

Binary Representation

Binary Representation

- Tables for 4bit integers:

bin	uint
0000	
0001	
0010	
0011	
0100	
0101	
0110	
0111	

Binary Representation

- Tables for 4bit integers:

bin	uint
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7

Binary Representation

- Tables for 4bit integers:

bin	uint
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7

bin	uint
1000	
1001	
1010	
1011	
1100	
1101	
1110	
1111	

Binary Representation

- Tables for 4bit integers:

bin	uint
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7

bin	uint
1000	8
1001	9
1010	10
1011	11
1100	12
1101	13
1110	14
1111	15

Binary Representation

- Tables for 4bit integers:

bin	uint	int
0000	0	
0001	1	
0010	2	
0011	3	
0100	4	
0101	5	
0110	6	
0111	7	

bin	uint
1000	8
1001	9
1010	10
1011	11
1100	12
1101	13
1110	14
1111	15

Binary Representation

- Tables for 4bit integers:

bin	uint	int
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7

bin	uint
1000	8
1001	9
1010	10
1011	11
1100	12
1101	13
1110	14
1111	15

Binary Representation

- Tables for 4bit integers:

bin	uint	int
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7

bin	uint	int
1000	8	
1001	9	
1010	10	
1011	11	
1100	12	
1101	13	
1110	14	
1111	15	

Binary Representation

- Tables for 4bit integers:

bin	uint	int
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7

bin	uint	int
1000	8	-8
1001	9	-7
1010	10	-6
1011	11	-5
1100	12	-4
1101	13	-3
1110	14	-2
1111	15	-1

Hexadecimal Representation

Hexadecimal Representation

- The hexadecimal digits...

hexadec	decimal	bin
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111

hexadec	decimal	bin
8	8	1000
9	9	1001
a	10	1010
b	11	1011
c	12	1100
d	13	1101
e	14	1110
f	15	1111

Hexadecimal Representation

- ... and how to count them.

hexadecimal: 0

decimal: 0

Hexadecimal Representation

- ... and how to count them.

hexadecimal: **0** **1**

decimal: 0 1

Hexadecimal Representation

- ... and how to count them.

hexadecimal: **0** **1** **2**

decimal: 0 1 2

Hexadecimal Representation

- ... and how to count them.

hexadecimal: **0** **1** **2** **3**

decimal: 0 1 2 3

Hexadecimal Representation

- ... and how to count them.

hexadecimal: **0** **1** **2** **3** **4**

decimal: 0 1 2 3 4

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5
decimal:	0	1	2	3	4	5

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6
decimal:	0	1	2	3	4	5	6

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7
decimal:	0	1	2	3	4	5	6	7

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8
decimal:	0	1	2	3	4	5	6	7	8

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9
decimal:	0	1	2	3	4	5	6	7	8	9

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a
decimal:	0	1	2	3	4	5	6	7	8	9	10

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b
decimal:	0	1	2	3	4	5	6	7	8	9	10	11

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal: **14**

decimal: 20

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15
decimal:	20	21

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16
decimal:	20	21	22

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17
decimal:	20	21	22	23

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18
decimal:	20	21	22	23	24

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19
decimal:	20	21	22	23	24	25

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a
decimal:	20	21	22	23	24	25	26

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b
decimal:	20	21	22	23	24	25	26	27

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c
decimal:	20	21	22	23	24	25	26	27	28

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d
decimal:	20	21	22	23	24	25	26	27	28	29

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e
decimal:	20	21	22	23	24	25	26	27	28	29	30

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f
decimal:	20	21	22	23	24	25	26	27	28	29	30	31

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f	20
decimal:	20	21	22	23	24	25	26	27	28	29	30	31	32

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f	20	21
decimal:	20	21	22	23	24	25	26	27	28	29	30	31	32	33

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f	20	21	22
decimal:	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f	20	21	22	23
decimal:	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f	20	21	22	23	24
decimal:	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f	20	21	22	23	24	25
decimal:	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f	20	21	22	23	24	25	26
decimal:	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38

Hexadecimal Representation

- ... and how to count them.

hexadecimal:	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	10	11	12	13
decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

hexadecimal:	14	15	16	17	18	19	1a	1b	1c	1d	1e	1f	20	21	22	23	24	25	26	...
decimal:	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	...