

# Cryptography lecture notes

Javier Silva



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## Part I

# Introduction to modern cryptography



# Chapter 1

## Introduction

You can label chapter and section titles using `{#label}` after them, e.g., we can reference Chapter 1. If you do not manually label them, there will be automatic labels anyway.

Figures and tables with captions will be placed in `figure` and `table` environments, respectively.

```
par(mar = c(4, 4, .1, .1))  
plot(pressure, type = 'b', pch = 19)
```

Reference a figure by its code chunk label with the `fig:` prefix, e.g., see Figure 1.1. Similarly, you can reference tables generated from `knitr::kable()`, e.g., see Table 1.1.

```
knitr::kable(  
  head(iris, 20), caption = 'Here is a nice table!',  
  booktabs = TRUE  
)
```

You can write citations, too. For example, we are using the **bookdown** package [R-bookdown] in this sample book, which was built on top of R Markdown and **knitr** [xie2015].

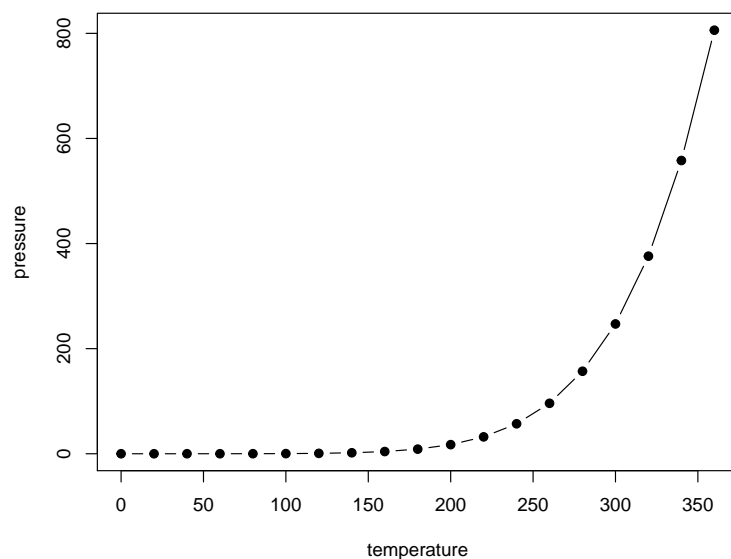


Figure 1.1: Here is a nice figure!

Table 1.1: Here is a nice table!

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa
4.6	3.4	1.4	0.3	setosa
5.0	3.4	1.5	0.2	setosa
4.4	2.9	1.4	0.2	setosa
4.9	3.1	1.5	0.1	setosa
5.4	3.7	1.5	0.2	setosa
4.8	3.4	1.6	0.2	setosa
4.8	3.0	1.4	0.1	setosa
4.3	3.0	1.1	0.1	setosa
5.8	4.0	1.2	0.2	setosa
5.7	4.4	1.5	0.4	setosa
5.4	3.9	1.3	0.4	setosa
5.1	3.5	1.4	0.3	setosa
5.7	3.8	1.7	0.3	setosa
5.1	3.8	1.5	0.3	setosa



## Chapter 2

# Security parameter



## Part II

# Symmetric cryptography



## Chapter 3

# Pseudorandom generators



## Chapter 4

# Block ciphers





## Chapter 5

# Hash functions



## Chapter 6

**MACs: message  
authentication codes**



## Part III

# Asymmetric cryptography



## Chapter 7

# Elementary number theory





## Chapter 8

# Algebraic structures



## Chapter 9

# Public-key encryption



## Chapter 10

# The Diffie–Hellman key exchange



## Chapter 11

# Digital signatures





## Part IV

# Other topics



## Chapter 12

# Cryptanalysis



## Appendix A

### Set theory



## Appendix B

### Code