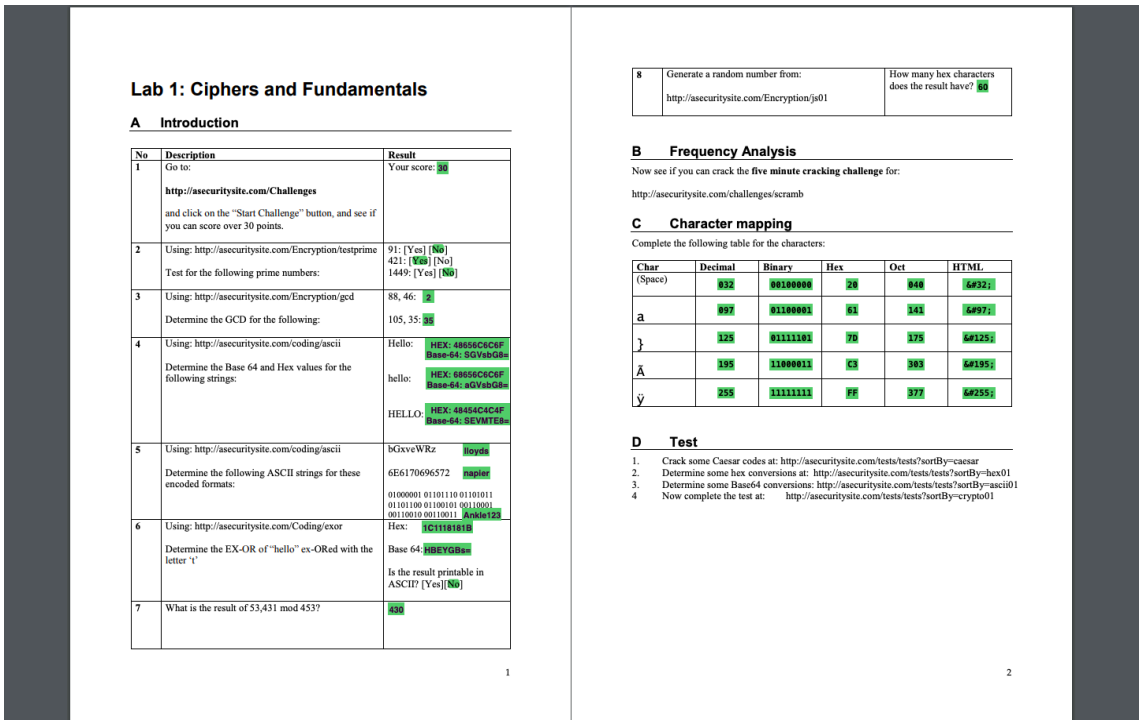
Secure Communications

Week 4

Ciphers and Fundamentals (Part 2)

Sections

C. Character mapping



Lab 1: Ciphers and Fundamentals

A Introduction

No	Description	Result
1	Go to: **http://asecuritysite.com/Challenges** and click on the "Start Challenge" button, and see if you can score over 30 points.	Your score: 30
2	Using: http://asecuritysite.com/Encryption/testprime Test for the following prime numbers:	91: [Yes] [No] 421: [Yes] [No] 1449: [Yes] [No]
3	Using: http://asecuritysite.com/Encryption/gcd Determine the GCD for the following:	88, 46: 2 105, 35: 35
4	Using: http://asecuritysite.com/coding/ascii Determine the Base 64 and Hex values for the following strings:	Hello: HEX: 48656C6C6F Base-64: SGVsbG8= hello: HEX: 68656C6C6F Base-64: aGVsbG8= HELLO: HEX: 48454C4C4F Base-64: SEVMTE8=
5	Using: http://asecuritysite.com/coding/ascii Determine the following ASCII strings for these encoded formats:	bGxveWRz lloyds 6E6170696572 napier 01000001 01101110 01101011 01101100 01100101 00110001 00110010 00110011 Ankle123
6	Using: http://asecuritysite.com/Coding/exor Determine the EX-OR of "hello" ex-ORed with the letter 't'	Hex: 1C1118181B Base 64: HBEYGBs= Is the result printable in ASCII? [Yes][No]
7	What is the result of 53,431 mod 453?	430

8	Generate a random number from: http://asecuritysite.com/Encryption/js01	How many hex characters does the result have? 60

B Frequency Analysis

Now see if you can crack the **five minute cracking challenge** for:

http://asecuritysite.com/challenges/scramb

C Character mapping

Complete the following table for the characters:

Char	Decimal	Binary	Hex	Oct	HTML
(Space)	032	00100000	20	040	
a	097	01100001	61	141	a
}	125	01111101	7D	175	}
Ã	195	11000011	C3	303	Ã
ÿ	255	11111111	FF	377	ÿ

D Test

1. Crack some Caesar codes at: http://asecuritysite.com/tests/tests?sortBy=caesar
2. Determine some hex conversions at: http://asecuritysite.com/tests/tests?sortBy=hex01
3. Determine some Base64 conversions: http://asecuritysite.com/tests/tests?sortBy=ascii01
4. Now complete the test at: http://asecuritysite.com/tests/tests?sortBy=crypto01

D. Test

1. Crack some Caesar codes at: http://asecuritysite.com/tests/tests?sortBy=caesar

Your score

Correct: 10, Incorrect: 0

Correct

Question	Your Answer	Feedback
Which is a possible Caesar code of newyork:	TKCEUXQ	Link
Which is a possible Caesar code of iowa:	CIQU	Link
Which is a possible Caesar code of birmingham:	PWFAWBUVOA	Link
Which is a possible Caesar code of louisiana:	ADJXHXPCP	Link
Which is a possible Caesar code of newmexico:	QHZPHALFR	Link
Which is a possible Caesar code of michigan:	ZVPUVTNA	Link
Which is a possible Caesar code of tuesday:	YZJXIFD	Link
Which is a possible Caesar code of france:	RDMZOQ	Link
Which is a possible Caesar code of guam:	SGMY	Link
Which is a possible Caesar code of seattle:	KWSLLDW	Link

2. Determine some hex conversions at: http://asecuritysite.com/tests/tests?sortBy=hex01

Your score

Correct: 16, Incorrect: 0

Correct

Question	Your Answer	Feedback
What is the binary format for decimal value of 238:	11101110	Link
What is the hex format for decimal value of 139:	8B	Link
What is the hex format for decimal value of 242:	F2	Link
What is the binary format for decimal value of 243:	11110011	Link
What is the hex format for decimal value of 223:	DF	Link
What is the binary format for decimal value of 192:	11000000	Link
What is the hex format for decimal value of 141:	8D	Link
What is the binary format for decimal value of 62:	00111110	Link
What is the binary format for decimal value of 164:	10100100	Link
What is the binary format for decimal value of 183:	10110111	Link
What is the binary format for decimal value of 41:	00101001	Link
What is the binary format for decimal value of 186:	10111010	Link
What is the hex format for decimal value of 217:	D9	Link
What is the binary format for decimal value of 177:	10110001	Link
What is the hex format for decimal value of 188:	BC	Link
What is the hex format for decimal value of 161:	A1	Link

3. Determine some Base64 conversions: http://asecuritysite.com/tests/tests?sortBy=ascii01

Your score

Correct: 10, Incorrect: 0

Correct

Question	Your Answer	Feedback
What is the Base64 value for the word of georgia	Z2VvcmdpYQ==	Link
What is the Base64 value for the word of heart	aGVhcnQ=	Link
What is the Base64 value for the word of brighton	YnJpZ2h0b24=	Link
What is the Base64 value for the word of greek	Z3JlZWs=	Link
What is the Base64 value for the word of macedonia	bWFjZWRvbmlh	Link
What is the Base64 value for the word of dumfries	ZHVtZnJpZXM=	Link
What is the Base64 value for the word of france	ZnJhbmNl	Link
What is the Base64 value for the word of december	ZGVjZW1iZXI=	Link
What is the Base64 value for the word of luton	bHV0b24=	Link
What is the Base64 value for the word of india	aW5kaWE=	Link

4. Now complete the test at: http://asecuritysite.com/tests/tests?sortBy=crypto01

Your score

Correct: 10, Incorrect: 0

Correct

Question	Your Answer	Feedback
For an 8-bit value of 0x10, what is the result when we rotate the bits by one place to the right:	0x08	
For a 12-bit encryption key, how many keys are possible:	4,096	
For a 14-bit encryption key, how many keys are possible:	16,384	
What is the GCD of 56 and 42:	14	
For a 17-bit encryption key, how many keys are possible:	131,072	
What is the result of 99 mod 20:	19	
For a 13-bit encryption key, how many keys are possible:	8,192	
What is the GCD for 64 and 32:	32	
For a 9-bit encryption key, how many keys are possible:	512	
For a 7-bit encryption key, how many keys are possible:	128	