



NEWS Cyber Security

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Crypto 101 Showing the work

As we all know, computers only understand numbers. In order for computers to communicate with humans, a conversion between characters and numbers has to be created.

Established in 1963, the first edition of the American Standard Code for Information Interchange (ASCII) was invented. After years of refinement, the current ASCII chart was created. It is still used today. This brings us to the good part: Crypto Challenge review.

ASCII TABLE											
Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char
0	0	[NULL]	32	20	[SPACE]	64	40	@	96	60	`
1	1	[START OF HEADING]	33	21	!	65	41	A	97	61	a
2	2	[START OF TEXT]	34	22	"	66	42	B	98	62	b
3	3	[END OF TEXT]	35	23	#	67	43	C	99	63	c
4	4	[END OF TRANSMISSION]	36	24	\$	68	44	D	100	64	d
5	5	[ENQUIRY]	37	25	%	69	45	E	101	65	e
6	6	[ACKNOWLEDGE]	38	26	&	70	46	F	102	66	f
7	7	[BELL]	39	27	'	71	47	G	103	67	g
8	8	[BACKSPACE]	40	28	(	72	48	H	104	68	h
9	9	[HORIZONTAL TAB]	41	29	)	73	49	I	105	69	i
10	A	[LINE FEED]	42	2A	*	74	4A	J	106	6A	j
11	B	[VERTICAL TAB]	43	2B	+	75	4B	K	107	6B	k
12	C	[FORM FEED]	44	2C	,	76	4C	L	108	6C	l
13	D	[CARRIAGE RETURN]	45	2D	-	77	4D	M	109	6D	m
14	E	[SHIFT OUT]	46	2E	.	78	4E	N	110	6E	n
15	F	[SHIFT IN]	47	2F	/	79	4F	O	111	6F	o
16	10	[DATA LINK ESCAPE]	48	30	0	80	50	P	112	70	p
17	11	[DEVICE CONTROL 1]	49	31	1	81	51	Q	113	71	q
18	12	[DEVICE CONTROL 2]	50	32	2	82	52	R	114	72	r
19	13	[DEVICE CONTROL 3]	51	33	3	83	53	S	115	73	s
20	14	[DEVICE CONTROL 4]	52	34	4	84	54	T	116	74	t
21	15	[NEGATIVE ACKNOWLEDGE]	53	35	5	85	55	U	117	75	u
22	16	[SYNCHRONOUS IDLE]	54	36	6	86	56	V	118	76	v
23	17	[ENG OF TRANS. BLOCK]	55	37	7	87	57	W	119	77	w
24	18	[CANCEL]	56	38	8	88	58	X	120	78	x
25	19	[END OF MEDIUM]	57	39	9	89	59	Y	121	79	y
26	1A	[SUBSTITUTE]	58	3A	:	90	5A	Z	122	7A	z
27	1B	[ESCAPE]	59	3B	;	91	5B	[	123	7B	{
28	1C	[FILE SEPARATOR]	60	3C	<	92	5C	\	124	7C	|
29	1D	[GROUP SEPARATOR]	61	3D	=	93	5D	]	125	7D	}
30	1E	[RECORD SEPARATOR]	62	3E	>	94	5E	^	126	7E	~
31	1F	[UNIT SEPARATOR]	63	3F	?	95	5F	_	127	7F	[DEL]

How to encode using ASCII:

Example text: **DPS**

Text | ASCII

D = 068

P = 080

S = 083

Final ASCII value = **068 080 083**

Crypto challenge 4.0 is a "simple" **Text >> ASCII** conversion. Using this chart, the message can be encoded and decoded. (Note: ASCII is 'case' sensitive and has different codes for upper and lower case characters.) You can use this table to decode last month's challenge. Tell me what you find!

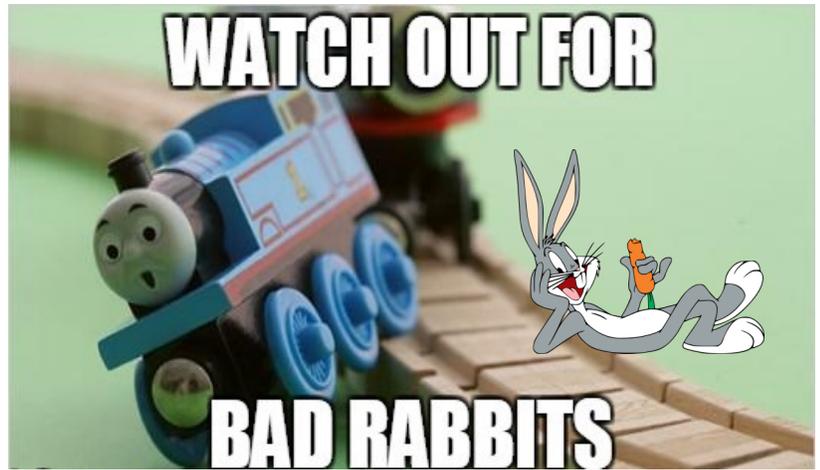
Want more tech? Read more about ASCII [here](#).

New Wave of Data-encrypting

Malware Hits Russia and Ukraine

A new, potentially virulent wave of data-encrypting malware is sweeping through Eastern Europe and has left a wake of outages at news agencies, train stations, and airports, according to multiple security companies.

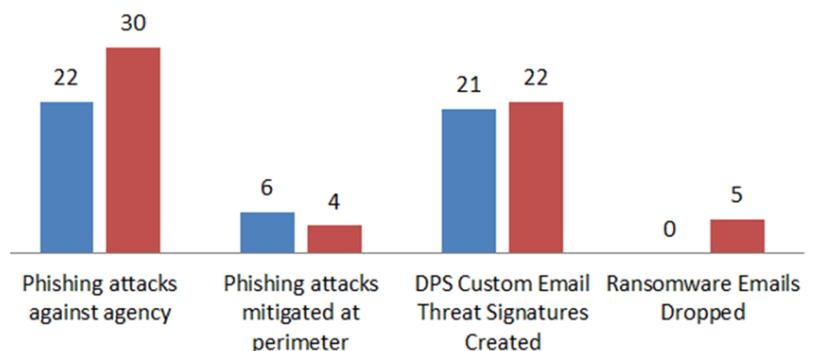
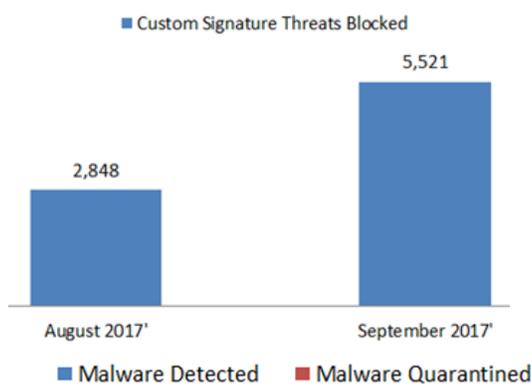
Bad Rabbit appears to specifically target corporate networks by using methods similar to those used in a June data-wiping attack dubbed "NotPetya" that shut down computers around the world. Bad Rabbit infects Windows computers and relies solely on targets manually clicking on the installer. Read the full article [here](#).



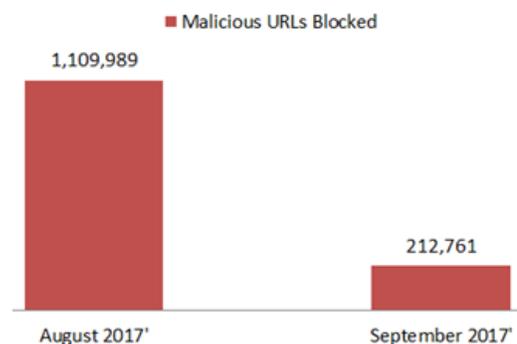
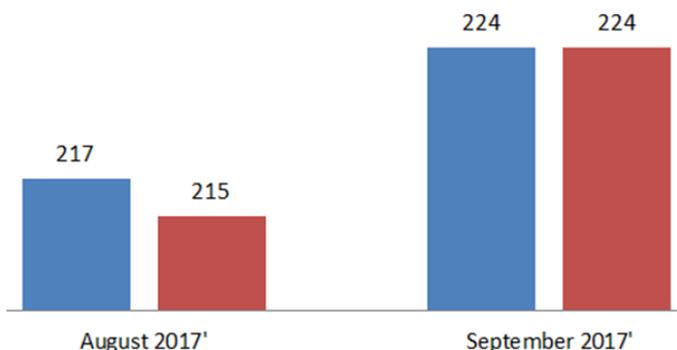
Bad Rabbit infects Windows computers and relies solely on targets manually clicking on the installer. Read the full article [here](#).

< Cyber Stats - September />

Custom Signature Threats Blocked



Malicious URLs Blocked



Cyber Side Chat: SSN

Since the **Equifax** data breach, identity theft has been on many people's mind. How we manage our identity brings us to our next Cyber Side Chat: **Social Security Numbers** (SSN). Inspired by recent events, I thought I'd share with you my research and get your thoughts on the topic.

What we know

Almost all aspects of American life can be tied back to our SSN. From our bank accounts to our tax records, our identities are usually verified by or in conjunction with our SSN. It may not sound like a big deal but some problems are uncovered the farther we dig into the issue.

Delving Through The Digits

I went back to **when** and **how** the SSN was created. Hopefully you enjoy history as much I do because this is a great article on the history of SSN: [here](#).

If you look into the history, you quickly learned the SSN was never intended to be used as an identifier. #redflag 🚩

Fun Fact!

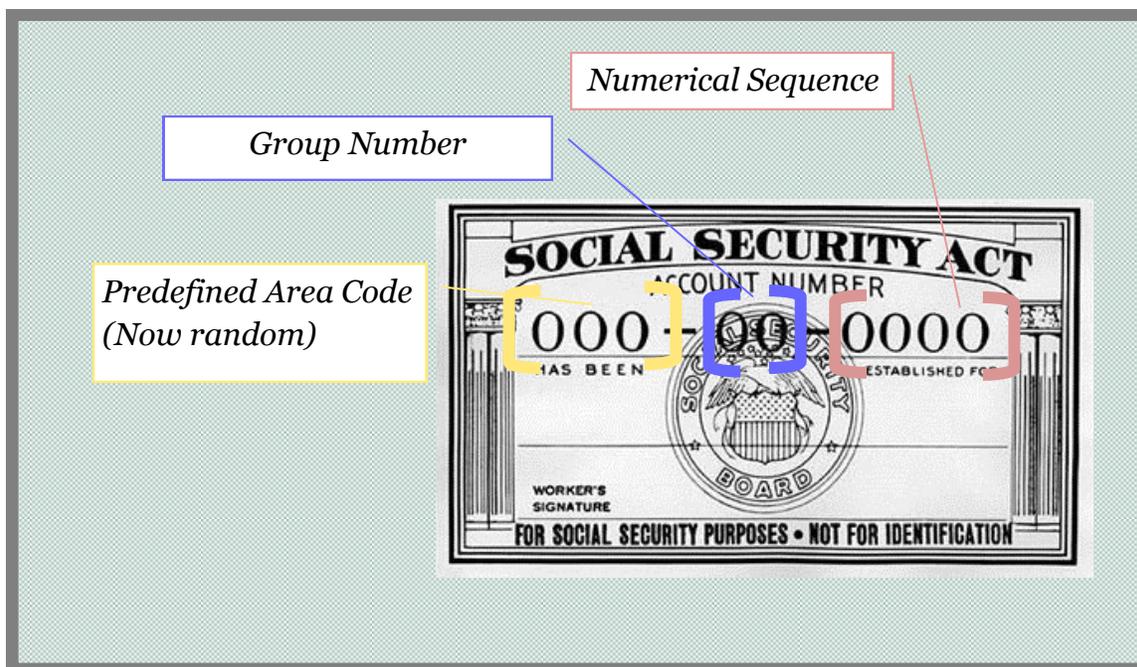
Previous iterations of SSN card included a disclaimer printed on the card saying "Not For Identification".



Ok, so how are these numbers generated anyways? Contrary to popular belief, the SSN is not completely generated at random. The nine (9) digit number can be broken down into three (3) individual segments:

1. **Area Code:** Until June 25, 2011, this first digit segment is generally the State or territory where your SSN was assigned. Thereafter, the number was randomly assigned.
2. **Group Number:** The second digit segment is a sequential number and doesn't have much informational significance. Basically, it is a numerical sequence used as a place holder when the third digit segment "overflows". (111-00-9999...111-01-0001)
3. **Numerical Sequence:** The third digit segment is simply the numerical sequence of digits (0001 to 9999) issued within each group number. This is **also** a sequential number!

Unless you are below the age of six (6), an attacker can reasonably calculate your first three digits by knowing the State you were born. And of course, charts matching States to their associated SSN 'area codes' are posed all over the internet. See for yourself [here!](#)



Group discussion on Social Security cards:

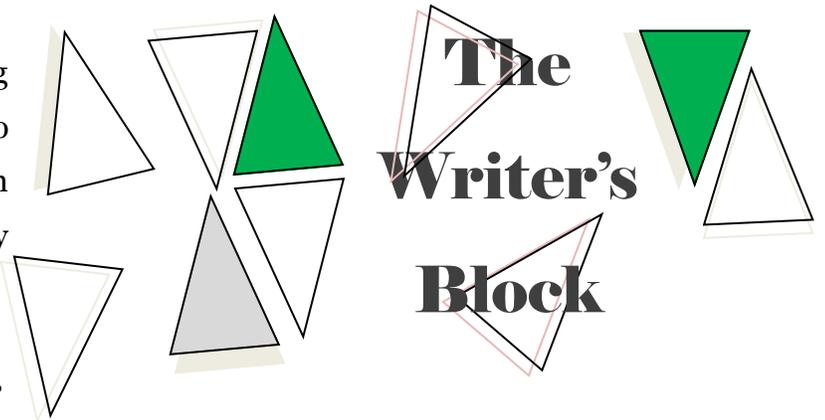
It is safe to assume changing this system would be a torrential mess and the USA would experience some "growing pains". However, the only thing consistent in life is change and the principle holds true for technology as well. As you are researching and pondering your position, here is some information worth considering:

- It is difficult to change numbers if they are compromised.
- Many businesses and services already use or require it.
- [Guessing a social security number is pretty trivial.](#)

I want to hear what you think. In terms of security, what would you do to make national identification more secure? Send us your solutions!

Contributor's Farewell Address

For those who do not know, I will be leaving the Department in December. Contributing to the Cyber Security newsletter has been an absolute joy. I want to thank my Cyber Security team for enduring the countless hours spent reviewing newsletter drafts and my grammar. Since the day I arrived as a “green-handed”



intern, they have provided me with the guidance and grace I needed to succeed. Strong leadership and team unity keeps us sharp and brings out the best in each other.

And thank you, the readers. It has always been Cyber Security's goal to provide an interesting and fun publication to increase security awareness. Seeing your enthusiasm for security puts a smile on my face. Along with being an absolute blast, writing for you has been an honor and a privilege. I hope you never lose your curiosity to learn.

As my sails set toward new and uncharted opportunities, I will forever remember my DPS family. I could not have asked for a better team or audience.

Best,

J. G. Carson.

*Cyber Security will continue monthly newsletter publications starting January 2018.

Crypto Challenge 5.0

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0101001101100101011000110111010101110010011010010111010001111001
00100000011010000110000101110011001000000110111001101111
00100000011011000110100101101101011010010111010001110011
00100000011011110110111001101100011110010010000001100010
01100001011100100111001001101001011001010111001001110011
```

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