KICK-OFF

THE LIFI-PROJECT

DISCLAIMER

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Please consider the environment before printing these slides.

Always use the link to the original slides to access the latest version. The slides are likely to change during a semester.

THE FLASHLIGHT CHALLENGE

- Team up with a partner and discuss the question:

  How can you communicate words using only a flashlight?

- Come up with a system and share it with the rest of the group!

- Try your system and compete with another group for faster communication!

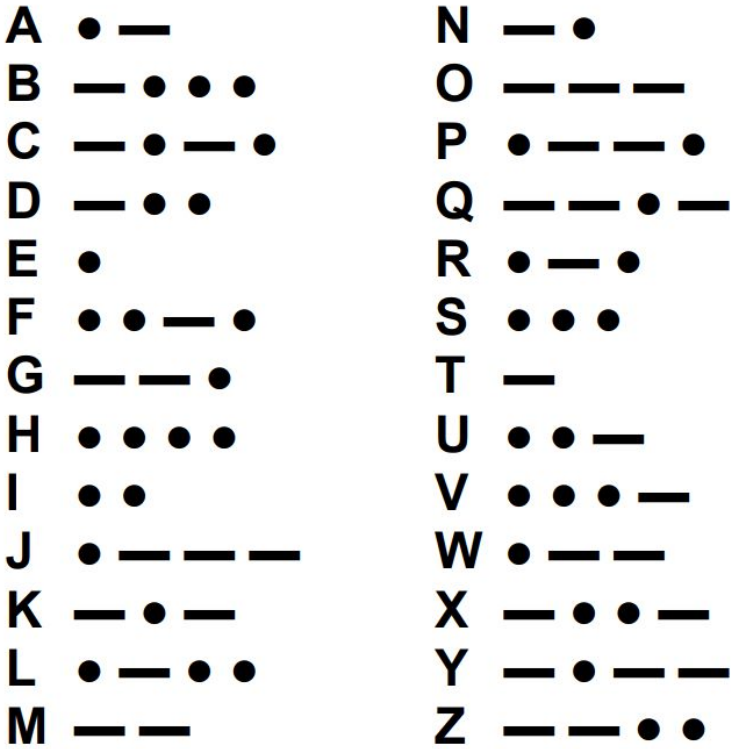
THE FLASHLIGHT GAME

WHAT'S THIS?

THE FLASHLIGHT GAME

MORSE CODE

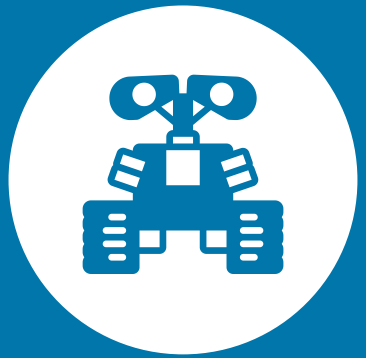
- A dot is **one unit** long
- A dash is **three units** long
- A gap between dots and dashes within the same symbol is **one unit** long
- A gap between symbols is **three units** long
- A gap between words is **seven units** long
- Listen to the alphabet in Morse code



Source: https://en.wikipedia.org/wiki/Morse_code

Source: https://rsgb.org/main/files/2012/10/Morse_Code_Sheet_01.pdf

THE LIFI-PROJECT



AN ENGINEERING PROBLEM

Can we transmit information using light?

What is the best protocol for data transmission using an LED?

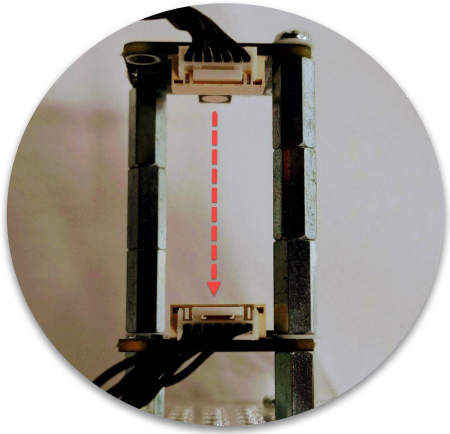
How fast can we transmit information?

How reliable is the data transfer?

Over what distance can we transfer data?

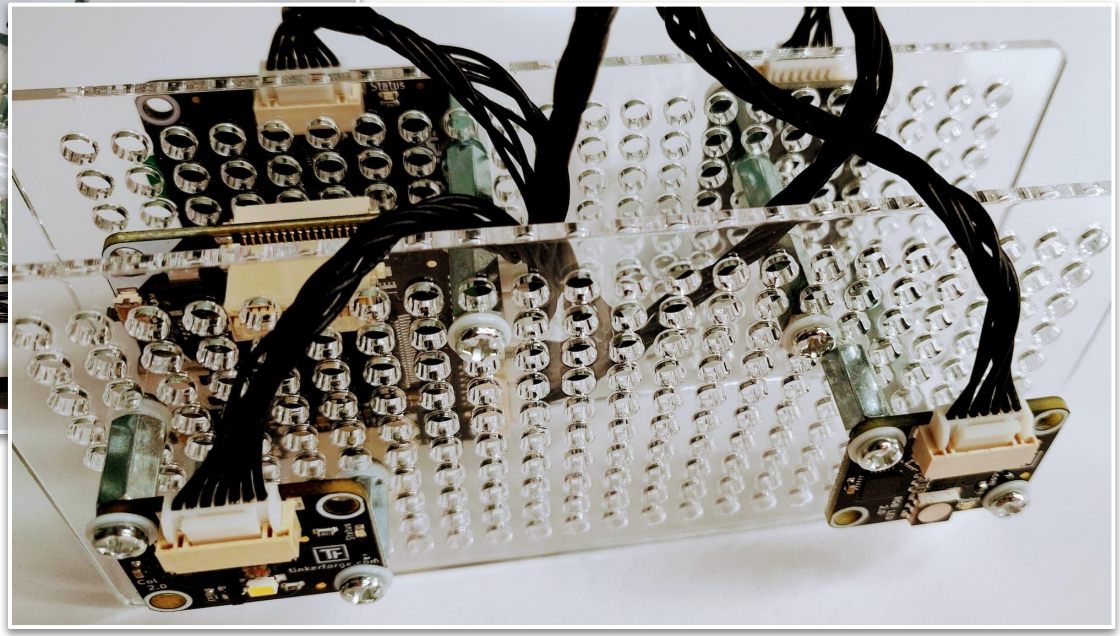
Under what environmental conditions does the setup work properly?

How can we make our data transfer secure?

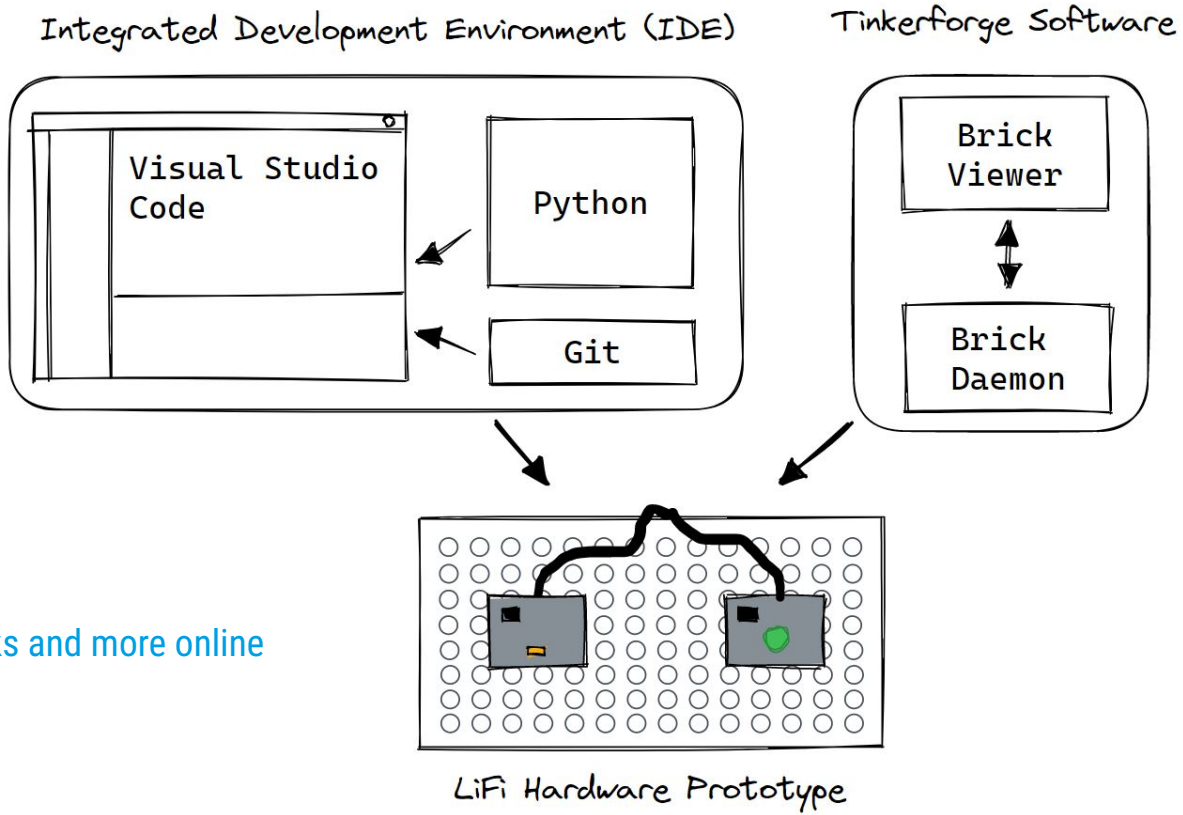


LIFI-PROJECT

HARDWARE



Assembly instructions online



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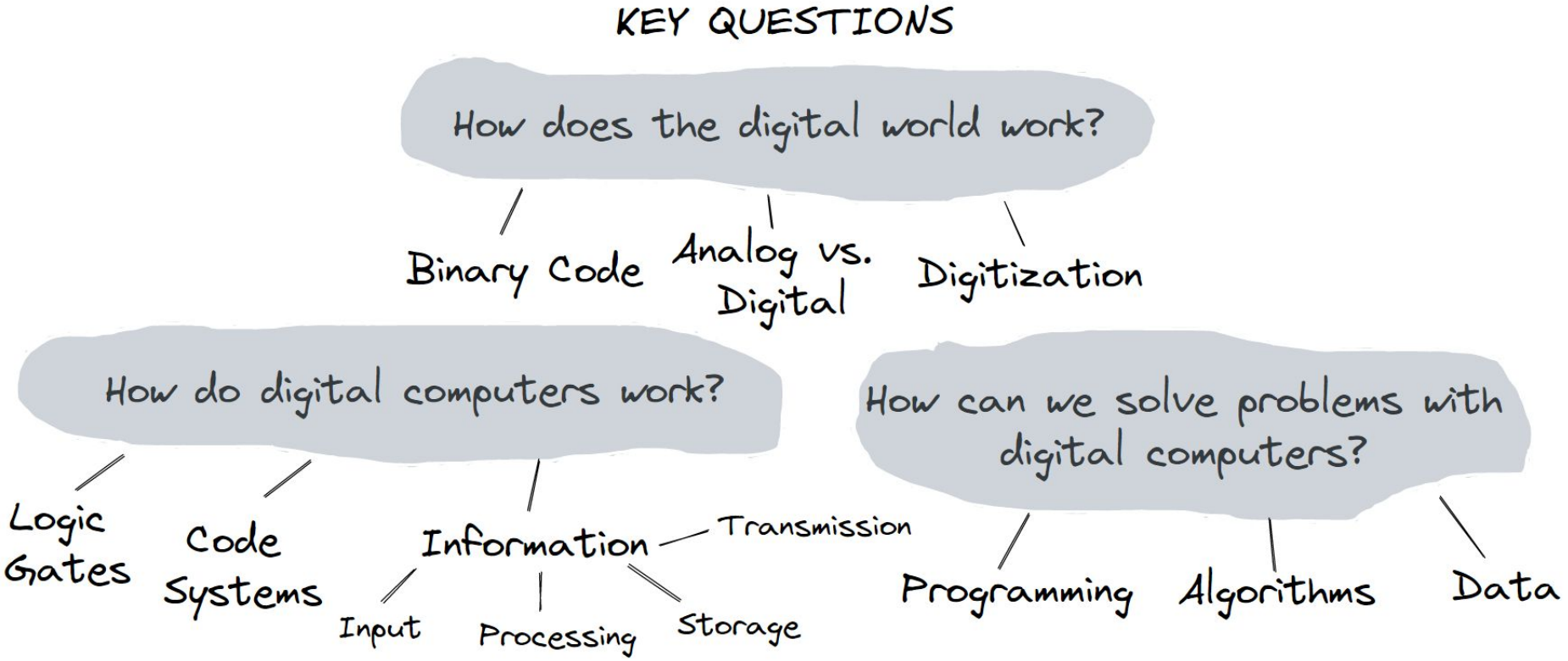
KEY QUESTIONS
How does the digital world work?
Binary Code
Analog vs. Digital
Digitization
How do digital computers work?
Logic Gates
Code Systems
Information
Transmission
Input
Processing
Storage
How can we solve problems with digital computers?
Programming
Algorithms
Data