Lecture 2a
Flowcharts

Objectives

At the end of this lesson, you should

1. Understand the link between program, algorithm, pseudo code and flowcharts
2. Know and understand the concept of flowcharting
3. Know how to create a flowchart from an algorithm
4. Understand and describe the steps of an algorithm given a flowchart

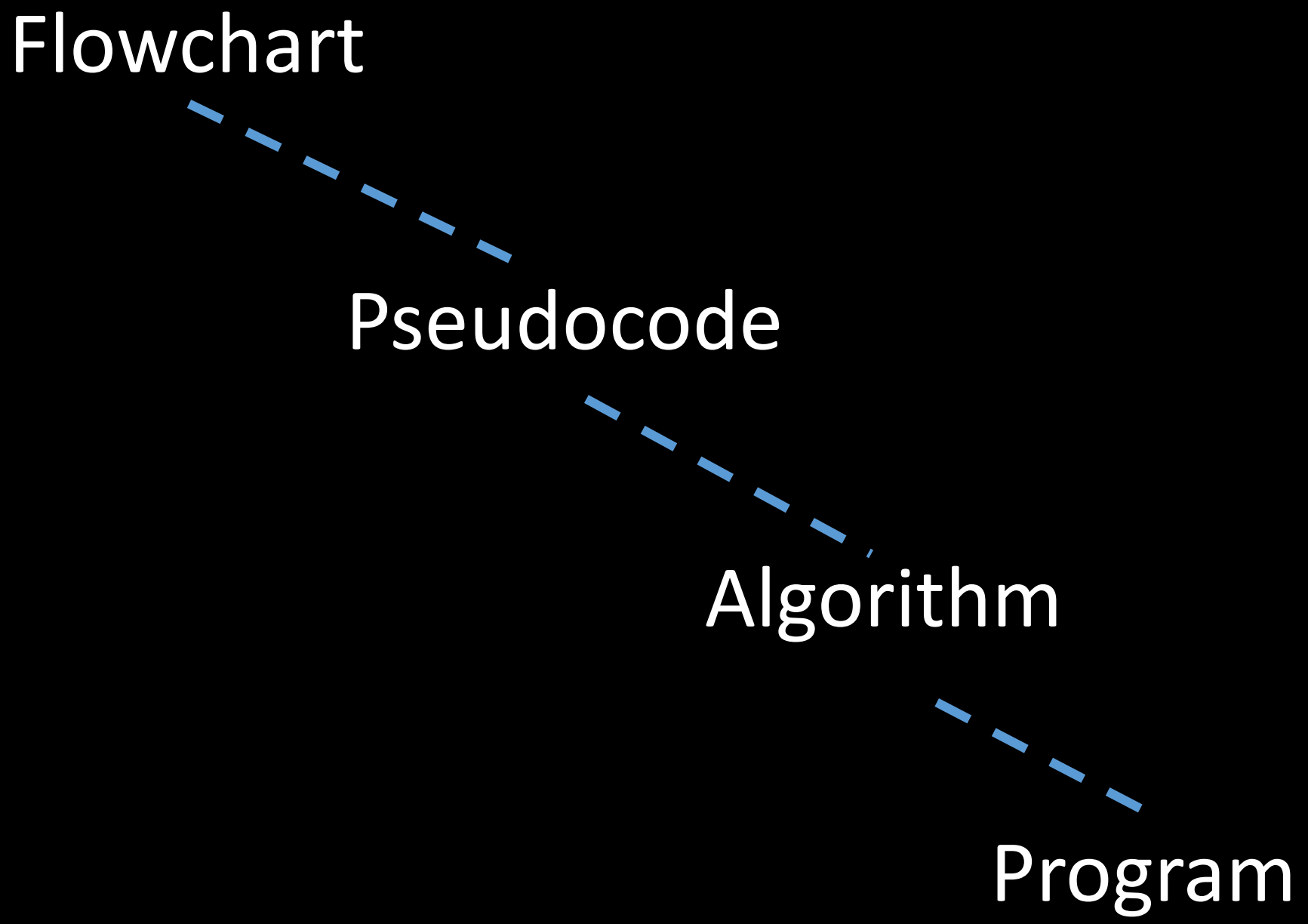
Definitions

Program – the actual expression of the algorithm in a specific programming language.

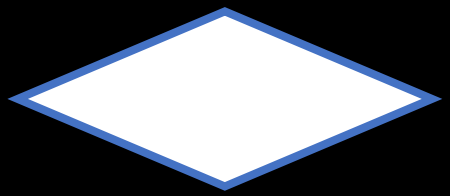
Algorithm – a sequence of explicit and unambiguous steps, which, when carried out for a given set of initial input/s, produces the corresponding output/s.

Pseudo code – a mixture of programming terminology and English to explain an algorithm, in a code-like structure. *Cannot be used directly in a program.*

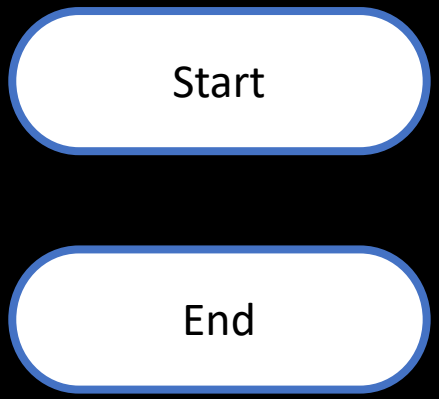
Flowchart – a diagram that details the procedures (steps) in the program / algorithm.


Flowchart
Pseudocode
Algorithm
Program

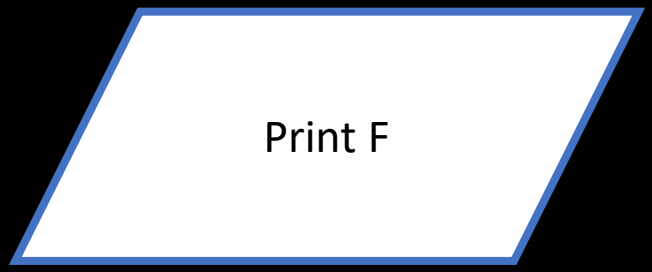
Flowchart Symbols

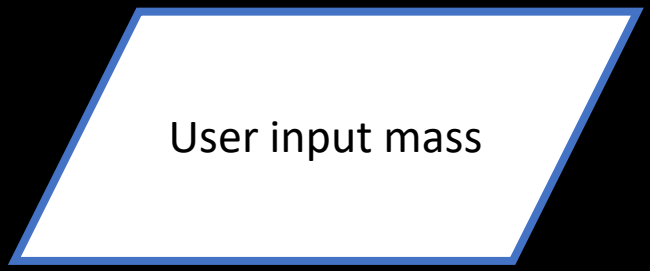
	Terminal (Start / End)
	Input or Output
	Process
	Predefined Process
	Decision

Terminals



Input / Output





Process

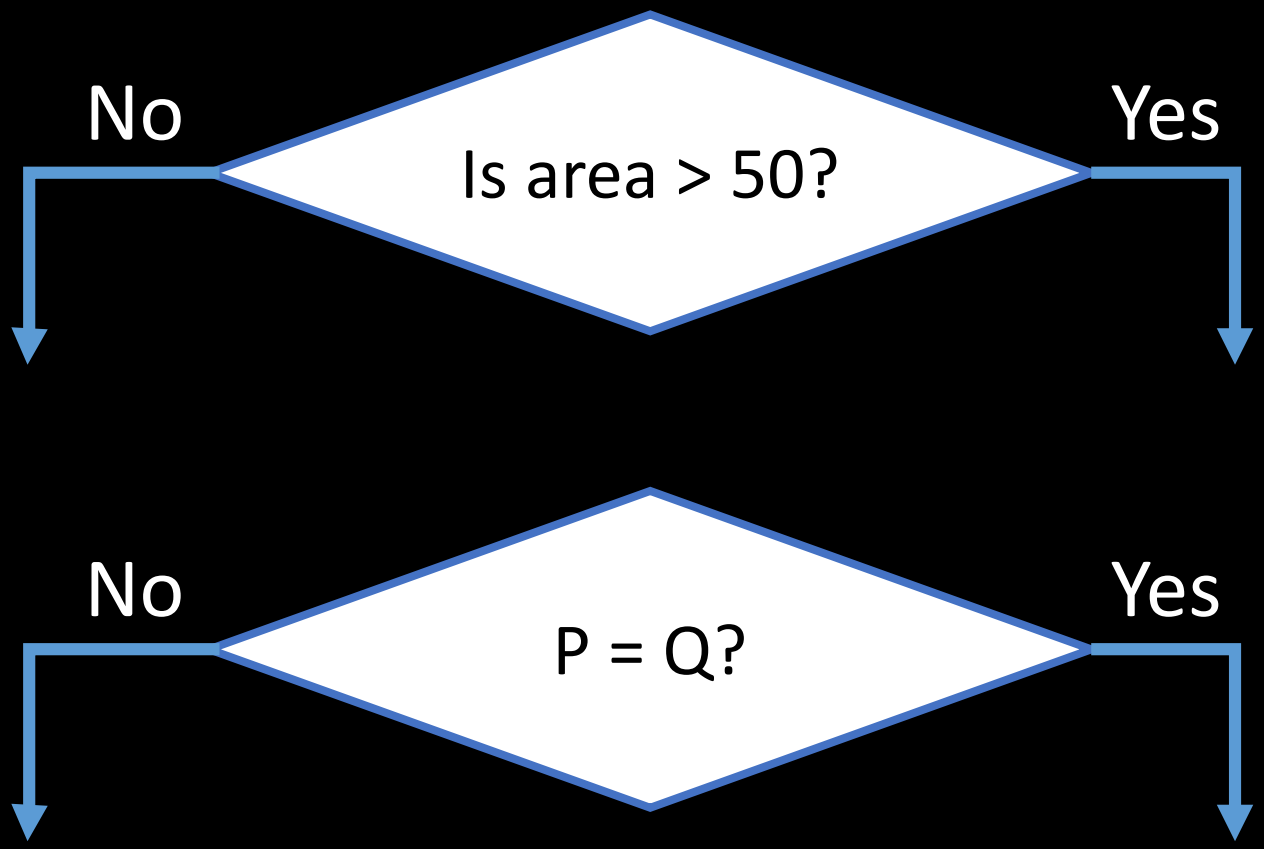
Area = Length * Breadth

$m = 1$
$n = 5$

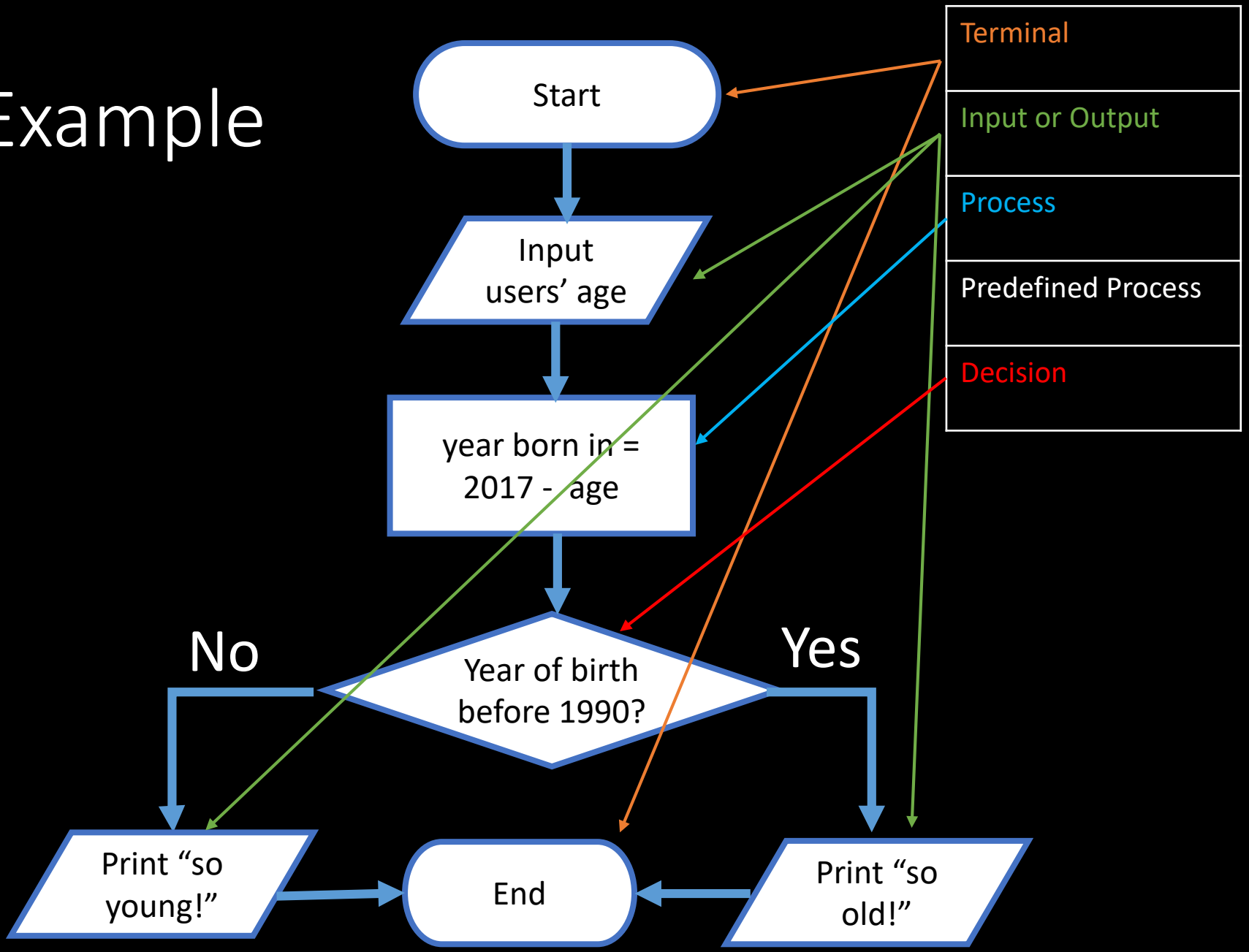
chopstr = mystring[2:]

S = len(mystring)

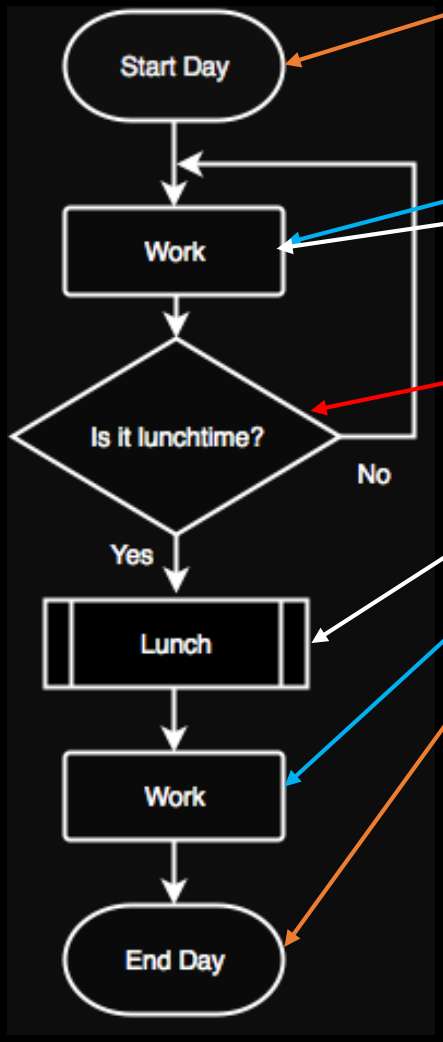
Decision



Example


Terminal
Input or Output
Process
Predefined Process
Decision
Start
Input users' age
year born in = 2017 - age
Year of birth before 1990?
No
Yes
Print "so young!"
End
Print "so old!"

Example



Terminal

Input or Output

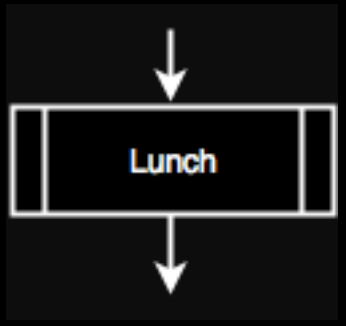
Process

Predefined Process

Decision

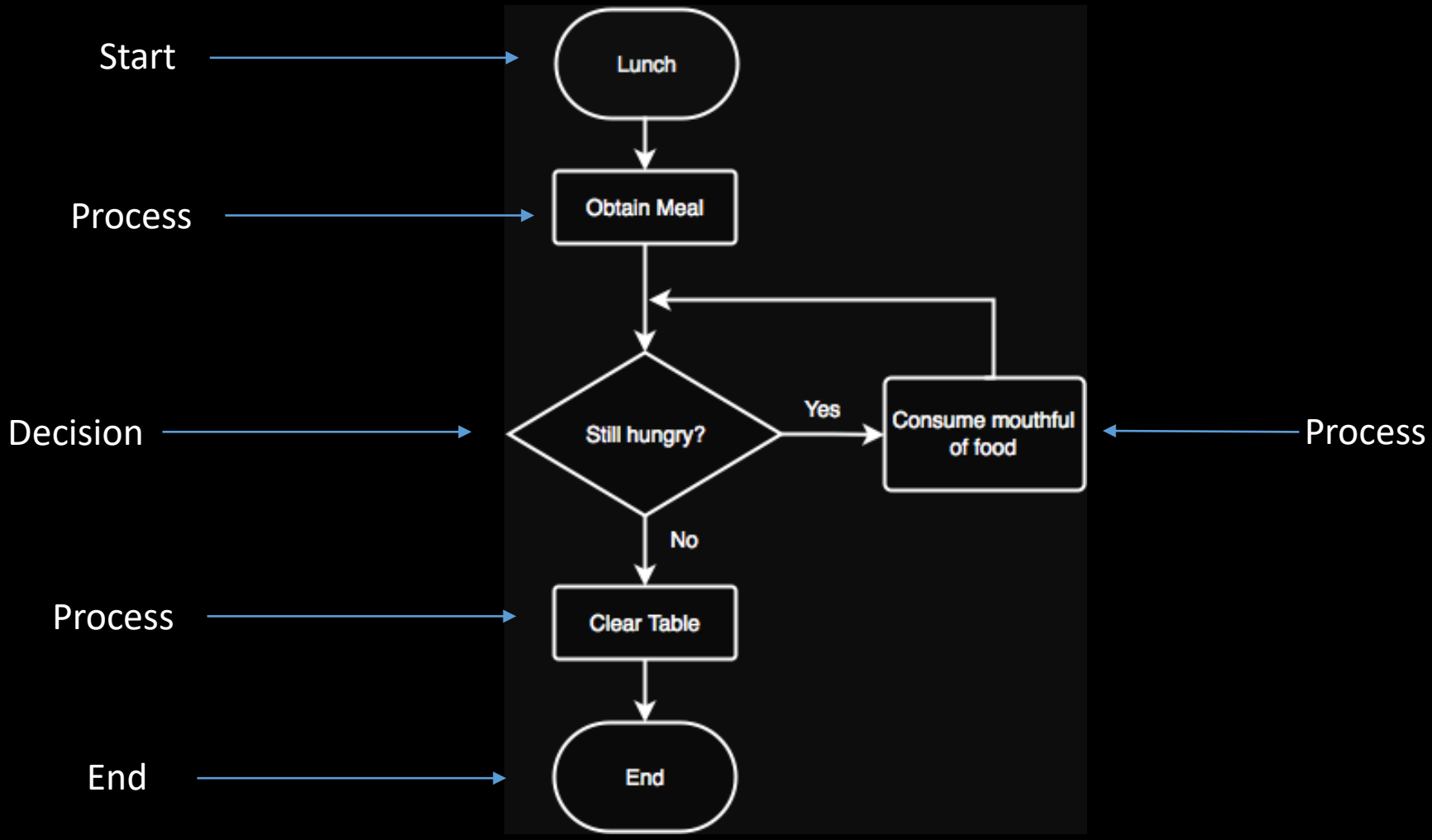
Predefined Process

Predefined
Process

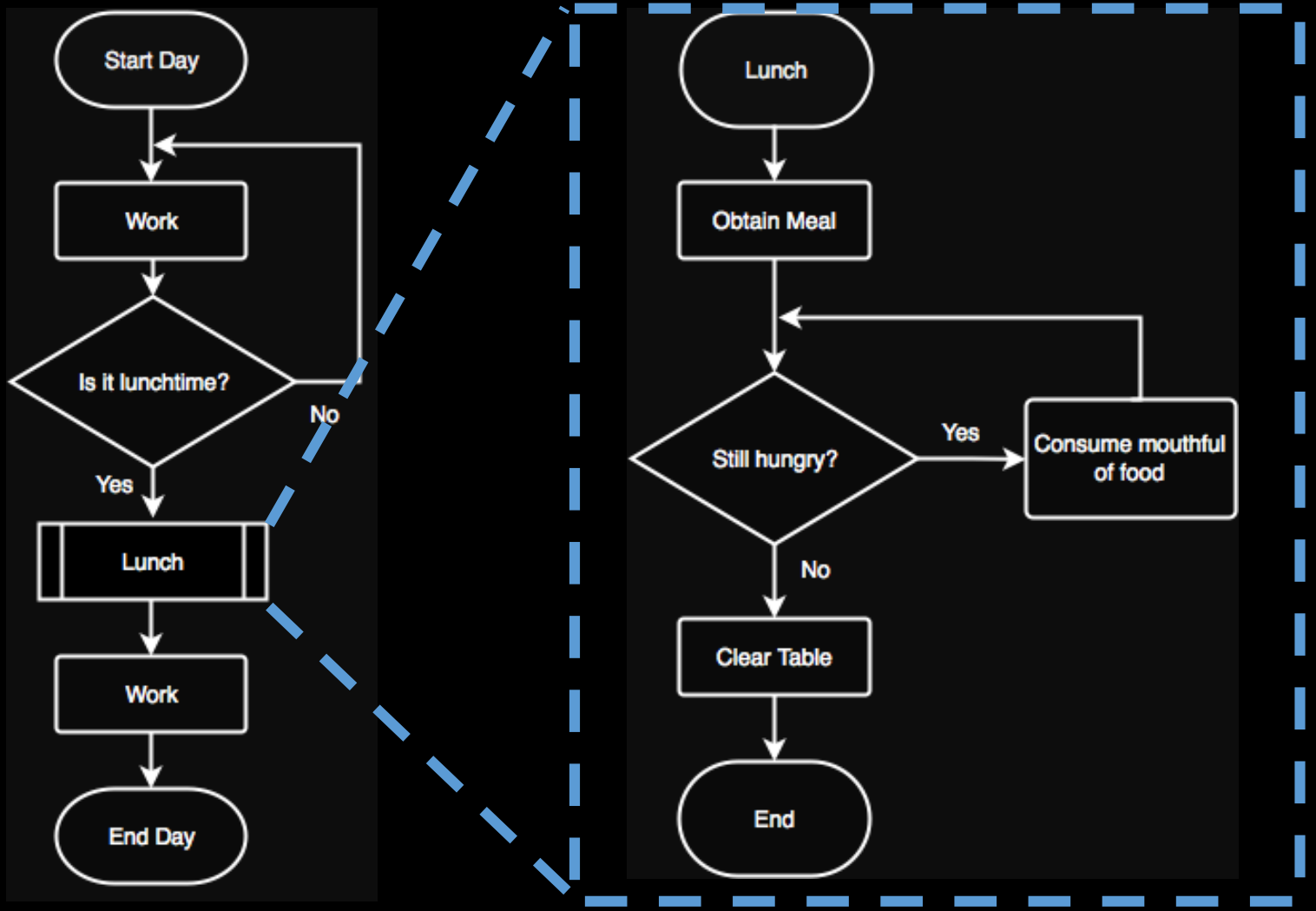


Lunch is a function

The Predefined Process for ‘Lunch’



Flowchart : All in a Day with the Predefined Process ‘Lunch’



A Puzzling Algorithm

- Using the inputs a=7 and b=2, predict the outputs.
- Write the code for this algorithm.
- Explain how the algorithm is implemented.

https://www.101computing.net/a-puzzling-algorithm/