1.
Algorithms, flow charts and programming languages

Business Programming

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About me…

- Computer Technologies Engineer
- Master in Applied Artificial Intelligence
- Indie Dev.

Background & interests:

Video Game Development, miniatures (40k, gunpla), board games.

MAGICAL KNIGHT

Communication: Canvas mail, email: Luis_SFU@tec.mx, discord: vf1_barukiri

Evaluation Scheme

Evaluative activities		Evidence	
Class Activities	20%	Problem Situation	60%
Quizzes	5%		
Final	15%		
40%		60%	

What is an Algorithm?

A finite set of well defined series of steps, procedures designed to solve a problem, accomplish a specific task or achieve a goal

How do we represent an algorithm then?

Natural Language

Our general purpose, spoken and written, communication language.

--> **Example (lemonade):** Cut some lemons, squeeze them, mix with water and sugar, and add ice on top.

--> **Example (sum 2 numbers):** I ask two numbers, add them together and show them.

IPO Diagrams (Input – Process – Output)

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An IPO diagram is a simple way to show how a task or system works.

1. Input – What you start with. The information, materials, or data you give to the system.

2. Process – The steps or actions done to the input to make something new.

3. Output – The result you get after the process is done.

Making Lemonade:

Input	Process	Output
Lemons Sugar Water Ice	Cut Lemons; Squeeze Lemons; Mix sugar and water; Add Ice	Fresh lemonade

Sum of 2 numbers

Input	Process	Output
Number 1; Number 2;	S=N1+N2	S(Sum)

Flowcharts

- Shows **every step**, decisions, loops, and possible paths.
- Gives more detail for programming or precise procedures.
- Takes more time to design and read.
- Graphical representation

There are **many** ways to do these Flowchart diagrams that represent algorithms and they go well beyond the scope of this class.
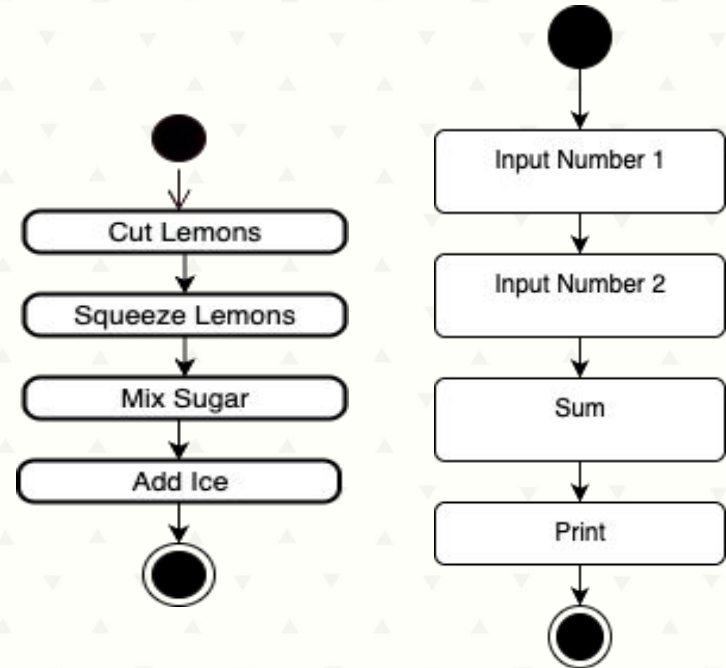
Pseudocode

A series of instructions in a more human-readable form, similar to English or any Natural language.

(As you can see, it's just readable and doesn't have **strict** syntax rules, as long as you write it correctly)

Sum 2 Numbers pseudocode

```
input A
input B
Sum ← B + A
Print(Sum)
```

Swap 2 numbers

```
START
  READ A
  READ B
  temporal = A
  A = B
  B = temporal
  DISPLAY A, B
END
```

Sum of two numbers Python

```python
# Method 1
n1 = 3.2
n2 = 2.3
my_sum = n1+n2
print(my_sum)

# This will give us the sum But what we said was to INPUT so this one would be incorrect if we cared for
our FLOWCHART and PSEUDOCODE since its clearly written as INPUT.

# Method 2.1
# roughly following OUR OWN Pseudocode ->
n1 = float(input("Input number 1: "))
n2 = float(input("Input number 2: "))
my_sum = n1+n2
print(my_sum)

# We are doing what our pseudocode tells us BUT, we are actually doing more steps that are not stated.
# What am I doing that It's NOT in our pseudocode?
```