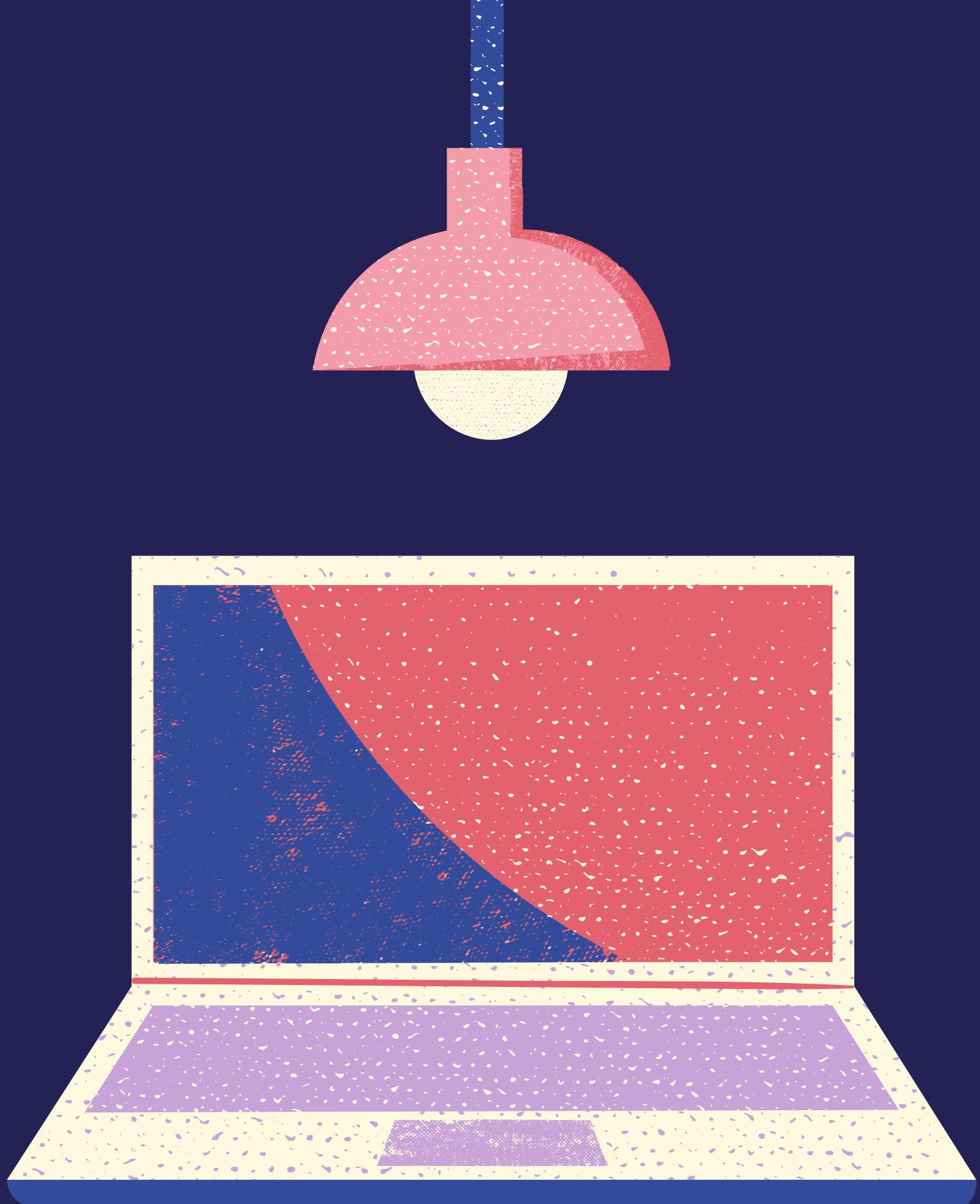
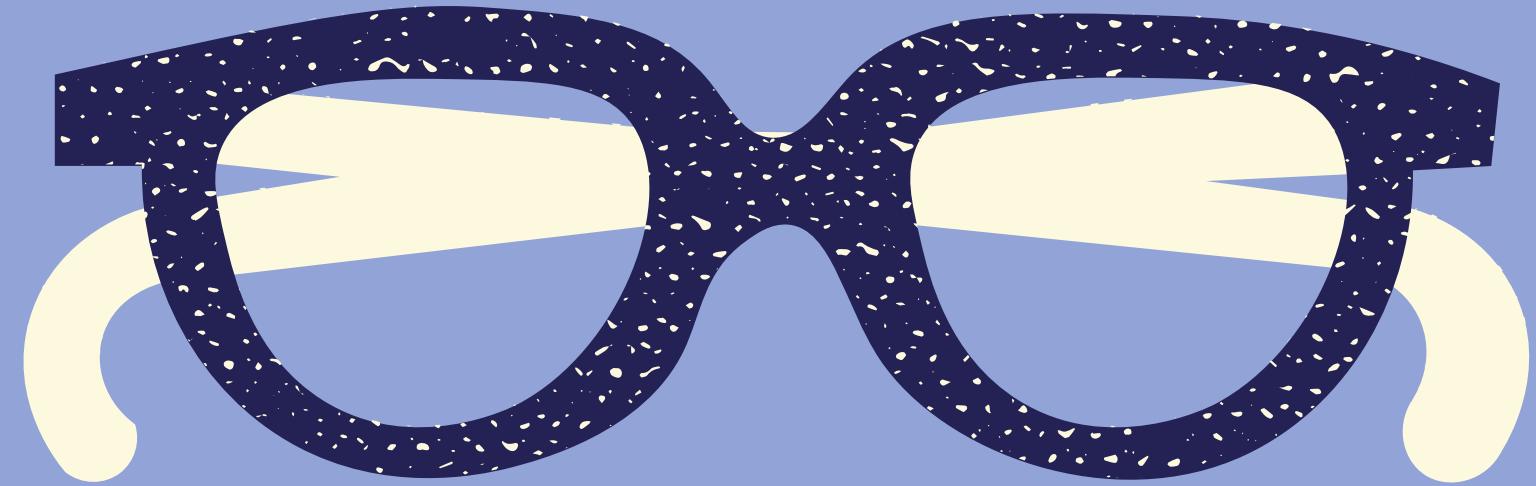


Introduction to Programming

what's a program and programming language?

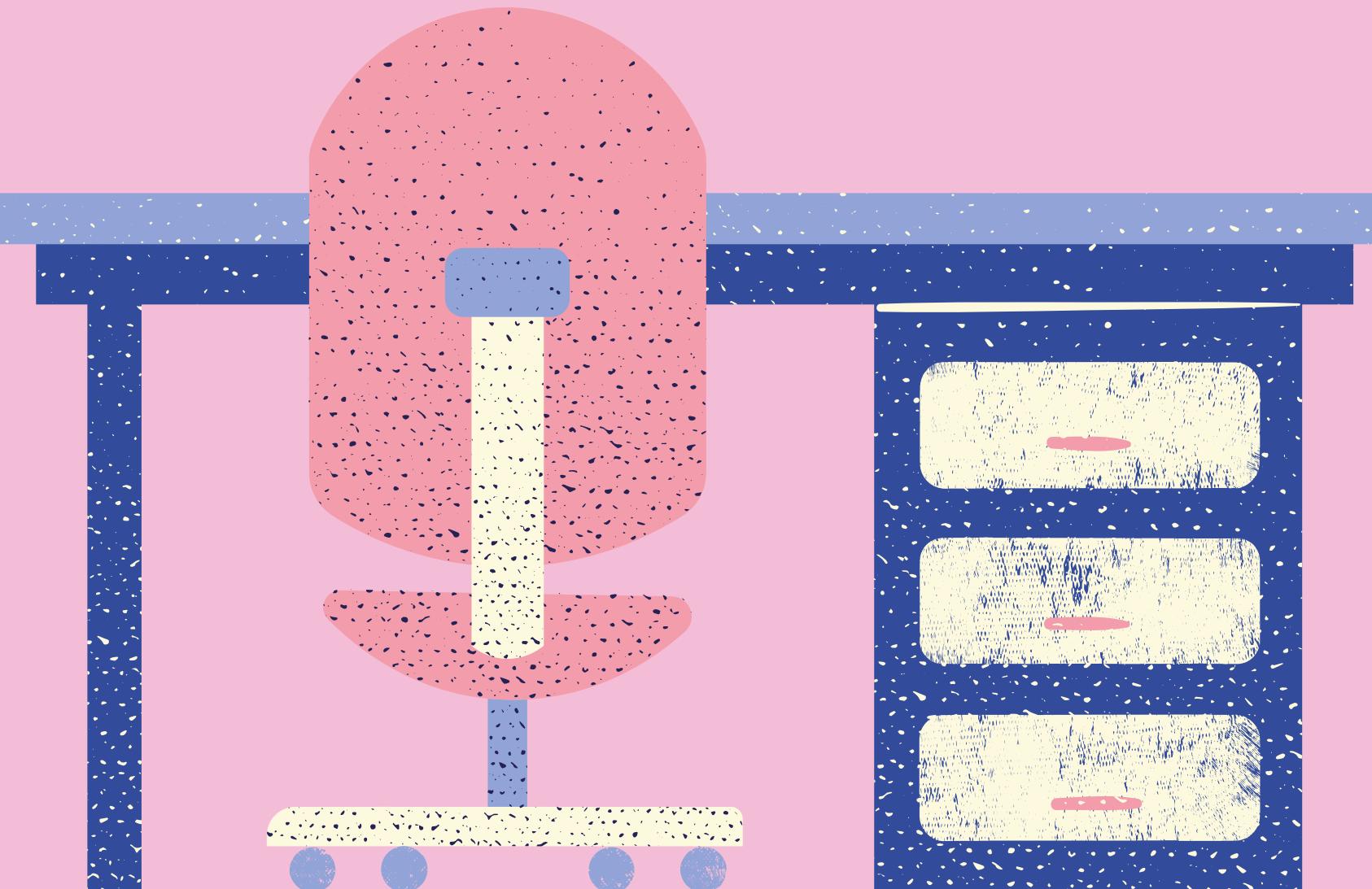


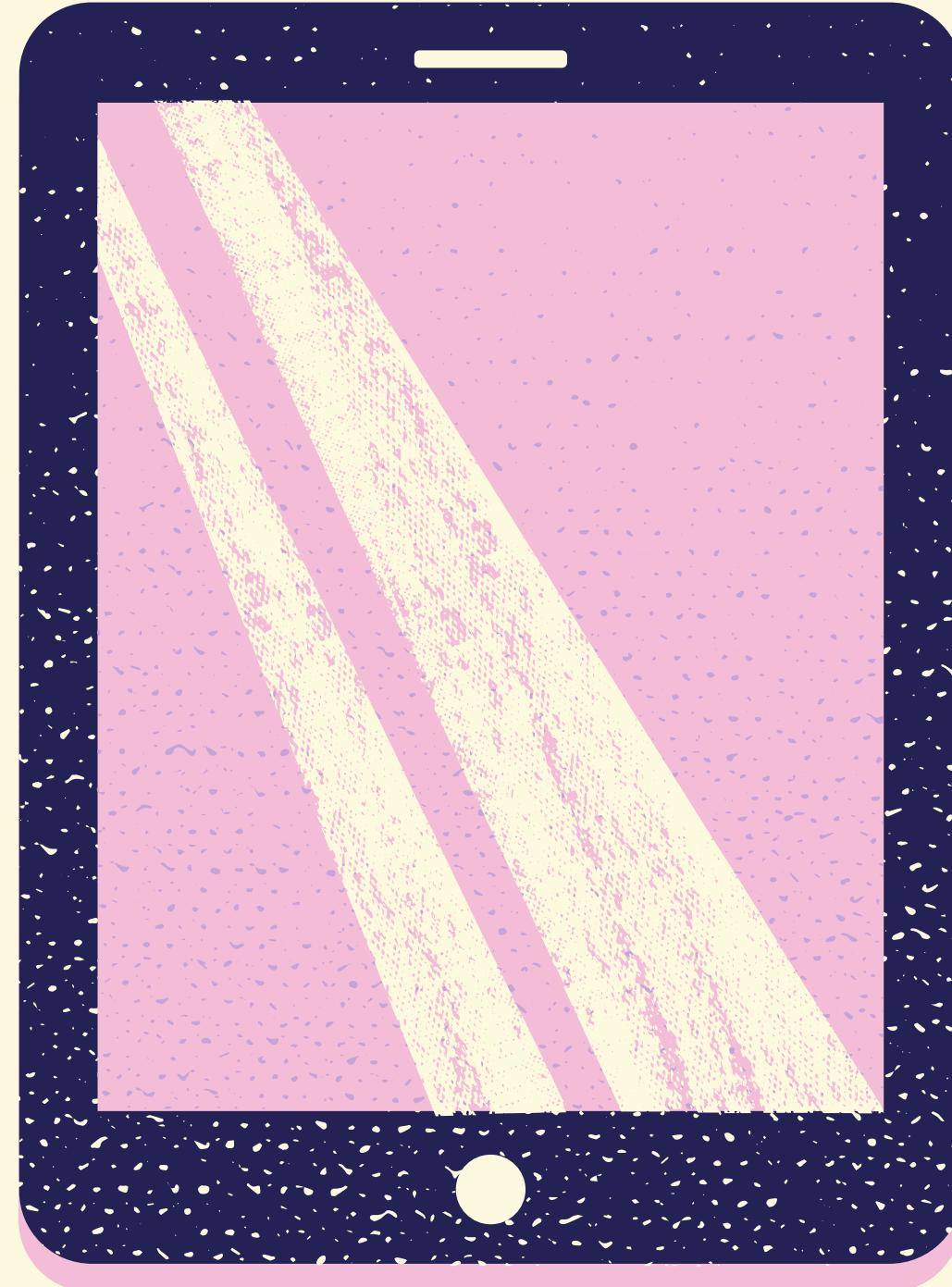


So what are Programs?

Outline

- what are programs and programming language
- machine level language
- assembly level language
- high level language





Programs (software)

set of instructions that tell a computer what to do

- we use programs to interact with computer
- to write programs we use programming language

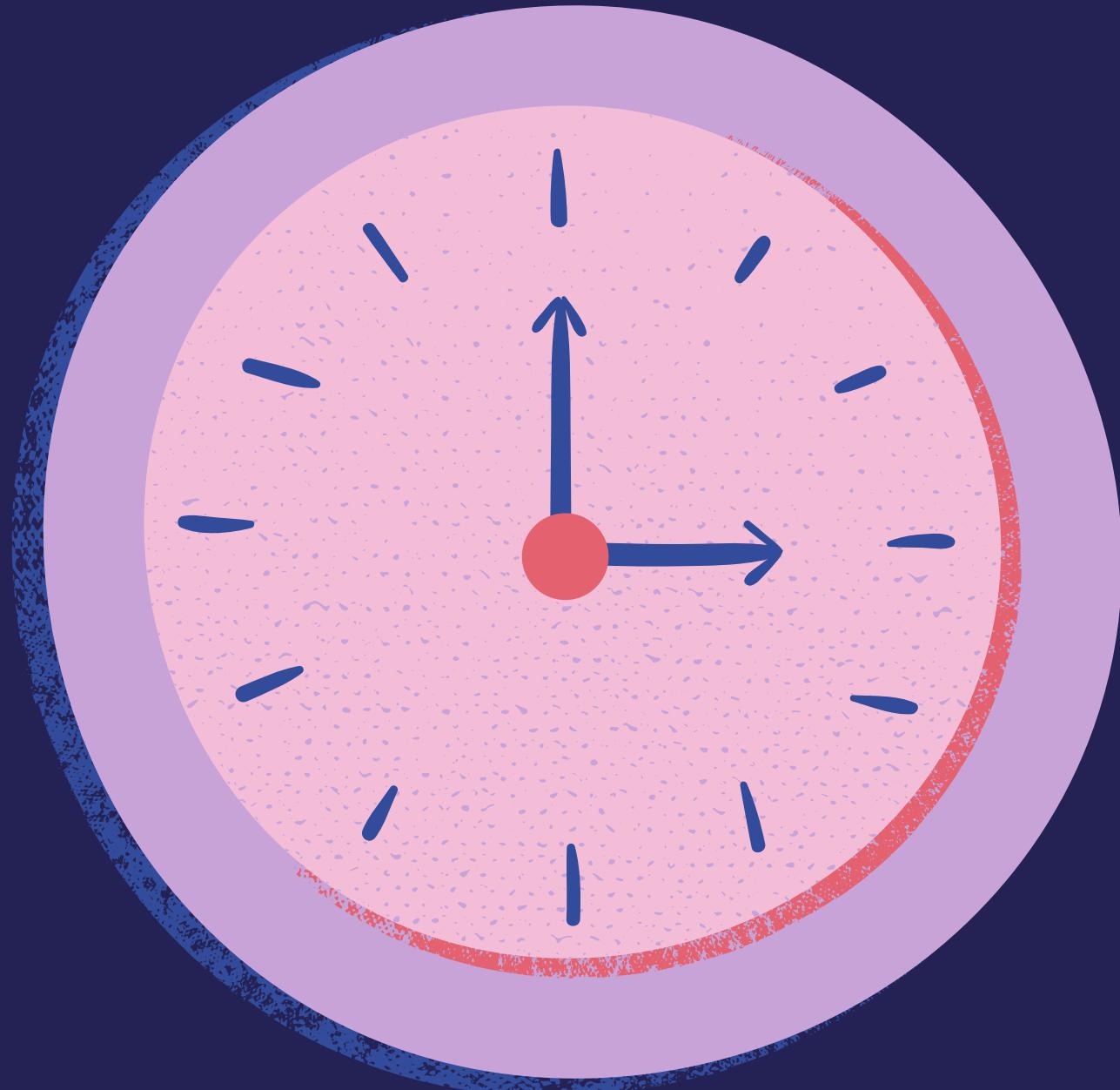


Programming Language

Language used to write programs

- computers are machines and they do not understand human languages
- programs are written in programming language so computers can understand

Machine Language



- Computer only understands zeros and ones (0|1) -> Binary
- Its very difficult for humans to remember and use i.e to add 2 and 3 the instruction may look like 1101101010011010
- Its machine dependent so instructions for same operation may vary from machine to machine
- before execution every instruction must be written or converted to machine level language. instructions written in other programming language are translated to machine code first then they are executed.

Assembly Language

This was made to make programming easy

- Machine Dependent
- Introduced keywords like add,sub,mul,...
- to add 2 and 3 and store into result : add 2,3,result
- assembly language instructions can't be directly executed on machines
- there is a special program called 'assembler' that translate assembly code to machine code, then it can be executed.

add 2,3, result

cannot be executed



ASSEMBLER



00101011
01101010
101110101
11011000
10100110

can be executed

High Level Language

- uses English words
 - easy to learn and use
 - instructions are called 'statements'
 - machine independent, same statements can run in different machines
-
- program written in high level language is called 'source code'
 - to add 2 +3 and get the result : `result= 2 +3;` (very similar to maths)

a special program '[compiler](#)' or '[interpreter](#)' converts the source code to machine code so that it can be executed

Source code -> Compiler/Interpreter -> Machine code



Thank You