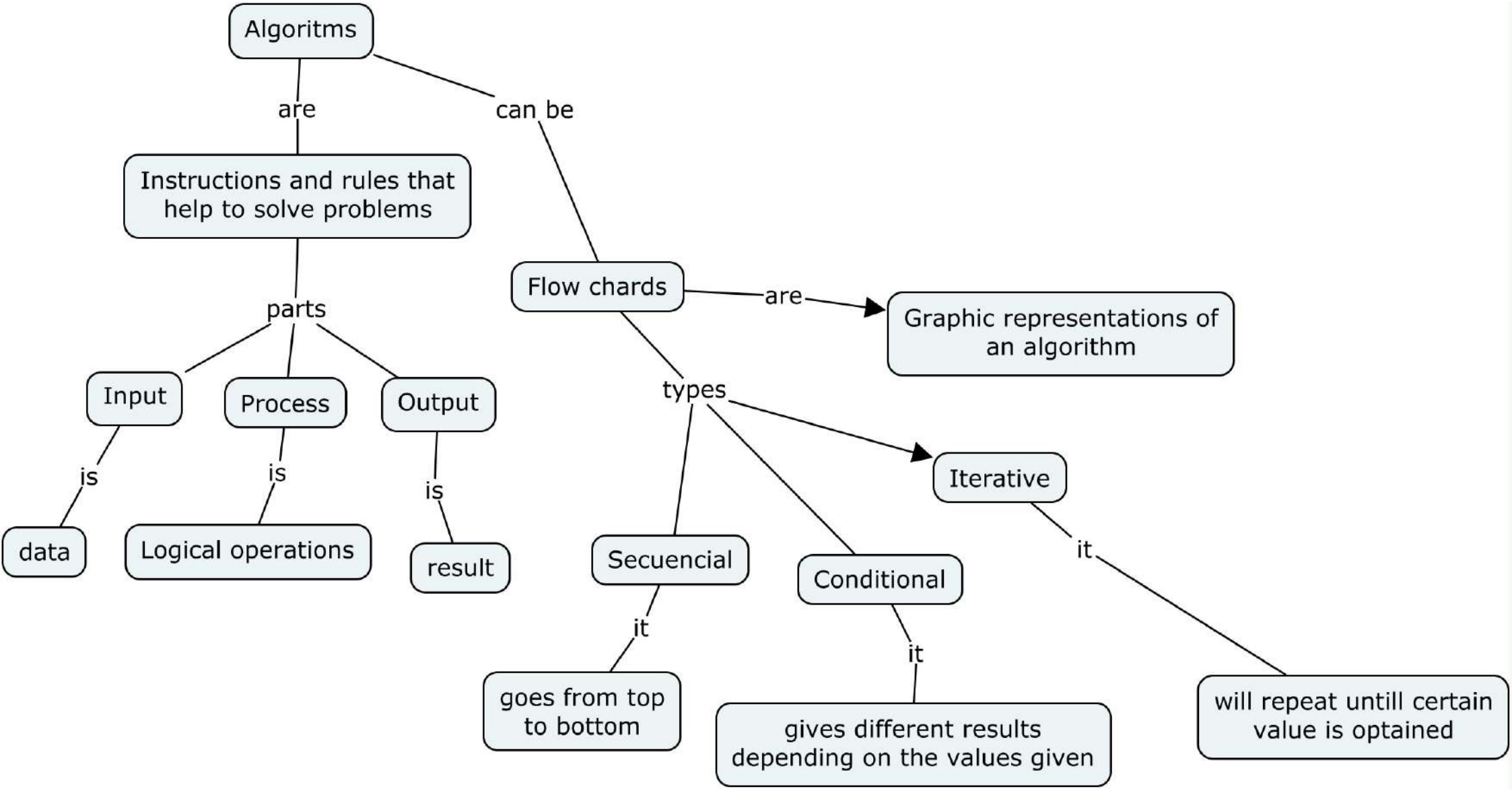
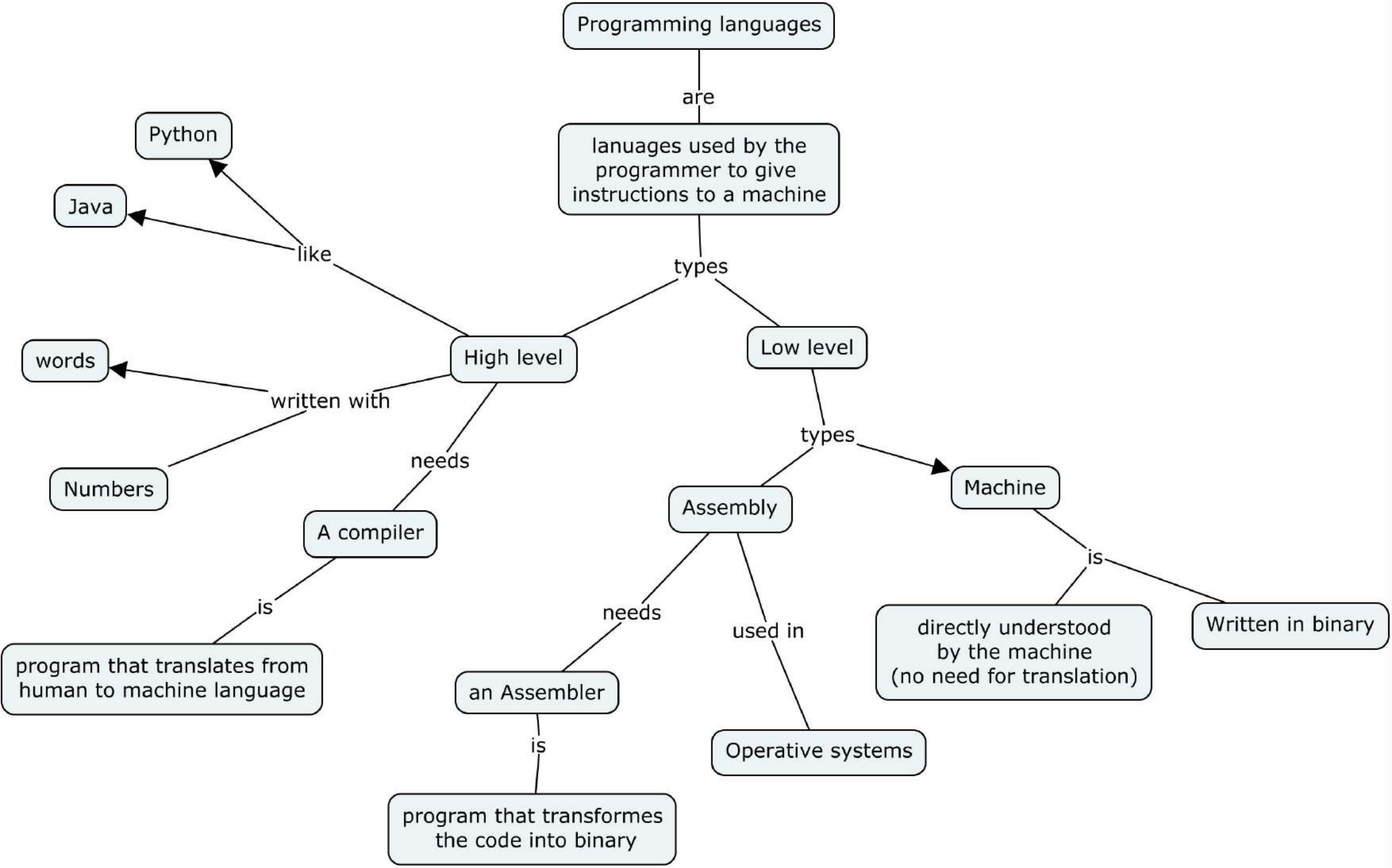
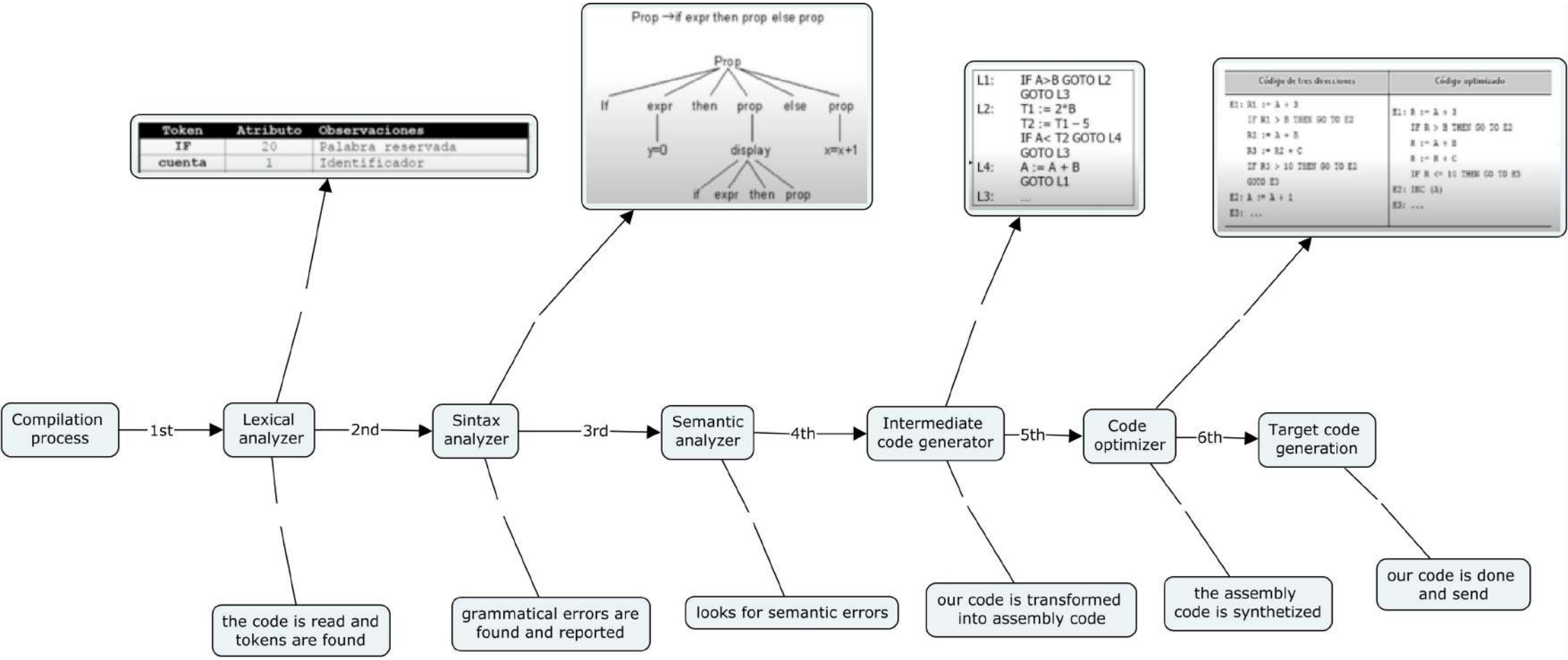
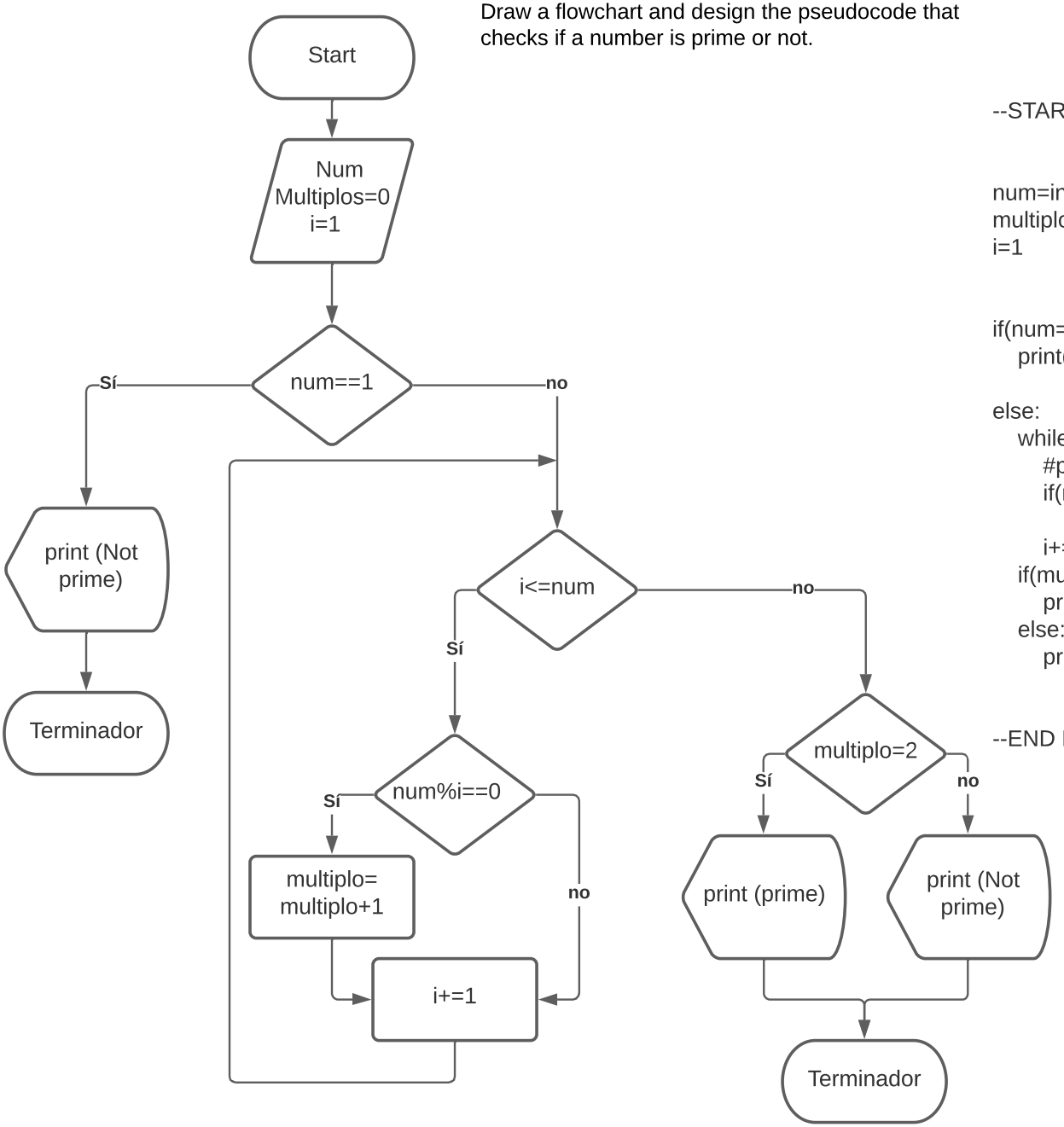

Algoritms
are
can be
Instructions and rules that help to solve problems
parts
Input
Process
Output
is
is
is
data
Logical operations
result
Flow chards
are
Graphic representations of an algorithm
types
Secuencial
Conditional
Iterative
it
it
it
goes from top to bottom
gives different results depending on the values given
will repeat untill certain value is optained


Programming languages
are
lanuages used by the programmer to give instructions to a machine
types
High level
Low level
like
Python
Java
words
written with
Numbers
needs
A compiler
is
program that translates from human to machine language
types
Assembly
Machine
needs
an Assembler
is
program that transformes the code into binary
used in
Operative systems
is
directly understood by the machine (no need for translation)
Written in binary


Prop →if expr then prop else prop
Prop
If
expr
then
prop
else
prop
y=0
display
x=x+1
if
expr
then
prop
Token
Atributo
Observaciones
IF
20
Palabra reservada
cuenta
1
Identificador
L1: IF A>B GOTO L2
GOTO L3
L2: T1 := 2*B
T2 := T1 – 5
IF A< T2 GOTO L4
GOTO L3
L4: A := A + B
GOTO L1
L3: ...
Código de tres direcciones
Código optimizado
Compilation process
1st
Lexical analyzer
2nd
Sintax analyzer
3rd
Semantic analyzer
4th
Intermediate code generator
5th
Code optimizer
6th
Target code generation
the code is read and tokens are found
grammatical errors are found and reported
looks for semantic errors
our code is transformed into assembly code
the assembly code is synthetized
our code is done and send

Project_B1

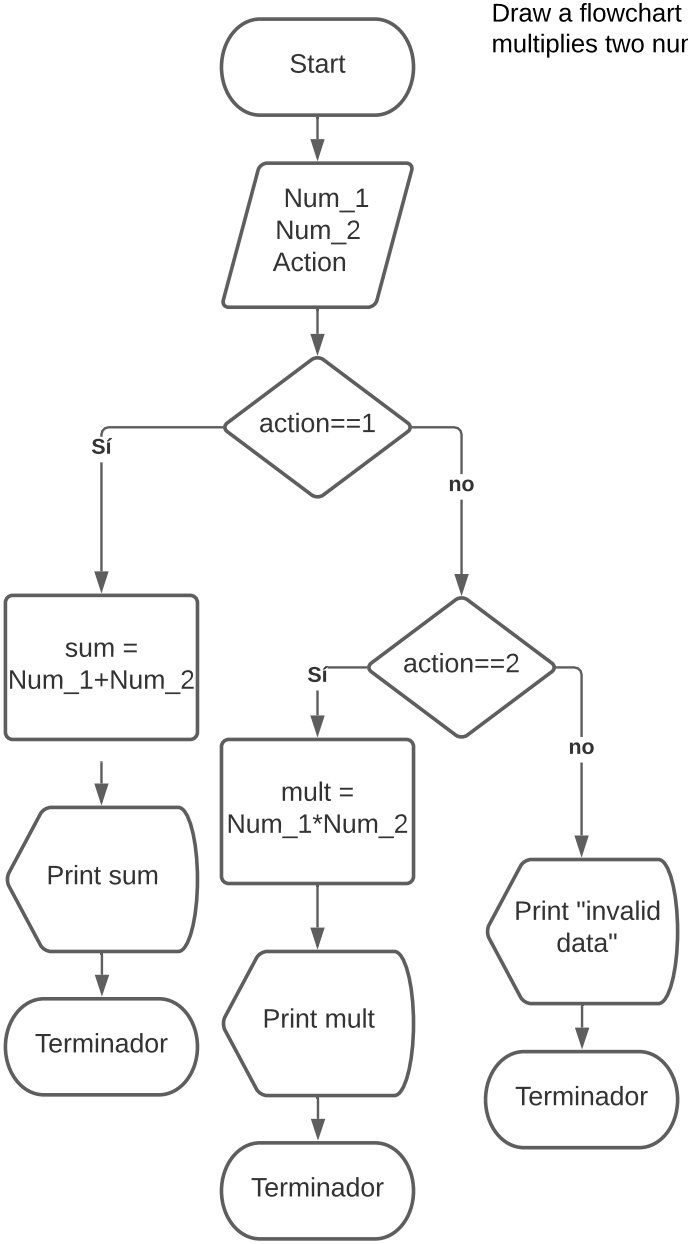
Draw a flowchart and design the pseudocode that checks if a number is prime or not.




```
--START PROGRAM--


num=int(input("Enter a number:\n"))
multiplos=0
i=1


if(num==1):
    print("not prime")

else:
    while i<=num:
        #print(i)
        if(num%i==0):
            multiplos = multiplos+1
        i+=1
    if(multiplos==2):
        print(num," is prime")
    else:
        print(num, " is not prime")


--END PROGRAM--
```

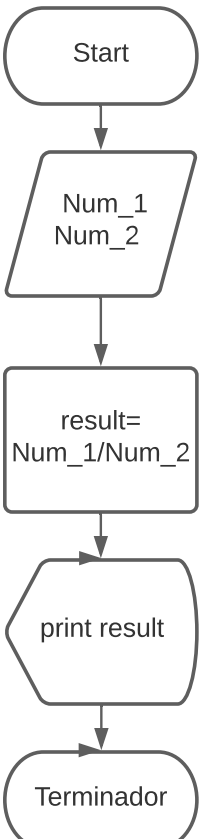
Project_B2

Draw a flowchart and write its pseudocode that adds / multiplies two numbers given by the user




```
--START PROGRAM--

Num_1=int(input("Insert a number\n"))
Num_2=int(input("Insert other number\n"))
action=int(input("Type 1 to sum and 2 to multipy\n"))


if(action==1):
    sum= Num_1+Num_2
    print(sum)

if(action==2):
    mult= Num_1*Num_2
    print(mult)

else:
    print("invalid data")

--END PROGRAM--
```

Project_B3



Draw a flowchart and write its pseudocode that divides two numbers given by the user (the first number is divided by the second number)

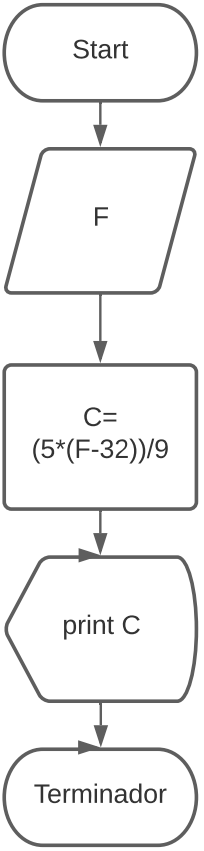
--START PROGRAM--

```
Num_1=int(input("Insert numerator\n"))
Num_2=int(input("Insert denominator\n"))

result=Num_1/Num_2

print("result=",result)
```

--END PROGRAM--

Project_B4

Draw a flowchart and write its pseudocode to convert temperature in Fahrenheit to Celsius

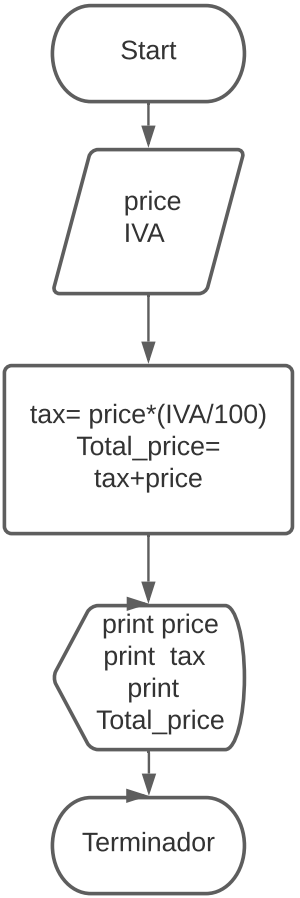


--START PROGRAM--

```
F=int(input("Temperature  in Farenheit:\n"))
C= (5*(F-32))/9

print("Temperature  in Celsius:",C)
```

--END PROGRAM--

Project_B5



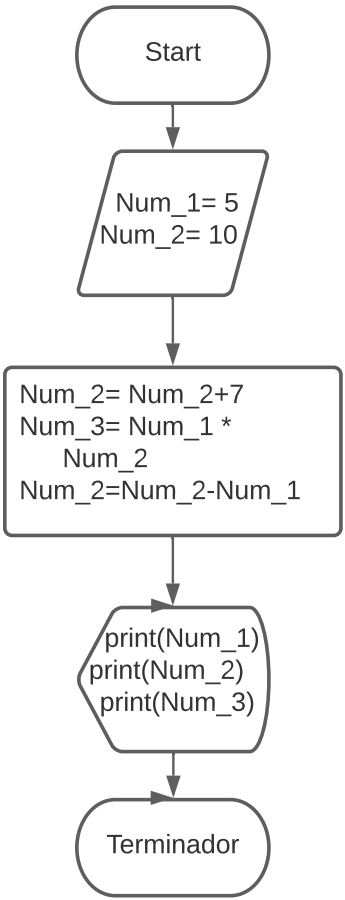
Design the algorithm for a program that calculates the total of a retail sale. The program should ask the user for the following: the retail price of the item being purchased and the sales tax rate. Once the information has been entered the program should calculate and display the following: the sales tax for the purchase and the total sale. Draw the flowchart for this algorithm.

--START PROGRAM--

```
price = int(input("What is the cost of this item?:\n"))
IVA = int(input("And the tax rate in 100%?:\n"))
tax = price*(IVA/100)
total_price = tax + price

print("item: $", price)
print("tax: $", tax)
print("Total: $", total_price)
```

--END PROGRAM--

Project_B6



Draw a flowchart to match the following pseudocode:

begin
Give variable num1 a starting value of 5 Give variable num2 a starting value of 10
Add 7 to num2
Store the value num1 multiply num2 in variable num3
Store the value num2 minus num1 in num2
Output num1, num2 and num3
End.

--START PROGRAM--

```
Num_1= 5
Num_2= 10

Num_2= Num_2+7
Num_3= Num_1*Num_2
Num_2=Num_2-Num_1

print(Num_1)
print(Num_2)
print(Num_3)
```

--END PROGRAM--