

Worksheet: Algorithms and Flowcharts 1

ASCII Character Set (0x20-0x7F)

hex	char	hex	char	hex	char	hex	char	hex	char	hex	char
20	space	30	0	40	@	50	P	60	`	70	p
21	!	31	1	41	A	51	Q	61	a	71	q
22	"	32	2	42	B	52	R	62	b	72	r
23	#	33	3	43	C	53	S	63	c	73	s
24	\$	34	4	44	D	54	T	64	d	74	t
25	%	35	5	45	E	55	U	65	e	75	u
26	&	36	6	46	F	56	V	66	f	76	v
27	'	37	7	47	G	57	W	67	g	77	w
28	(	38	8	48	H	58	X	68	h	78	x
29	)	39	9	49	I	59	Y	69	i	79	y
2A	*	3A	:	4A	J	5A	Z	6A	j	7A	z
2B	+	3B	;	4B	K	5B	[	6B	k	7B	{
2C	,	3C	<	4C	L	5C	\	6C	l	7C	
2D	-	3D	=	4D	M	5D	]	6D	m	7D	}
2E	.	3E	>	4E	N	5E	^	6E	n	7E	~
2F	/	3F	?	4F	O	5F	_	6F	o	7F	delete

1. Complete the table below by converting between the representations of the data.

	ASCII	Hexadecimal	Binary
a)	S	0x53	0101 0011
b)	m	0x6D	0110 1101
c)	i	0x69	0110 1001
d)	l	0x6C	0110 1100

	ASCII	Hexadecimal	Binary
e)	e	0x65	0110 0101
f)	:	0x3A	0011 1010
g)	~	0x7E	0111 1110
h)	)	0x29	0010 1001

2. Perform the binary calculation, then for each row, convert to hexadecimal and decimal.

a)

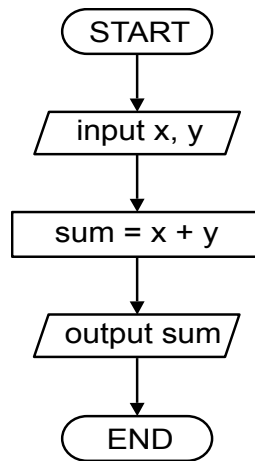
binary	hexadecimal	decimal
1 1 1 0	0x E	14
+ 1 0 1 1	+ 0x B	+ 11
1 1 0 0 1	0x 19	25

b)

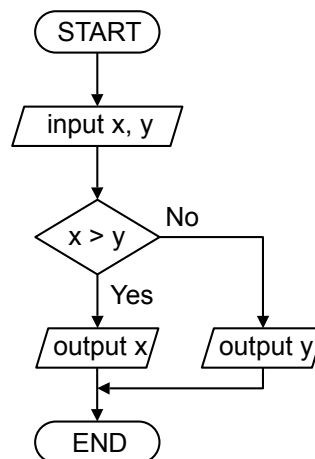
binary	hexadecimal	decimal
1 1 1 0	0x E	14
× 1 1 0	0x 6	06
0 0 0 0	0x 00	
1 1 1 0 0	0x 1C	
1 1 1 0 0 0	0x 38	
1 0 1 0 1 0 0	0x 54	84

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3. Draw a **flowchart** that represents an algorithm that takes two numbers as inputs (call them x , y), and outputs the sum of those two numbers.



4. Draw a flowchart that represents an algorithm that inputs two numbers (call them x , and y), and outputs the largest of those two numbers.



Worksheet: Algorithms and Flowcharts 1**ASCII Character Set (0x20-0x7F)**

hex	char	hex	char	hex	char	hex	char	hex	char	hex	char
20	space	30	0	40	@	50	P	60	`	70	p
21	!	31	1	41	A	51	Q	61	a	71	q
22	"	32	2	42	B	52	R	62	b	72	r
23	#	33	3	43	C	53	S	63	c	73	s
24	\$	34	4	44	D	54	T	64	d	74	t
25	%	35	5	45	E	55	U	65	e	75	u
26	&	36	6	46	F	56	V	66	f	76	v
27	'	37	7	47	G	57	W	67	g	77	w
28	(	38	8	48	H	58	X	68	h	78	x
29	)	39	9	49	I	59	Y	69	i	79	y
2A	*	3A	:	4A	J	5A	Z	6A	j	7A	z
2B	+	3B	;	4B	K	5B	[	6B	k	7B	{
2C	,	3C	<	4C	L	5C	\	6C	l	7C	
2D	-	3D	=	4D	M	5D	]	6D	m	7D	}
2E	.	3E	>	4E	N	5E	^	6E	n	7E	~
2F	/	3F	?	4F	O	5F	_	6F	o	7F	delete

1. Complete the table below by converting between the representations of the data:

	ASCII	Hexadecimal	Binary
a)	S	0x53	0101 0011
b)	u	0x75	0111 0101
c)	p	0x70	0111 0000
d)	e	0x65	0110 0101

	ASCII	Hexadecimal	Binary
e)	r	0x72	0111 0010
f)	:	0x3A	0011 1010
g)	-	0x2D	0010 1101
h)	}	0x7D	0111 1101

2. Perform the binary calculation, then for each row, convert to hexadecimal and decimal:

a)

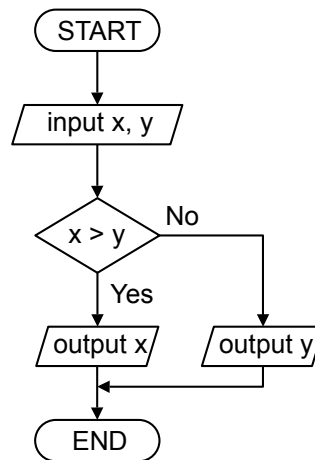
binary	hexadecimal	decimal
1 1 0 1	→ 0x D	→ 13
+ 1 1 1 0	→ + 0x E	→ + 14
<u>1 1 0 1 1</u>	→ 0x 1B	→ 27

b)

binary	hexadecimal	decimal
1 1 1 0	→ 0x E	→ 14
× 1 0 1	→ 0x 5	→ 5
<u>1 1 1 0</u>	→ 0x 0E	
<u>0 0 0 0 0</u>	→ 0x 00	
<u>1 1 1 0 0 0</u>	→ 0x 38	
<u>1 0 0 0 1 1 0</u>	→ 0x 46	→ 70

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3. Draw a flowchart that represents an algorithm that inputs two numbers (call them x , and y), and outputs the largest of those two numbers.



4. Draw a **flowchart** that represents an algorithm that takes two numbers as inputs (call them x , y), and outputs the sum of those two numbers.

