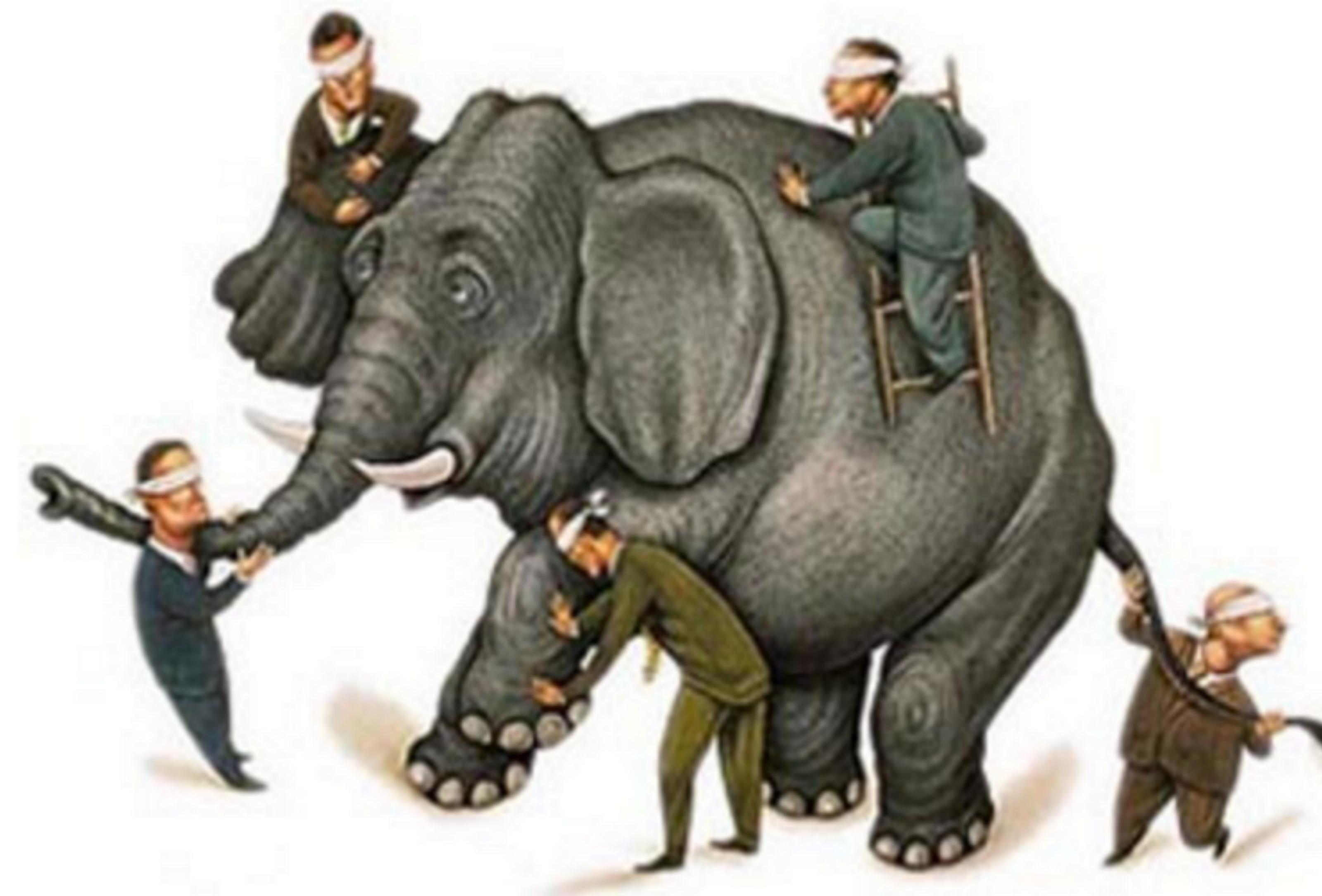


A COMMITTEE WAS ASKED TO DESCRIBE AN ELEPHANT

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A COMMITTEE WAS ASKED TO DESCRIBE AN ELEPHANT

Its a garden
hose!



A COMMITTEE WAS ASKED TO DESCRIBE AN ELEPHANT



Nope! Its a
pillar

A COMMITTEE WAS ASKED TO DESCRIBE AN ELEPHANT



We all agree
its a rope!

A COMMITTEE WAS ASKED TO DESCRIBE AN ELEPHANT



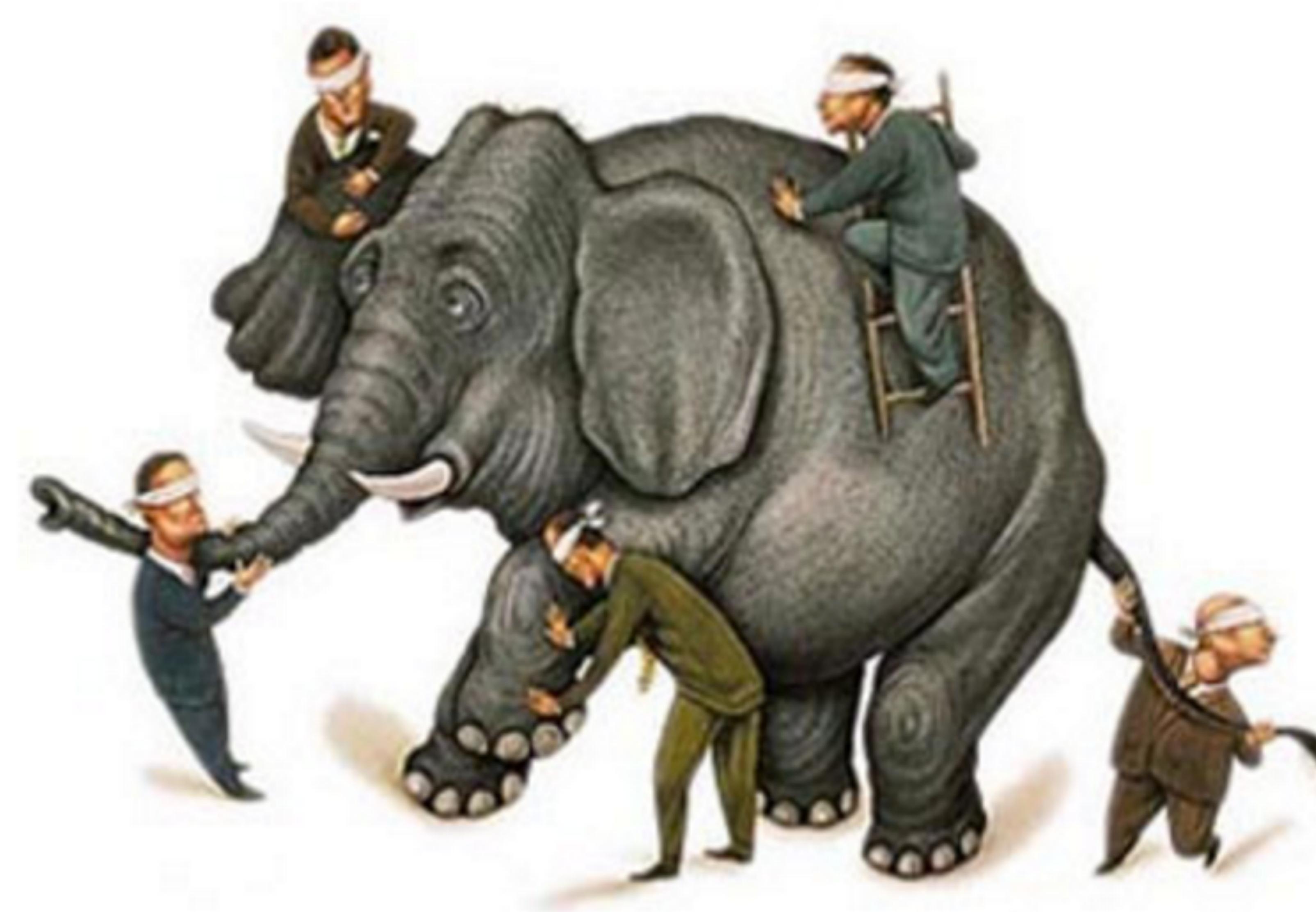
Nyet! Its a wall, a
brick wall in fact.

A COMMITTEE WAS ASKED TO DESCRIBE AN ELEPHANT

A unique fan -
Japanese I believe



A COMMITTEE WAS ASKED TO DESCRIBE AN ELEPHANT



OBJECT-ORIENTED PROGRAMMING
(LIKE AN ELEPHANT)

IS POWERFUL, AND ALL
THINGS TO ALL PEOPLE

OBJECT-ORIENTED PROGRAMMING

(LIKE AN ELEPHANT)

IS POWERFUL, AND ALL
THINGS TO ALL PEOPLE

LET ME DESCRIBE IT AS A C
PROGRAMMER WOULD

“CLASSES ARE STRUCTS THAT
CONTAIN FUNCTIONS”

FLASHBACK TO C

**FIRST NAME, MIDDLE NAME, LAST
NAME**

FLASHBACK TO C

ADDRESS, EMAIL, PHONE NUMBER

FLASHBACK TO C

COMPANY, DESIGNATION

FLASHBACK TO C

OFTEN, SOME VARIABLES JUST MAKE
SENSE GROUPED TOGETHER

FLASHBACK TO C

OFTEN, SOME VARIABLES JUST MAKE
SENSE GROUPED TOGETHER

IN THE C PROGRAMMING
LANGUAGE, VARIABLES CAN BE
GROUPED TOGETHER USING
`struct`

YOU CAN CREATE USER-DEFINED
TYPES USING `struct` AND
`typedef`

BTW IF YOU HAVE LEARNT ANY
OBJECT ORIENTED
PROGRAMMING, A `struct` IS
A CLASS WITH ALL MEMBER
VARIABLES PUBLIC, AND NO
MEMBER FUNCTIONS

STRUCTS WERE A REALLY POWERFUL CONCEPT
WHEN THEY WERE INTRODUCED IN C; THEY SEEM
BORING NOW BECAUSE OF THE SPREAD OF OOP

OBJECT-ORIENTED PROGRAMMING

(LIKE AN ELEPHANT)

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A TRIANGLE

SIDE 1,
SIDE 2,
SIDE 3
(DATA)

CALCULATE
AREA,
PERIMETER
**(FUNCTIONS THAT
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PUBLIC!

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ANGLES

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IT CORRESPONDS EXACTLY
TO A STRUCT IN C

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SIDE 2,
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C++ GOES FAR BEYOND C IN MAKING
USER-DEFINED CLASSES FIRST CLASS
TYPES, ON PAR WITH THE SYSTEM
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OBJECT OF (OR AN INSTANCE OF) THE CLASS

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A CLASS IS BASICALLY A STRUCT ON STEROIDS

AN OBJECT IS A VARIABLE OF THAT CLASS

“OBJECT” AND “CLASS” ARE POSSIBLY THE 2
MOST IMPORTANT WORDS IN PROGRAMMING

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NOW EACH OBJECT (OR INSTANCE) OF
THE CLASS LOOKS EXACTLY LIKE THIS

SIDE 1,
SIDE 2,
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ANGLES

(DATA)

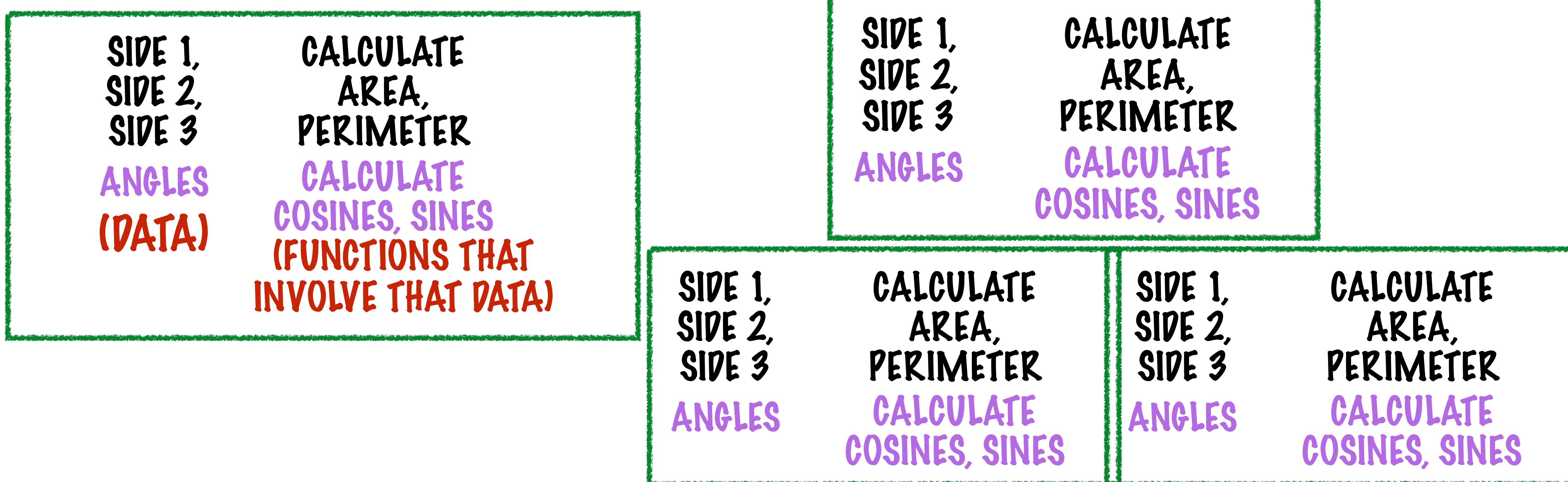
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A VARIABLE OF THIS CLASS IS CALLED AN
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THE DATA ITEMS ARE CALLED MEMBER
VARIABLES

NOW EACH OBJECT (OR INSTANCE) OF THE CLASS LOOKS EXACTLY LIKE THIS

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SIDE 2,
SIDE 3

ANGLES

(DATA)

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THE FUNCTIONS ARE CALLED MEMBER
FUNCTIONS (OR METHODS)

NOW EACH OBJECT (OR INSTANCE) OF THE CLASS LOOKS EXACTLY LIKE THIS

SIDE 1,
SIDE 2,
SIDE 3

ANGLES

MEMBER
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EACH OBJECT HAS ITS OWN COPY OF THE MEMBER
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ANGLES

MEMBER
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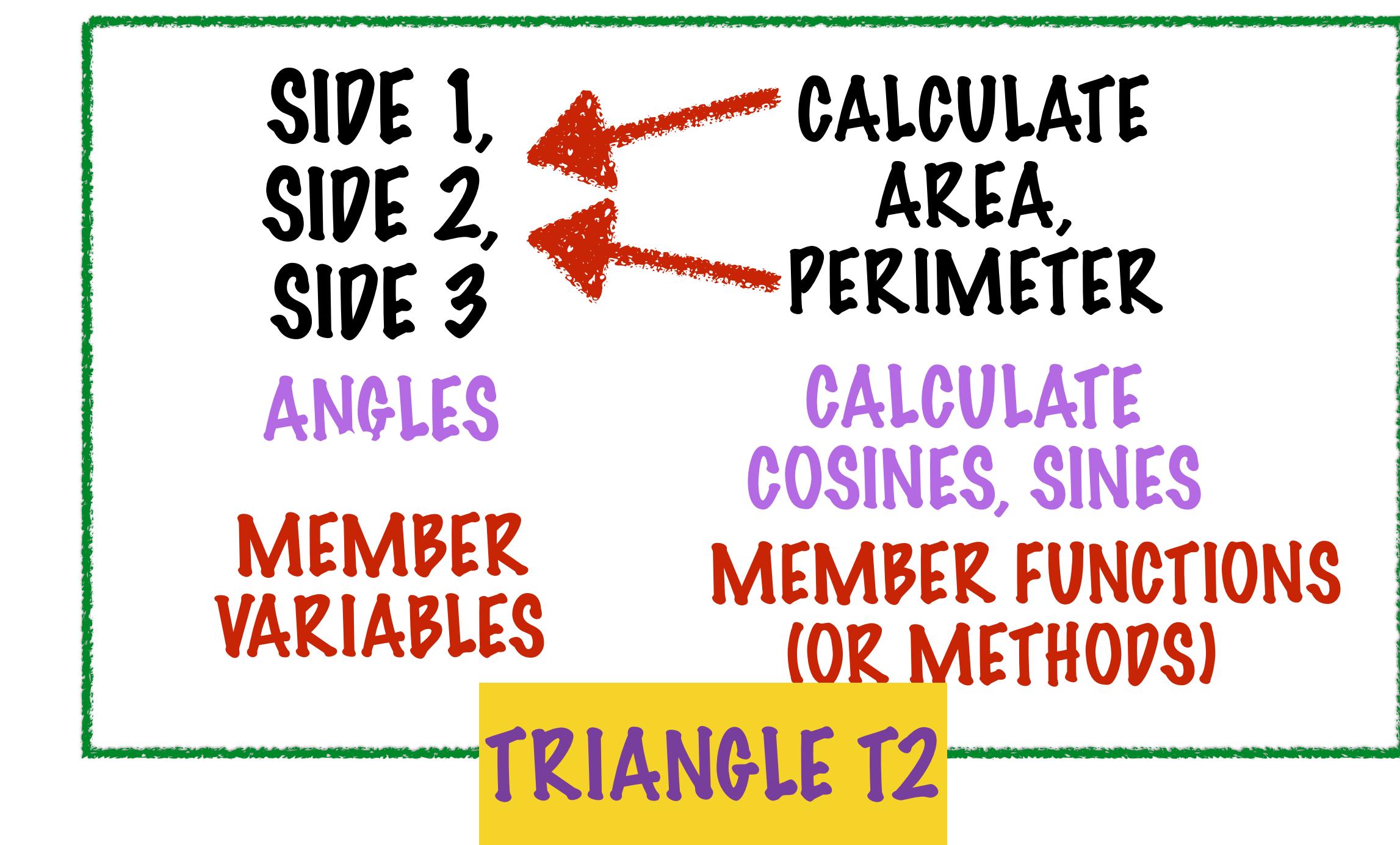
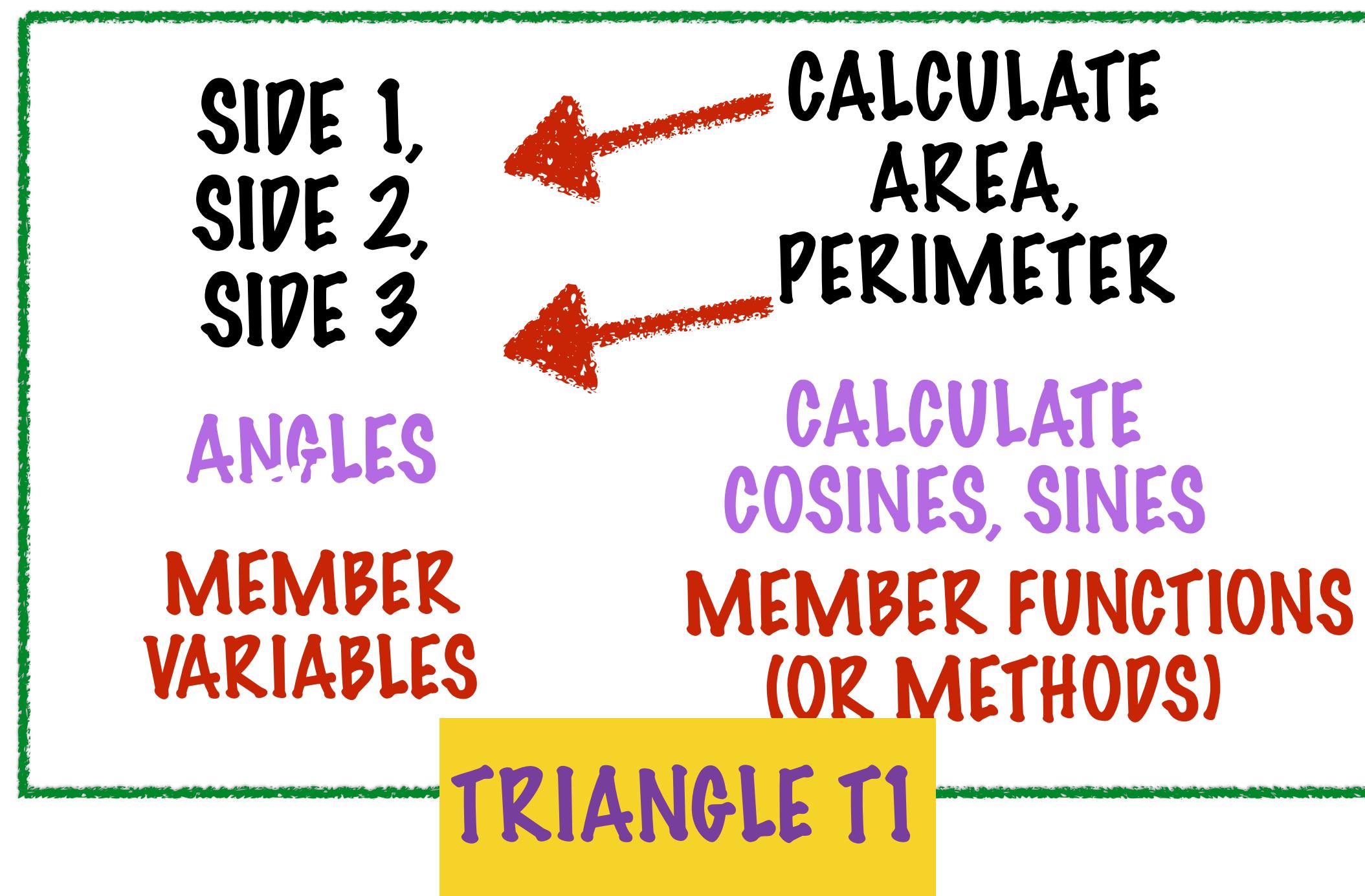
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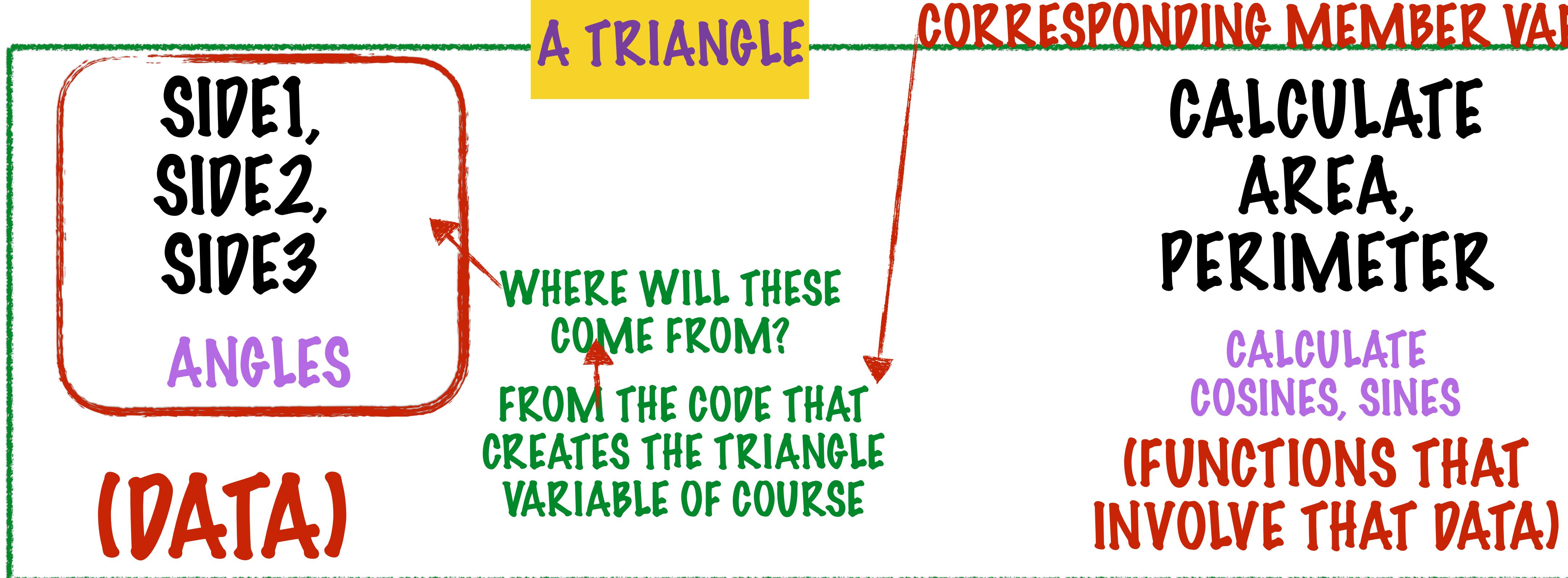
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EXACTLY, THAT'S THE CONSTRUCTOR

AHA!, SO WE WILL NEED A MEMBER FUNCTION TO TAKE CARE OF TAKING THESE IN, AND ASSIGNING TO THE CORRESPONDING MEMBER VARIABLES

SUCH A VARIABLE MIGHT
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THE CONSTRUCTOR

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THE CONSTRUCTOR
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THE C++ COMPILER WILL
AUTOMATICALLY CALL THE
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THE CONSTRUCTOR

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THE DESTRUCTOR

A MEMBER FUNCTION TO TAKE
CARE OF CLEANING UP THE OBJECT
JUST BEFORE IT CEASES TO EXIST

THE DESTRUCTOR ALWAYS HAS THE SAME
NAME AS THE CLASS, PRECEDED BY A TILDE (~)

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THE C++ COMPILER WILL
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A CLASS CAN ‘INHERIT’ FROM
ANOTHER CLASS - START WITH
ALL OF ITS MEMBERS AND
METHODS, AND THEN BUILD ON IT

AND COOLEST OF ALL, OTHER
TYPES CAN “BUILD ON” THIS TYPE

A CLASS CAN ‘INHERIT’ FROM ANOTHER CLASS - START WITH
ALL OF ITS MEMBERS AND METHODS, AND THEN BUILD ON IT

WE WILL GET BACK TO INHERITANCE ONCE WE REALLY
UNDERSTAND OBJECTS AND CLASSES THOROUGHLY

TAKEN TOGETHER, THESE IDEAS PRETTY MUCH DEFINE OBJECT ORIENTED PROGRAMMING

OFTEN, SOME VARIABLES AND
FUNCTIONS JUST MAKE SENSE
GROUPED TOGETHER

OTHERS MIGHT BE INTERNAL
PLUMBING, AND THESE SHOULD BE
PRIVATE

ANYONE CAN
CREATE A VARIABLE
OF THIS TYPE

SO LET'S CYCLE THROUGH THEM AGAIN (AND AGAIN)

SOME OF THESE VARIABLES AND FUNCTIONS MIGHT BE
INTERESTING TO THE REST OF THE PROGRAM, AND
THESE SHOULD BE PUBLIC

THIS GROUP OF VARIABLES &
FUNCTIONS IS EFFECTIVELY A NEW,
USER-DEFINED, TYPE

SUCH A VARIABLE MIGHT REQUIRE SOME
INITIALISATION, AND ONCE ITS DONE, SOME CLEAN-UP

AND COOLEST OF ALL, OTHER
TYPES CAN "BUILD ON" THIS TYPE

TAKEN TOGETHER, THESE IDEAS
PRETTY MUCH DEFINE OBJECT
ORIENTED PROGRAMMING

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THIS GROUP OF VARIABLES
FUNCTIONS IS EFFECTIVELY A NEW,
DEFINED, TYPE

SO LET'S CYCLE THROUGH THEM
AGAIN (AND AGAIN)

ANYONE CAN
CREATE A VARIABLE
OF THIS TYPE

SUCH A VARIABLE MIGHT REQUIRE SOME
INITIALIZATION, AND ONCE IT'S DONE, SOME CLEAN-UP

LET'S PRACTICE THESE BY
WRITING SOME C++ CODE