Binary and Positional Number Systems: Takeaways

Syntax

- Converting a string representing a number of a given base to base 10:

```
int('1101', 2)

int('42042', 5)

int('FF0A', 16)
```

- Converting from base 10 to binary:

```
bin(1234)
```

- Converting from base 10 to octal:

```
oct(1234)
```

- Converting from base 10 to hexadecimal:

```
hex(1234)
```

Concepts

- A computer does not understand numbers like humans do. All it can do is check binary states on/off of electrical current.
- Any number can be represented in binary and this is how a computer is able to store and manipulate numbers.
- More complex data can also be represented in binary.
- A **nibble** is a group of four bits and a **byte** is a group of eight bits.
- Hexadecimal is very useful to represent bit sequences in a compact and human readable way. One hexadecimal can represent any nibble and two digits can represent any byte.
- Octal is well suited for representing read, write and execute file permissions because it contains three bits.

Resources

- Bits
- Binary number system
- Hexadecimal number system