

Programming 101



Class Objective

- Overview of programming
- Setting up the programming environment
- Writing and running the first program

"To understand what dev said"

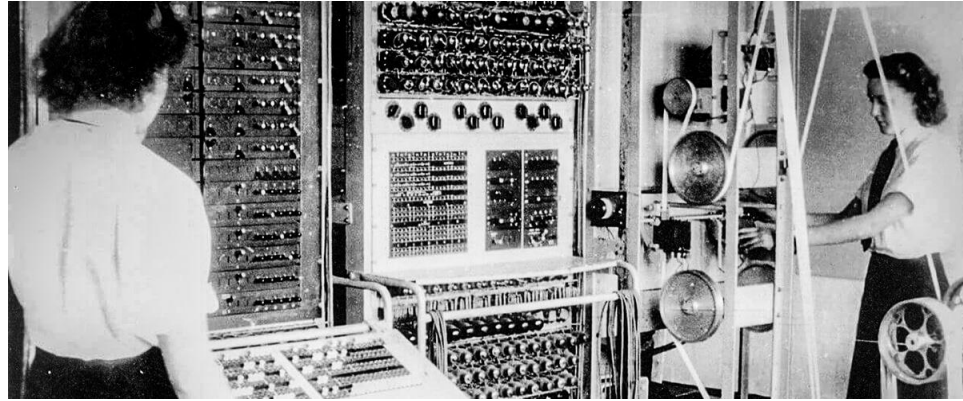
Class Objective



Class Schedule

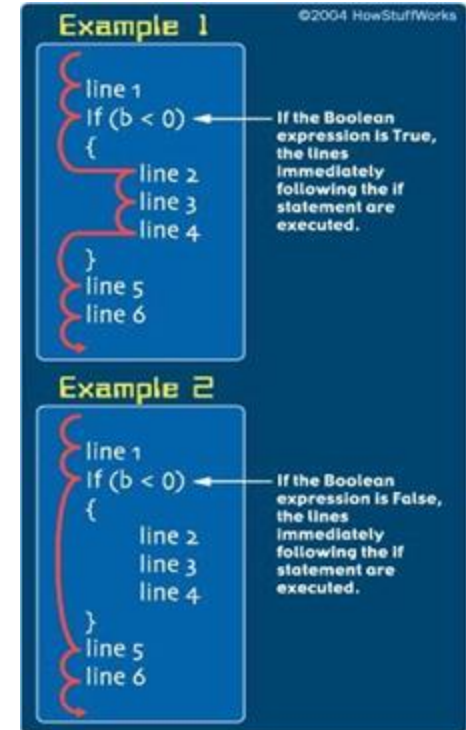
Date	Time	Topic
2024-07-16	Morning	Introduction of programming & Set up computer
	Afternoon	Basic programming & Workshop
2024-07-17	Morning	Introduction of api -what is api, -api in daily
	Afternoon	API Basic , mini game

Programming ?



Programming ?

Programming is the process of creating a set of instructions that tell a computer how to perform a task.



Programming ?

Telling a computer what to do

Machine language

- Easy for computer.
- Error-prone for human.

```
10: 8A00  RA ← mem[00]
11: 8B01  RB ← mem[01]
12: 1CAB  RC ← RA + RB
13: 9C02  mem[02] ← RC
14: 0000  halt
```

Adding two numbers (see TOY lecture)

Natural language

- Easy for human.
- Error-prone for computer.

Kids Make Nutritious Snacks
Red Tape Holds Up New Bridge.
Police Squad Helps Dog Bite Victim.
Local High School Dropouts Cut in Half.

Actual newspaper headlines
 —Rich Pattis

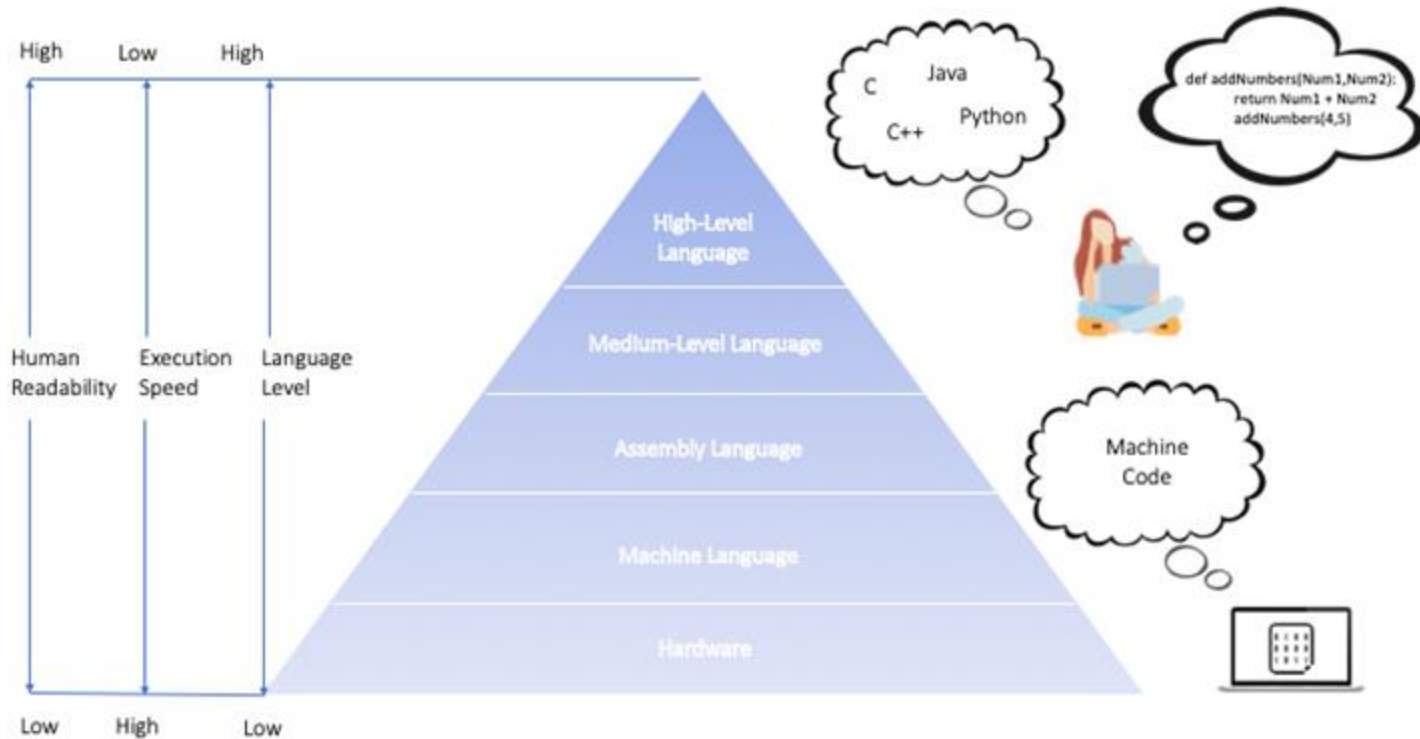
High-level language

- Some difficulty for both.
- An acceptable tradeoff.

```
for (int t = 0; t < 2000; t++)
{
    a[0] = a[11] ^ a[9];
    System.out.print(a[0]);
    for (int i = 11; i > 0; i--)
        a[i] = a[i-1];
}
```

Simulating an LFSR (see Prologue lecture)

Programming



Low Level vs High Level



Low Level vs High Level

```
010110110101011
101011010101011
110101011101010
101010101110101
101010110101011
010101010101010
11010101101011
```



```
section .data
    year dw 2024
    month db 7
    day db 16

section .text
    global _start

_start:
    ; Set year
    mov ax, year
    ; Call BIOS interrupt 1A to set the year
    mov ah, 0x05
    int 0x1A

    ; Set month
    mov al, month
    ; Call BIOS interrupt 1A to set the month
    mov ah, 0x03
    int 0x1A

    ; Set day
    mov al, day
    ; Call BIOS interrupt 1A to set the day
    mov ah, 0x02
    int 0x1A

    ; Exit program
    mov ax, 0x4C00
    int 0x21
```

```
package main

import (
    "fmt"
    "time"
)

func main() {
    // Create a specific date
    year := 2024
    month := 7
    day := 16

    // Construct the date
    date := time.Date(year, time.Month(month), day, 0, 0, 0, time.UTC)

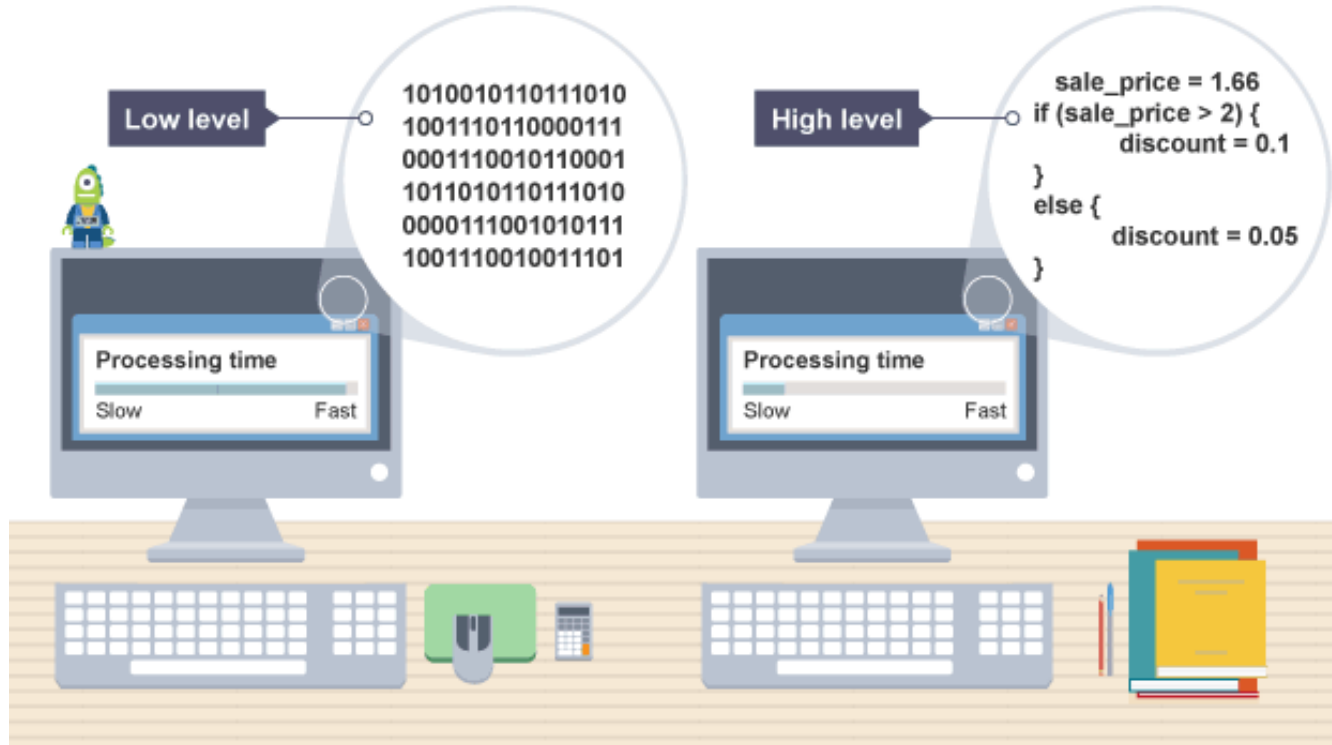
    // Format the date as YYYYMMDD
    dateStr := date.Format("20060102")

    // Print the formatted date
    fmt.Println(dateStr)
}
```

Low

High

Low Level vs High Level



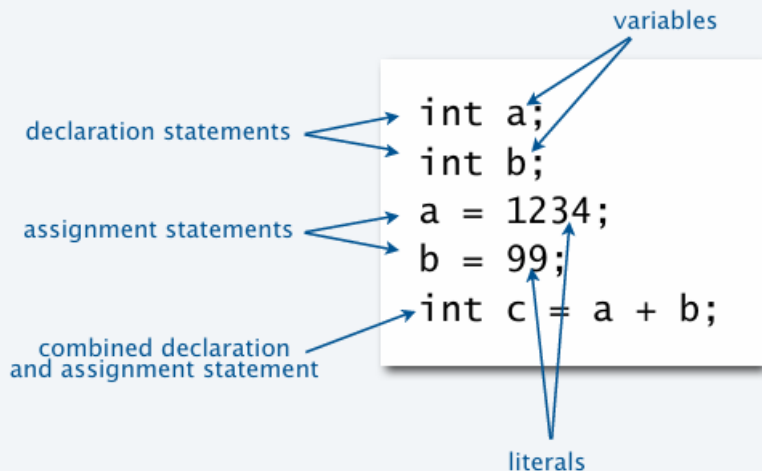
Basic Definitions

A **variable** is a name that refers to a value.

A **literal** is a programming-language representation of a value.

A **declaration statement** associates a variable with a type.

An **assignment statement** associates a value with a variable.



Essential Vocabulary for Programming 101

Function

- A block of code designed to perform a particular task, which can be reused in the program.

Parameter

- A variable used in a function to refer to one of the pieces of data provided as input to the function.

Return Value

- The value that a function produces and sends back to the part of the program that called it.

Source Code

- The human-readable instructions written by a programmer using a programming language.

Conditional Statements

- Instructions that only run when a specific condition is true (e.g., if, else, else if).

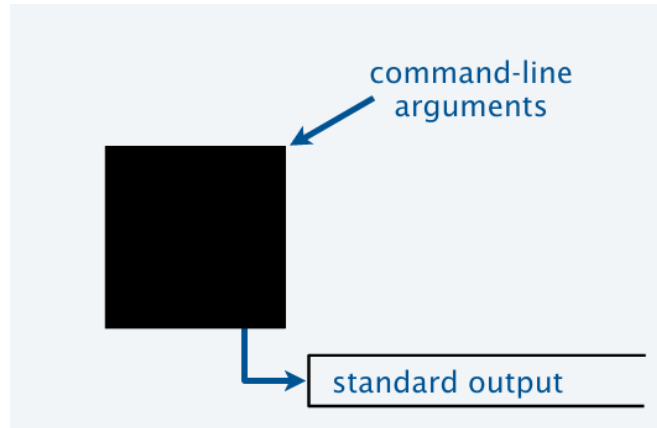
Loop

- A sequence of instructions that is continually repeated until a certain condition is reached (e.g., for, while).

Essential Vocabulary for Programming 101

Function

- A block of code designed to perform a particular task, which can be reused in the program.



Essential Vocabulary for Programming 101

Function

- A block of code designed to perform a particular task, which can be reused in the program.



Function : Dragon
Input : "dracarys"
Output : fire

Essential Vocabulary for Programming 101

Quiz 1

```
Func DivNumber(a,b int) int {  
    return a+b  
}
```

What will DivNumber(3, 5) return?

- a) 35
- b) 8
- c) a + b
- d) An error

Essential Vocabulary for Programming 101

Quiz 2

- What is a function in programming?
 - a) A block of code designed to perform a specific task
 - b) A variable that stores data
 - c) A loop that repeats actions
 - d) An error in the code

Essential Vocabulary for Programming 101

Parameter

- The information you give to a machine or a function to help it do its job.



Function : Dragon
Input : "dracarys"
Output : fire

Essential Vocabulary for Programming 101

Return Value

-The value that a function produces and sends back to the part of the program that called it.



Pseudocode

Pseudocode is like a recipe or a set of instructions that explains what you want the computer to do, but it's written in plain language that you can easily understand.

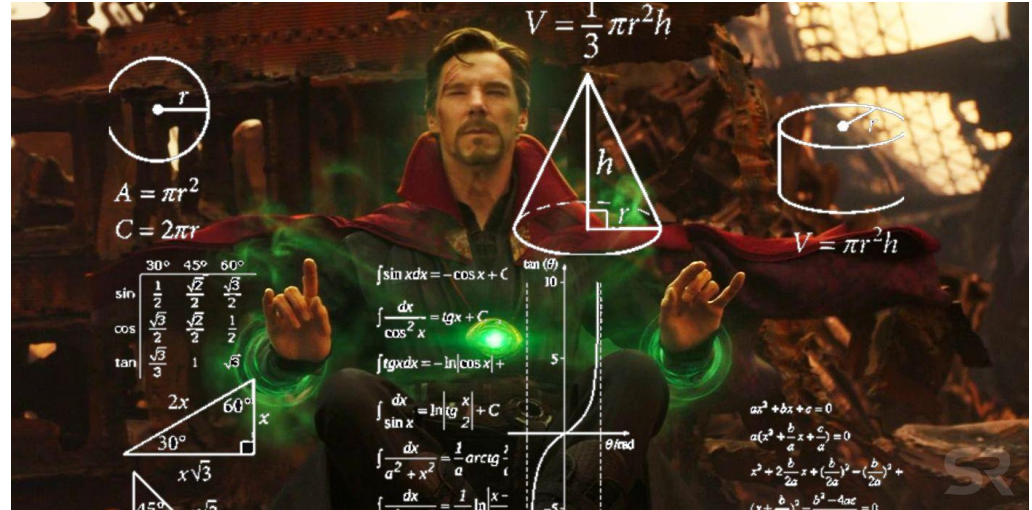
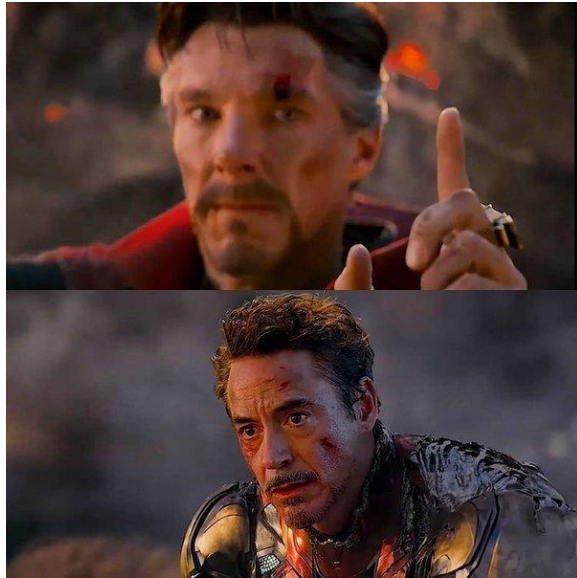
It's not real code, but it helps you plan out what your program will do.

Example :

เดินไปซื้อกาแฟ
ถ้าร้านเปิด
 สั่งคาปูชิโน
ถ้าร้านปิด
 หาร้านใหม่
ถ้าไม่อยากจะเดินหา
 กลับมาทำงาน
จบ

Pseudocode Quit Time 1

เขียน pseudocode สำหรับสิ่งที่คุณหมอเห็น 1d ใน 14d ล้วน



Pseudocode Quit Time 2

```
while game is running
    print "Enter a spell (or type 'exit' to quit):"
    spellName = get user input

    if spellName is "exit"
        print "Goodbye!"
        break
    end if

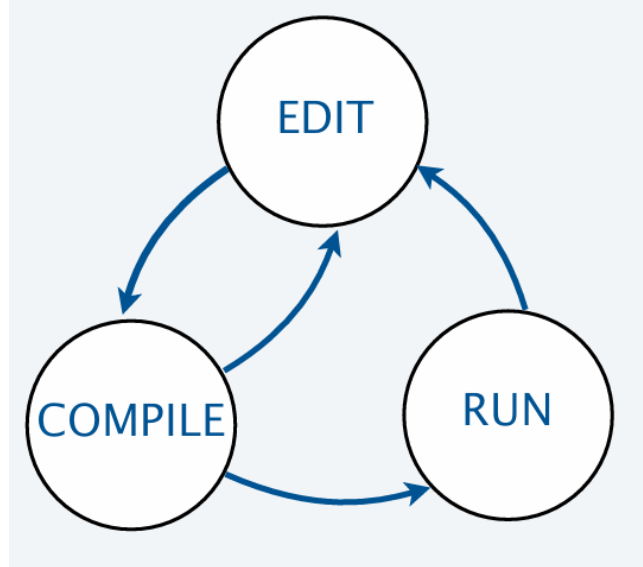
    if spellName is "Lumos"
        print "The wand lights up!"
    else if spellName is "Nox"
        print "The light on the wand goes out!"
    else if spellName is "Expelliarmus"
        print "Disarming charm cast!"
    else if spellName is "Wingardium Leviosa"
        print "The object floats in the air!"
    else
        print "Unknown spell. Try again."
    end if
end while
```



ถ้าลูน่าท่องคาถาว่า Lumos จะเกิดอะไรขึ้น?

Program development (Before coding)

1. EDIT
2. COMPILE
3. RUN



GO
What is Golang?



Tools

1. Install Homebrew
2. Install Go
3. Set Up Go Workspace

Set up : <https://github.com/pheerapack/Hello-world>

Hello World

```
package main
import "fmt"

func main() {

    fmt.Println("Hello World from Go!")

}
```

go run main.go