101
0001110110
0001110111
0001111000
0001111001
0001111010
0001111011
0001111100
0001111101
0001111110
0001111111
0010000000
0010000001
0010000010
0010000011
0010000100
0010000101

0010000110
0010000111
0010001000
0010001001
0010001010
0010001011
0010001100
0010001101
0010001110
0010001111
0010010000
0010010001
0010010010
0010010011
0010010100
0010010101
0010010110
0010010111
0010011000
0010011001
0010011010
0010011011
0010011100
0010011101
0010011110
0010011111
0010100000
0010100001
0010100010
0010100011
0010100100
0010100101
0010100110
0010100111
0010101000
0010101001
0010101010
0010101011
0010101100
0010101101
0010101110

0010101111
0010110000
0010110001
0010110010
0010110011
0010110100
0010110101
0010110110
0010110111
0010111000
0010111001
0010111010
0010111011
0010111100
0010111101
0010111110
0010111111
0011000000
0011000001
0011000010
0011000011
0011000100
0011000101
0011000110
0011000111
0011001000
0011001001
0011001010
0011001011
0011001100
0011001101
0011001110
0011001111
0011010000
0011010001
0011010010
0011010011
0011010100
0011010101
0011010110
0011010111

0011011000
0011011001
0011011010
0011011011
0011011100
0011011101
0011011110
0011011111
0011100000
0011100001
0011100010
0011100011
0011100100
0011100101
0011100110
0011100111
0011101000
0011101001
0011101010
0011101011
0011101100
0011101101
0011101110
0011101111
0011110000
0011110001
0011110010
0011110011
0011110100
0011110101
0011110110
0011110111
0011111000
0011111001
0011111010
0011111011
0011111100
0011111101
0011111110
0011111111
0100000000

0100000001
0100000010
0100000011
0100000100
0100000101
0100000110
0100000111
0100001000
0100001001
0100001010
0100001011
0100001100
0100001101
0100001110
0100001111
0100010000
0100010001
0100010010
0100010011
0100010100
0100010101
0100010110
0100010111
0100011000
0100011001
0100011010
0100011011
0100011100
0100011101
0100011110
0100011111
0100100000
0100100001
0100100010
0100100011
0100100100
0100100101
0100100110
0100100111
0100101000
0100101001

0100101010
0100101011
0100101100
0100101101
0100101110
0100101111
0100110000
0100110001
0100110010
0100110011
0100110100
0100110101
0100110110
0100110111
0100111000
0100111001
0100111010
0100111011
0100111100
0100111101
0100111110
0100111111
0101000000
0101000001
0101000010
0101000011
0101000100
0101000101
0101000110
0101000111
0101001000
0101001001
0101001010
0101001011
0101001100
0101001101
0101001110
0101001111
0101010000
0101010001
0101010010

0101010011
0101010100
0101010101
0101010110
0101010111
0101011000
0101011001
0101011010
0101011011
0101011100
0101011101
0101011110
0101011111
0101100000
0101100001
0101100010
0101100011
0101100100
0101100101
0101100110
0101100111
0101101000
0101101001
0101101010
0101101011
0101101100
0101101101
0101101110
0101101111
0101110000
0101110001
0101110010
0101110011
0101110100
0101110101
0101110110
0101110111
0101111000
0101111001
0101111010
0101111011

0101111100
0101111101
0101111110
0101111111
0110000000
0110000001
0110000010
0110000011
0110000100
0110000101
0110000110
0110000111
0110001000
0110001001
0110001010
0110001011
0110001100
0110001101
0110001110
0110001111
0110010000
0110010001
0110010010
0110010011
0110010100
0110010101
0110010110
0110010111
0110011000
0110011001
0110011010
0110011011
0110011100
0110011101
0110011110
0110011111
0110100000
0110100001
0110100010
0110100011
0110100100

0110100101
0110100110
0110100111
0110101000
0110101001
0110101010
0110101011
0110101100
0110101101
0110101110
0110101111
0110110000
0110110001
0110110010
0110110011
0110110100
0110110101
0110110110
0110110111
0110111000
0110111001
0110111010
0110111011
0110111100
0110111101
0110111110
0110111111
0111000000
0111000001
0111000010
0111000011
0111000100
0111000101
0111000110
0111000111
0111001000
0111001001
0111001010
0111001011
0111001100
0111001101

0111001110
0111001111
0111010000
0111010001
0111010010
0111010011
0111010100
0111010101
0111010110
0111010111
0111011000
0111011001
0111011010
0111011011
0111011100
0111011101
0111011110
0111011111
0111100000
0111100001
0111100010
0111100011
0111100100
0111100101
0111100110
0111100111
0111101000
0111101001
0111101010
0111101011
0111101100
0111101101
0111101110
0111101111
0111110000
0111110001
0111110010
0111110011
0111110100
0111110101
0111110110

0111110111
0111111000
0111111001
0111111010
0111111011
0111111100
0111111101
0111111110
0111111111
1000000000
1000000001
1000000010
1000000011
1000000100
1000000101
1000000110
1000000111
1000001000
1000001001
1000001010
1000001011
1000001100
1000001101
1000001110
1000001111
1000010000
1000010001
1000010010
1000010011
1000010100
1000010101
1000010110
1000010111
1000011000
1000011001
1000011010
1000011011
1000011100
1000011101
1000011110
1000011111

1000100000
1000100001
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[INFO] The Truth Table Length is 1024

Cpu time for n = 10 is 0.032944006000000005 seconds

-----Truth table of 11 inputs function -----

[INFO] The Truth Table Length is 2048

Cpu time for n = 11 is 1.8106600000000002E-4 seconds

-----Truth table of 12 inputs function -----

[INFO] The Truth Table Length is 4096

Cpu time for n = 12 is 3.03889E-4 seconds

-----Truth table of 13 inputs function -----

[INFO] The Truth Table Length is 8192

Cpu time for n = 13 is 5.24496E-4 seconds

-----Truth table of 14 inputs function -----

[INFO] The Truth Table Length is 16384
Cpu time for n = 14 is 0.001291167 seconds
-----Truth table of 15 inputs function -----
[INFO] The Truth Table Length is 32768
Cpu time for n = 15 is 0.001982102 seconds
-----Truth table of 16 inputs function -----
[INFO] The Truth Table Length is 65536
Cpu time for n = 16 is 0.003670616 seconds
-----Truth table of 17 inputs function -----
[INFO] The Truth Table Length is 131072
Cpu time for n = 17 is 0.005009007 seconds
-----Truth table of 18 inputs function -----
[INFO] The Truth Table Length is 262144
Cpu time for n = 18 is 0.012641482999999998 seconds
-----Truth table of 19 inputs function -----
[INFO] The Truth Table Length is 524288
Cpu time for n = 19 is 0.014005898999999999 seconds
-----Truth table of 20 inputs function -----
[INFO] The Truth Table Length is 1048576
Cpu time for n = 20 is 0.01589104 seconds
-----Truth table of 21 inputs function -----
[INFO] The Truth Table Length is 2097152
Cpu time for n = 21 is 0.016775932 seconds
-----Truth table of 22 inputs function -----
[INFO] The Truth Table Length is 4194304
Cpu time for n = 22 is 0.079451291 seconds
-----Truth table of 23 inputs function -----
[INFO] The Truth Table Length is 8388608
Cpu time for n = 23 is 0.128645272 seconds
-----Truth table of 24 inputs function -----
[INFO] The Truth Table Length is 16777216
Cpu time for n = 24 is 0.246454288 seconds
-----Truth table of 25 inputs function -----
[INFO] The Truth Table Length is 33554432
Cpu time for n = 25 is 0.525410935 seconds
-----Truth table of 26 inputs function -----
[INFO] The Truth Table Length is 67108864
Cpu time for n = 26 is 0.5887623160000001 seconds
-----Truth table of 27 inputs function -----
[INFO] The Truth Table Length is 134217728
Cpu time for n = 27 is 2.0404594879999998 seconds

-----Truth table of 28 inputs function -----

[INFO] The Truth Table Length is 268435456

Cpu time for n = 28 is 3.3077E-5 seconds

-----Truth table of 29 inputs function -----

[INFO] The Truth Table Length is 536870912

Cpu time for n = 29 is 139.636276519 seconds

-----Truth table of 30 inputs function -----

[INFO] The Truth Table Length is 1073741824

Cpu time for n = 30 is 425.353947004 seconds

YOU CANNOT USE BigInteger class

Must use only basic java to solve this problem

Attach TruthTable.java and output of this program as a pdf file for full grade

TruthTable.java ends

Process finished with exit code 0