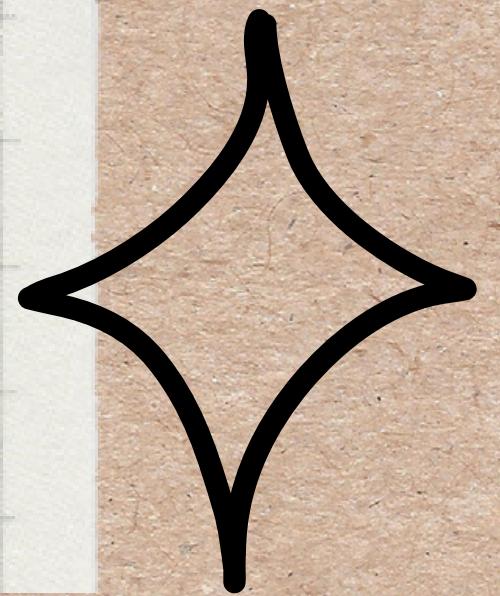
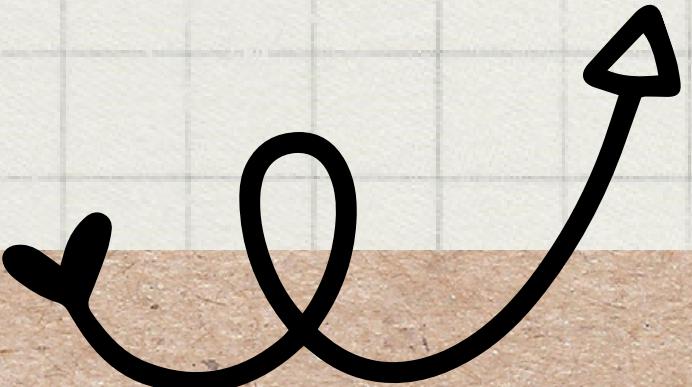


LOOPS

Introduction to Programming



CONTENTS COVERED

LOGIC BEHIND

WHY DO WE NEED LOOPS?

STRUCTURE OF A LOOP

TYPES OF LOOPS

THE THREE BASIC LOOPS IN THE
PROGRAMMING LANGUAGES

APPLICATIONS

BASIC PROBLEMS TO HELP YOU
UNDERSTAND WHERE TO APPLY
THE CONCEPT OF LOOPS



WHY LOOPS??



A photograph of a man with grey hair and glasses, wearing a dark shirt with a small logo on the chest. He is pointing his right index finger directly at the viewer. The background is a light-colored wall with a subtle pattern. Overlaid on the image is a black rounded rectangle containing the text "Don't repeat yourself" in white, bold, sans-serif font, repeated twice, once near the top and once near the bottom.

MAIN PURPOSE OF LOOPS:

- TO AVOID REPETITIONS
- TO COMBINE SIMILAR OPERATIONS
- TO AVOID LONG CODES

ADD 10 NUMBERS

set sum variable to zero

add number 1 to sum

add number 2 to sum

add number 3 to sum

add number 4 to sum

add number 5 to sum

add number 6 to sum

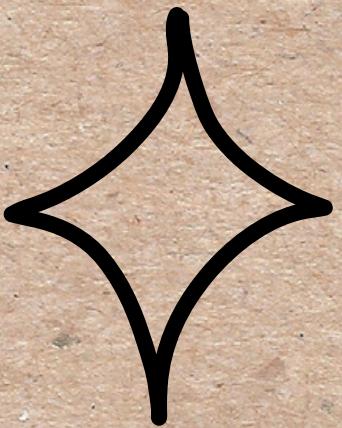
add number 7 to sum

add number 8 to sum

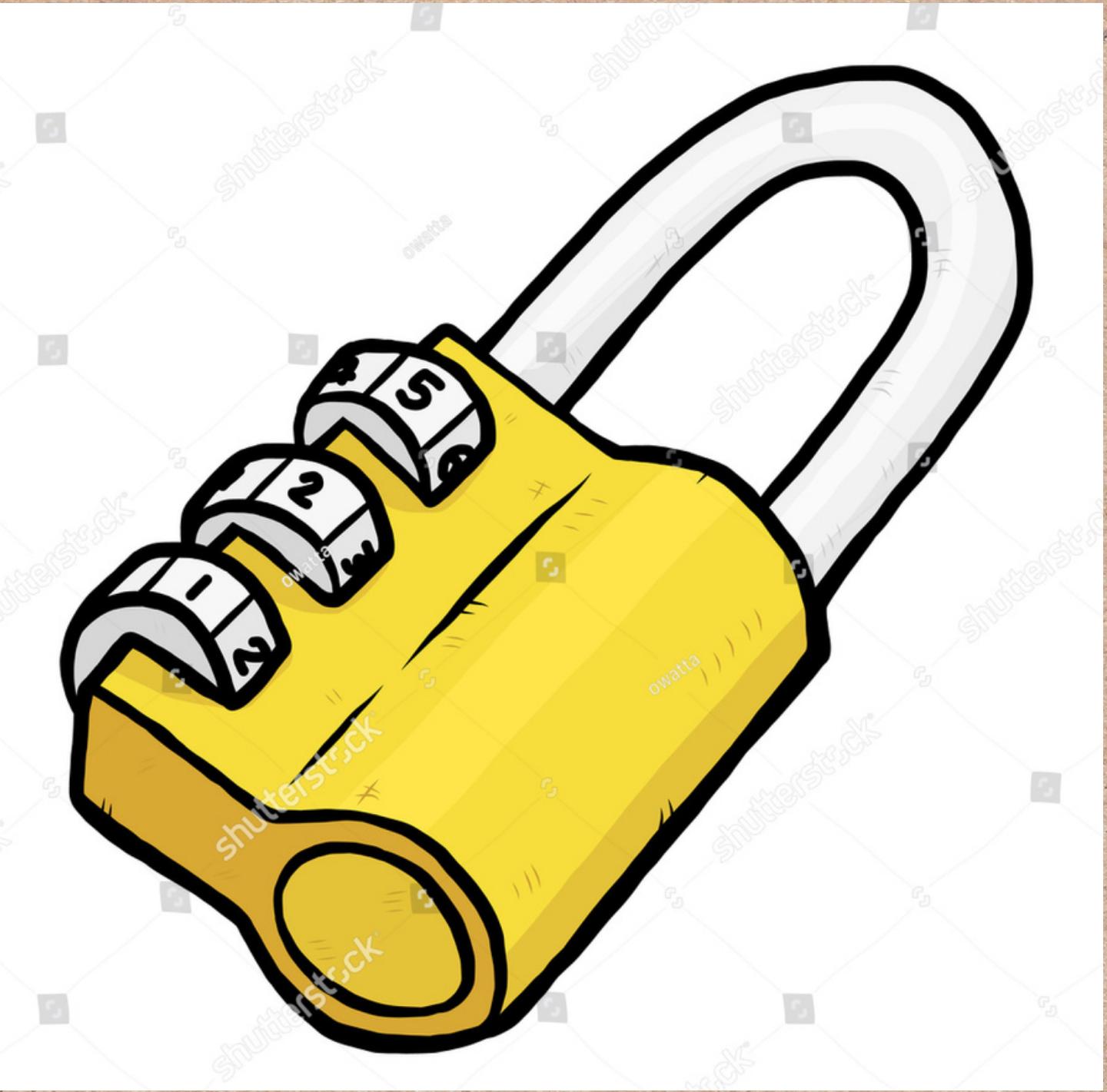
add number 9 to sum

add number 10 to sum

return the sum



CRACK THE LOCK!



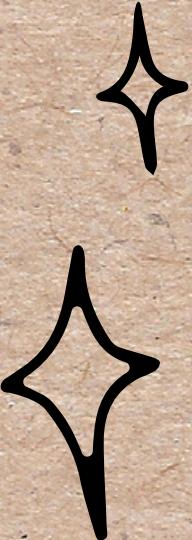
BASIC TERMS

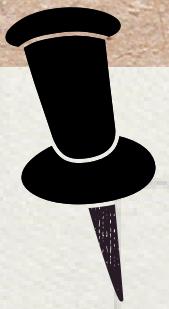
Iterations and
Iterators

Updating the
iterator

Conditional
Statement

“





THE LOOP LOGIC

THINGS TO DECIDE:

1. HOW MANY ITERATIONS DO WE EXPECT?
2. DECIDING THE CONDITIONAL STATEMENT FOR ITERATOR.
3. WHAT OPERATIONS DO WE WANT IN A GIVEN ITERATION?
4. HOW DO WE UPDATE THE ITERATOR?

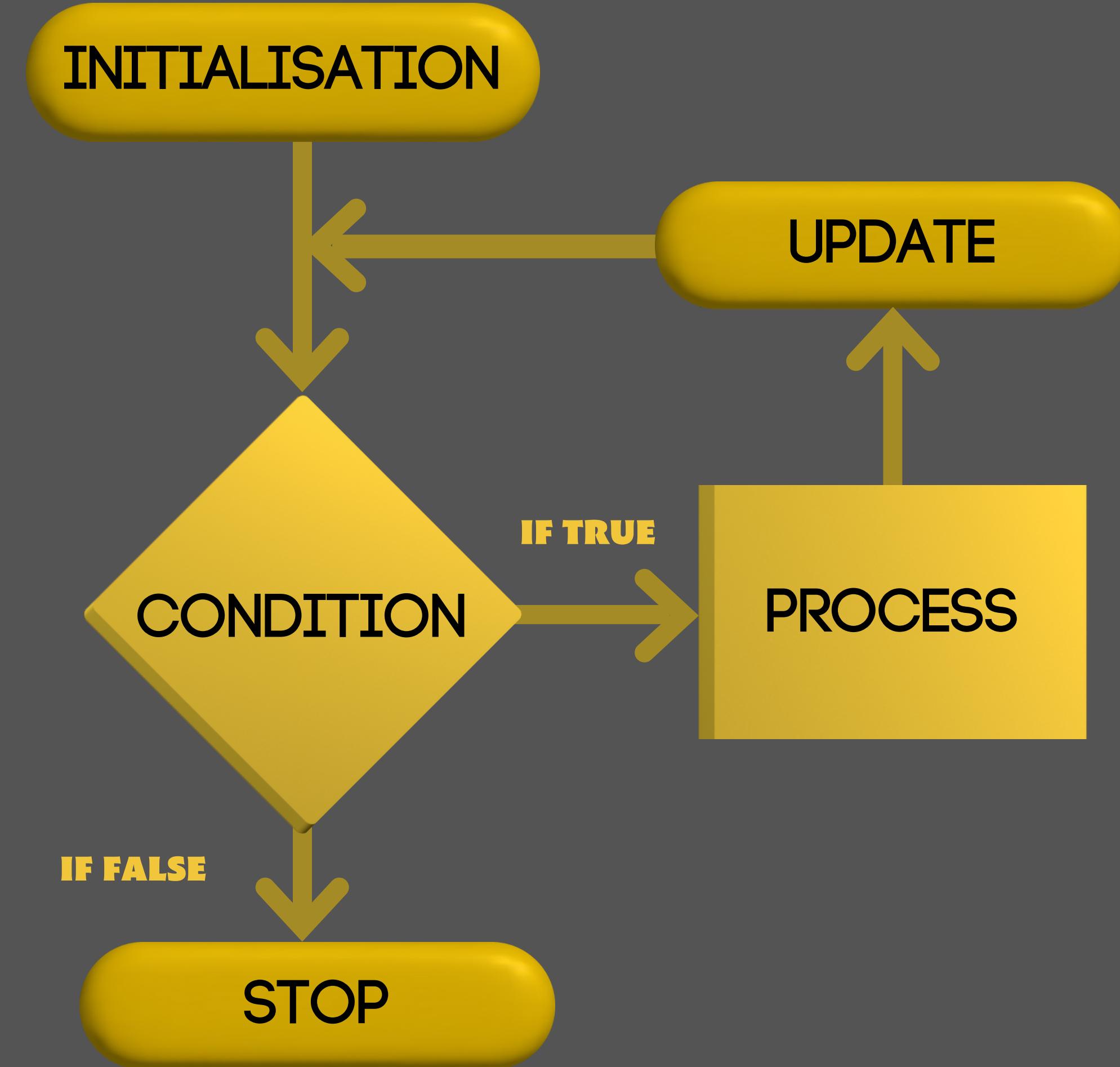


FOR LOOPS

NATURALLY USED WHEN YOU KNOW THE NUMBER OF
ITERATIONS
EXAMPLES:

- ADDING A SET OF NUMBERS
- FINDING IF A NUMBER IS PRIME

FOR LOOP LOGIC



FOR LOOPS: ADD 10 NUMBERS

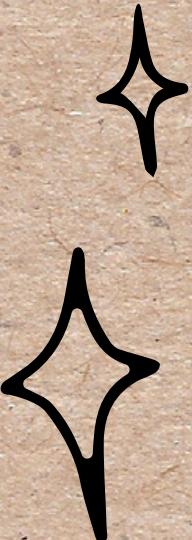


set sum variable to 0

repeat for 10 times:

add the corresponding number to sum

return the sum



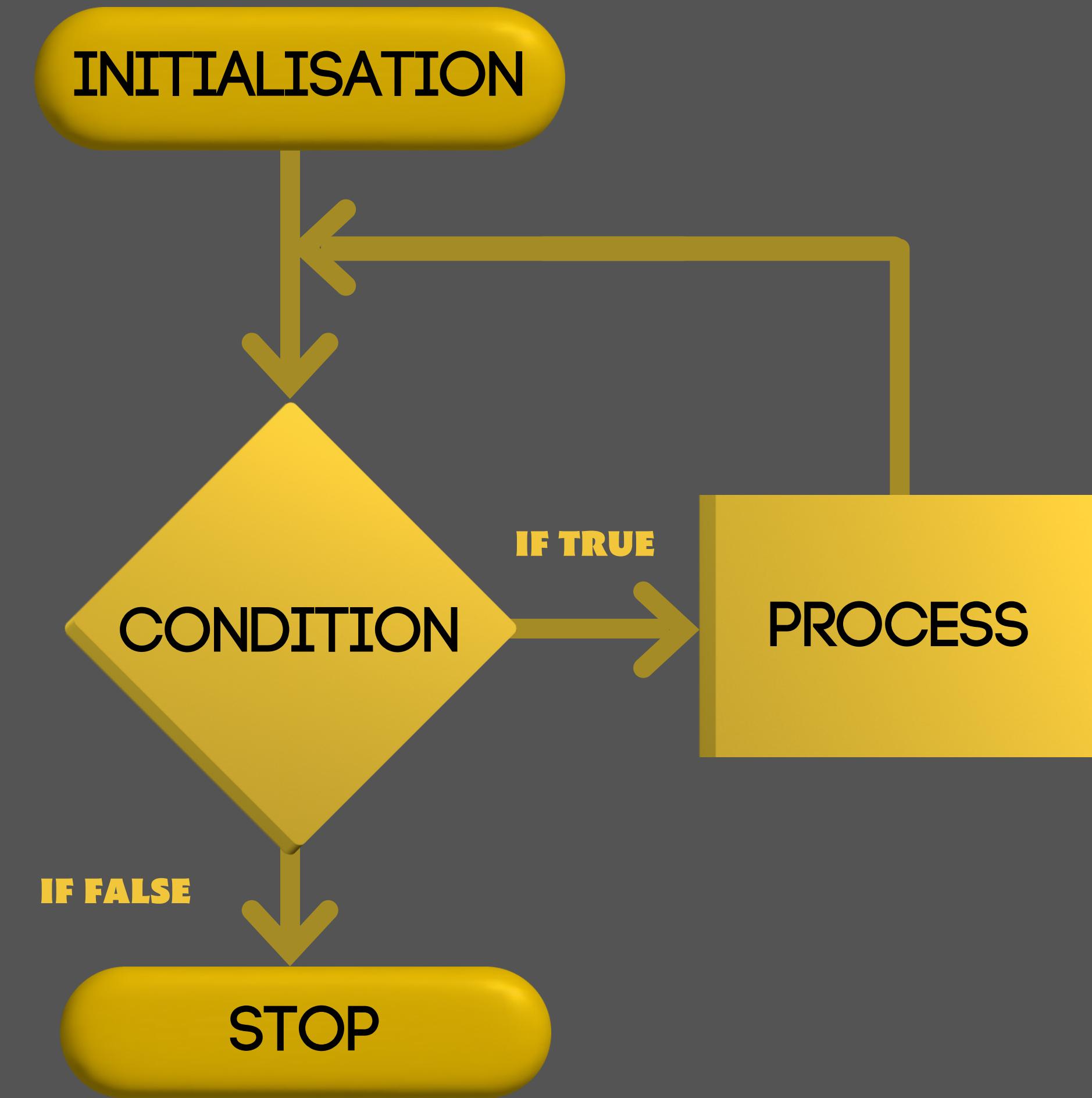
WHILE LOOPS

Generally used to perform looping until a certain condition holds true

Examples:

- Finding the number of digits of a number

WHILE LOOP LOGIC



WHILE LOOPS: NUMBER OF DIGITS IN AN INTEGER



set number_of_digits variable to 0

while integer is not 0:

perform floor division of integer by 10

increment number_of_digits by 1

return number_of_digits

FOR LOOPS: ADD 10 NUMBERS

set sum variable to 0

repeat for 10 times:

add the corresponding number to sum

return the sum

WHILE LOOPS: ADD 10 NUMBERS

set sum variable to 0

set iterator variable to 1

while iterator variable is less than or equal to 10:

add the corresponding number to sum

return the sum

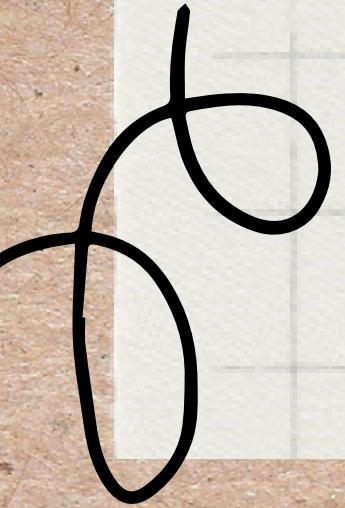
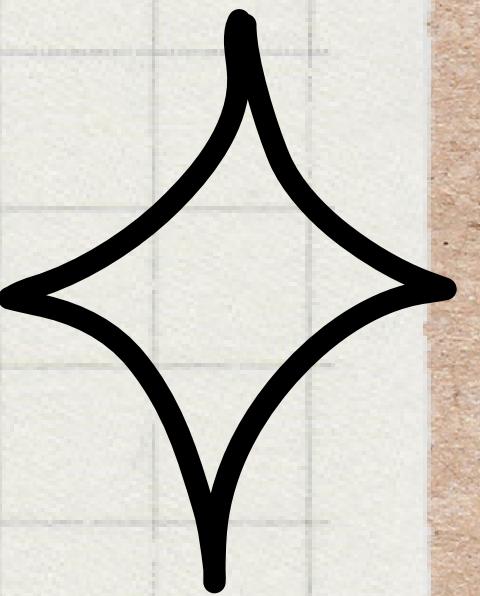
MAKE THE PATTERN

- > HERE YOU WILL BE GIVEN A PATTERN
- > DESIGN IT USING LOOPS



** PATTERN **

*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*





SOLUTIONS

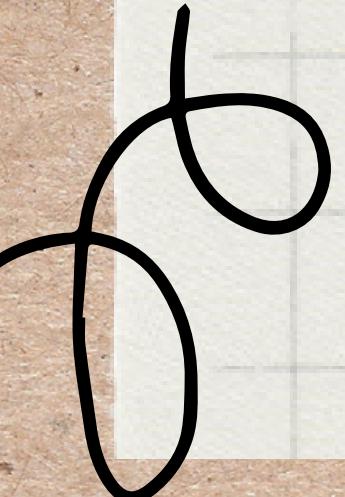
set loop iterator variable to 1

repeat loop while iterator is less than 10:

 display * * * * * * on the screen

 go to the next line on the screen

 increment loop iterator variable by 1





SOLUTIONS

set iterator_1 variable to 1

repeat while iterator_1 is less than 10:

set iterator_2 variable to 1:

repeat while iterator_2 is less than 7:

display * on the screen

go to the next line on the screen

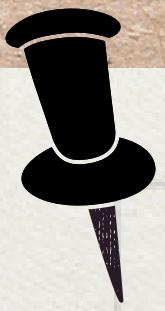
increment iterator_1 variable by 1



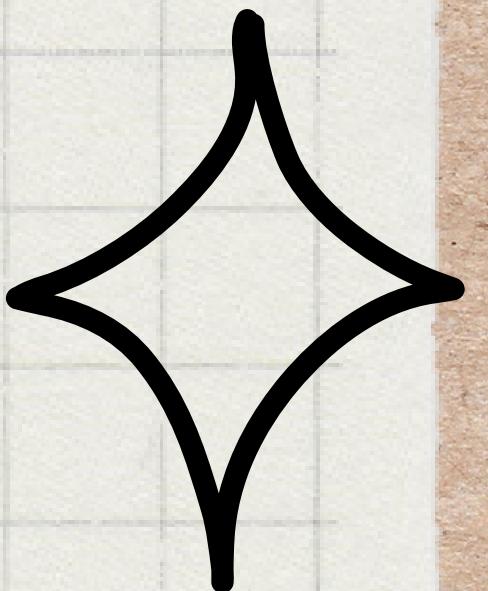
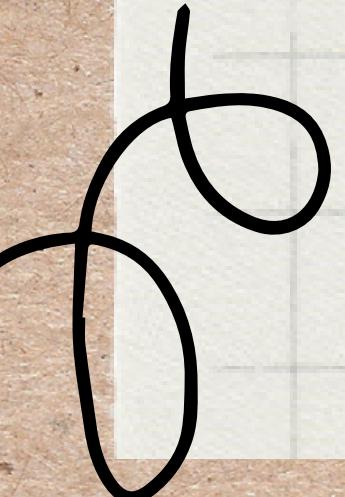
Any questions?

Try these out!

Find if a number is prime



** MAKE THIS PATTERN **



**Generate the fibonacci
sequence**

**THANK
you**

