



# Binary and Programming

## More Numbers? Why?

Alexander Wang [alwang@student.42.us.org](mailto:alwang@student.42.us.org)  
42 Staff [pedago@42.fr](mailto:pedago@42.fr)

*Summary: This project will have you learn more about binary numbers and how the computers internally represents various data types you have been using in Python.*

# Contents

I	Foreword	2
II	Introduction	3
III	Goals	4
IV	Mandatory part	5
V	Exercise 00: 4 Bit Number	6
VI	Exercise 01: Values of Characters	7
VII	Exercise 02: Bin to Hex Part 2	8
VIII	Turn-in and peer-evaluation	9

# **Chapter I**

## **Foreword**

Turmoil has engulfed the Galactic Republic. The taxation of trade routes to outlying star systems is in dispute.

Hoping to resolve the matter with a blockade of deadly battleships, the greedy Trade Federation has stopped all shipping to the small planet of Naboo.

While the Congress of the Republic endlessly debates this alarming chain of events, the Supreme Chancellor has secretly dispatched two Jedi Knights, the guardians of peace and justice in the galaxy, to settle the conflict....

# **Chapter II**

## **Introduction**

Welcome to the 2nd project of this long series. In this 2nd project, you will be learning even more about binary numbers (I know right? Most interesting thing ever).

However, we're going to be a little bit more precise in what we're learning about. So, let's get started.

# **Chapter III**

## **Goals**

- Learn more about binary numbers
- Learn about how both positive and negative numbers are represented in binary
- Learn about how floating point/irrational numbers are represented in binary
- Learn that characters are actually represented as numbers.
- Learn that everything eventually becomes numbers and subsequently binary.

# **Chapter IV**

## **Mandatory part**

- The language you will be using is Python3.7 (earlier versions may or may not work)
- Any other restrictions will be noted per exercise.

# Chapter V

## Exercise 00: 4 Bit Number

	4 Bit Number
Topics to study :	
Files to turn in :	<code>answer.txt</code>
Notes :	n/a

- Given a 4 bit number that uses a sign bit.
- Give the maximum and minimal number that can be represented.
- Save your answer in `answer.txt` on two separate lines.



Maximum should be on the first line. Minimum should be on the 2nd line. Failure to do so will result in an autofail by the autograder

# Chapter VI

## Exercise 01: Values of Characters

	Values of Characters
Topics to study :	
Files to turn in : <code>charValue.py</code>	
Notes :	

- Create a Python program `charValue.py` that prints out the decimal values for: A-Z, a-z, and 0-9 to the terminal.



Note the order that you should print. Failure to follow will result in an autofail by autograder

# Chapter VII

## Exercise 02: Bin to Hex Part 2

	Binary to Hexadecimal 2
Topics to study :	
Files to turn in : <code>toFloatingPoint.txt</code>	
Notes :	

- Convert the following irrational number to the Floating Point Format: -1.25.
- Save your answer to `toFloatingPoint.txt`



All steps must be done and labeled as: "Step 1: ", "Step 2: ", etc... Failure to do so will result in an autofail on the autograder

# **Chapter VIII**

## **Turn-in and peer-evaluation**

Turn your work in using your `GiT` repository, as usual. Only work present on your repository will be graded in defense.