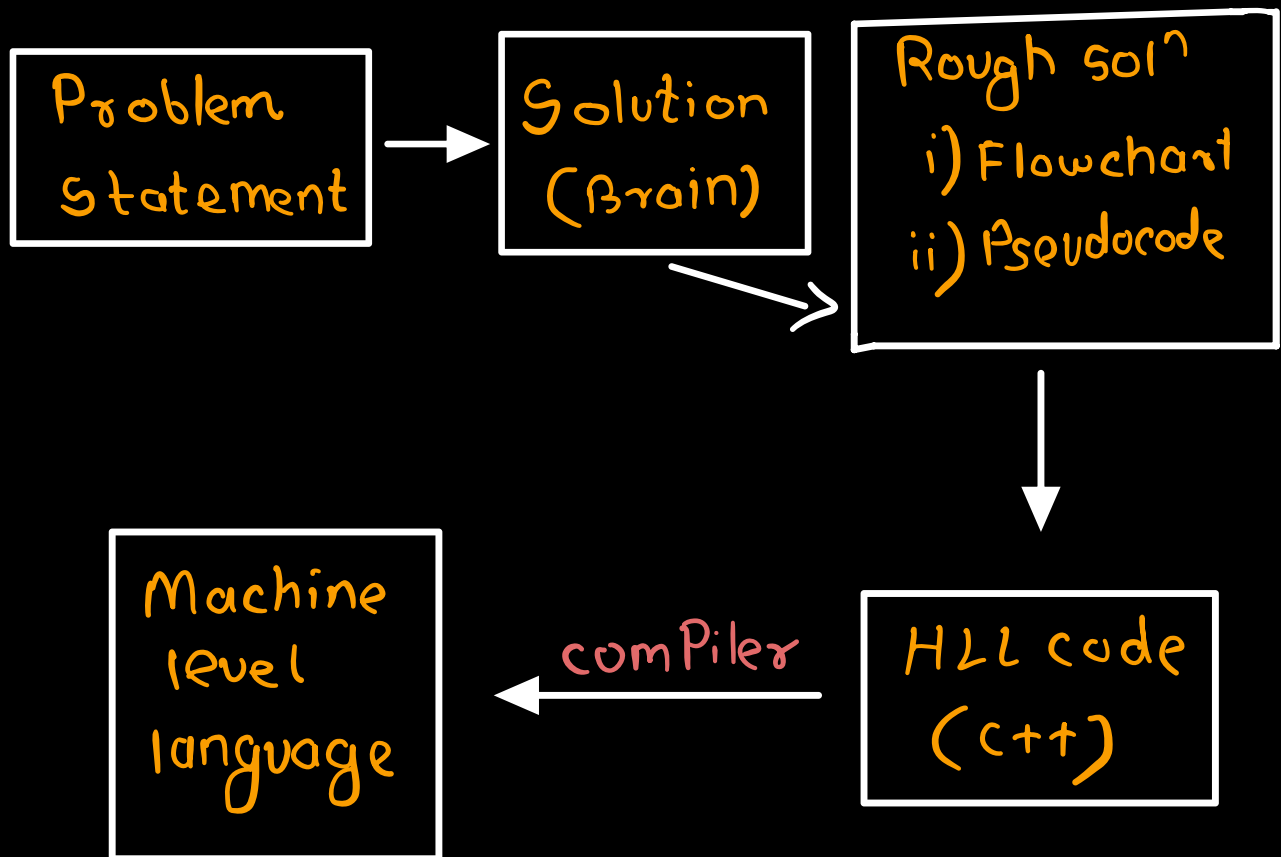## Algorithm

Series of steps taken to solve a given Problem statement is called an Algorithm.

How to Approach a Problem

① Understand the Problem

② Write down all i/P values

③ Logic creation (or) design an Algorithm.

```
┌──────────────┐      ┌──────────────┐      ┌──────────────────┐
│  Problem     │ ───> │  Solution    │      │  Rough sol^n     │
│  statement   │      │  (Brain)     │      │  i) Flowchart    │
└──────────────┘      └──────────────┘      │  ii) Pseudocode  │
                              │             └──────────────────┘
                              └──────────>           │
                                                     │
                                                     v
┌──────────────┐                          ┌──────────────────┐
│  Machine     │      compiler            │  HLL code        │
│  level       │ <──────────────────────  │  (C++)           │
│  language    │                          └──────────────────┘
└──────────────┘
```
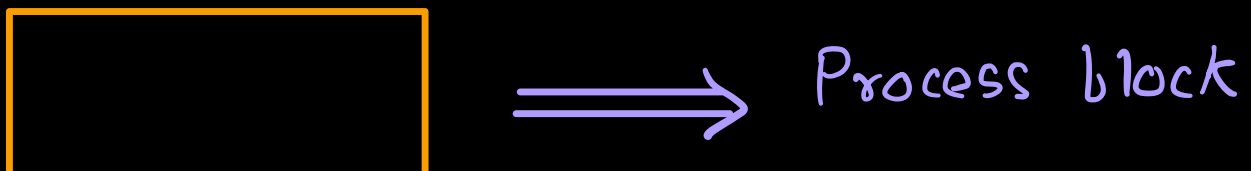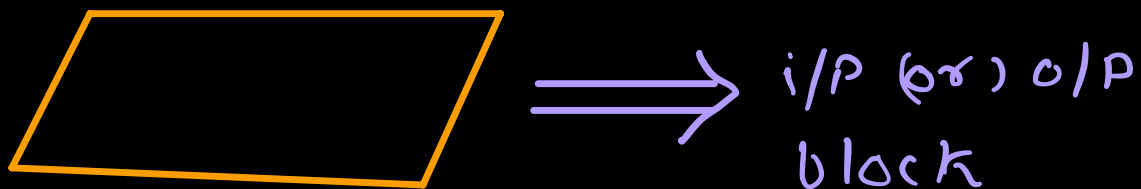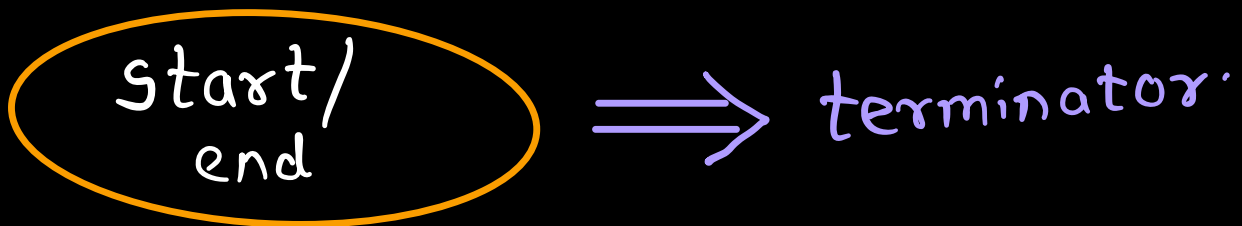
low level

High level

Middle level

Flowchart

It is a type of diagram that represents an algorithm, workflow (or) process

Flowchart Components

start/end $\Longrightarrow$ terminator.

(parallelogram) $\Longrightarrow$ i/p (or) o/p block

(rectangle) $\Longrightarrow$ Process block
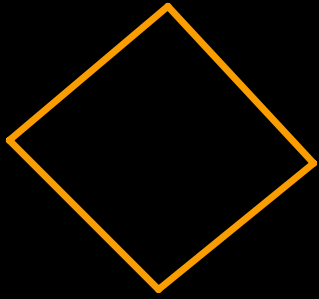
$\Diamond \implies$ decision control block

$\rightarrow$
$\leftarrow$ $\implies$ flow of execution

Ⓐ $\implies$ connector.

Flowchart questions

① Multiply two numbers

```
         ┌───────────┐
         │   Start   │
         └─────┬─────┘
               │
               ▼
        ╱─────────────╱
       ╱  Read a, b  ╱
      ╱─────────────╱
               │
               ▼
        ┌─────────────┐
        │  c = a * b  │
        └──────┬──────┘
               │
               ▼
        ╱─────────────╱
       ╱   Print c   ╱
      ╱─────────────╱
               │
               ▼
         ┌───────────┐
         │    end    │
         └───────────┘
```
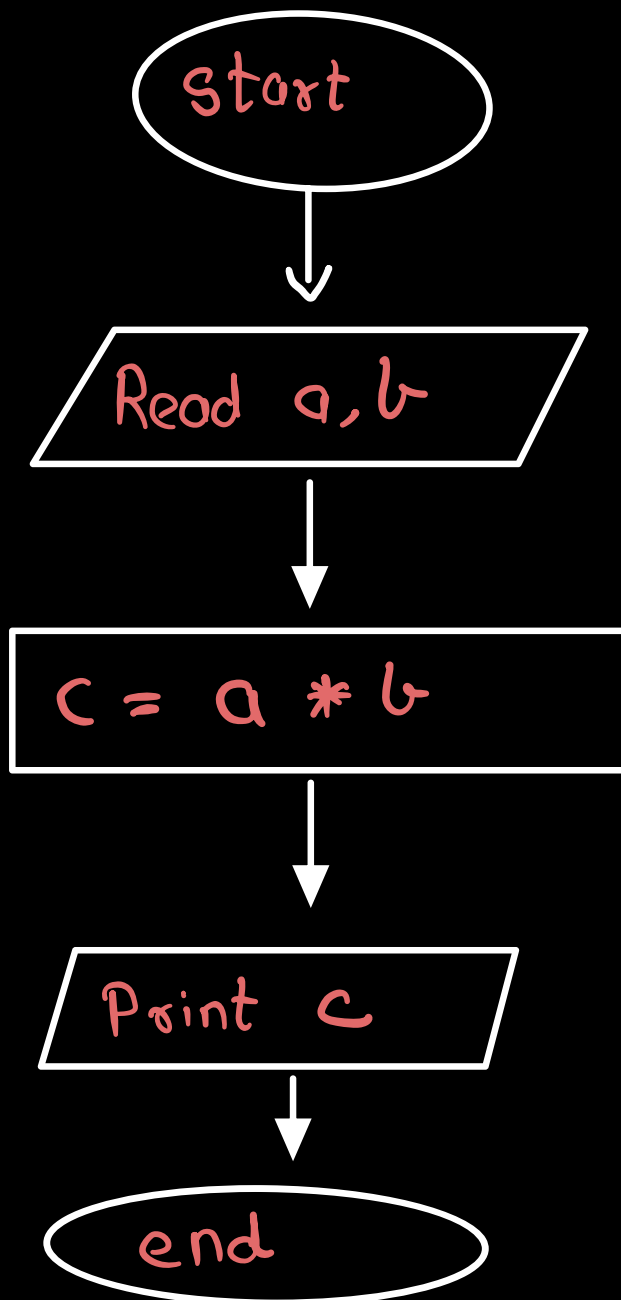
② Print counting from N to 1

```
          ┌─────────┐
          │  Start  │
          └────┬────┘
               ↓
        ┌──────────────┐
        │   Read  N    │
        └──────┬───────┘
               ↓
        ┌──────────────┐
        │    i = N     │
        └──────┬───────┘
               ↓
          ◇ is i > 0 ◇ ──Yes──→ ┌─────────┐
               │                 │ Print i │
               │ No              └────┬────┘
               ↓                      ↓
          ┌────────┐            ┌──────────┐
          │  end.  │            │ i = i-1  │
          └────────┘            └──────────┘
```