ACCESS MODIFIERS: PUBLIC, PRIVATE, PROTECTED AND PACKAGE PRIVATE

CLASSES CONTAIN MEMBER VARIABLES AND MEMBER FUNCTIONS

THE PERSON WRITING THE CLASS CAN CONTROL ACCESS TO THESE MEMBER VARIABLES AND MEMBER FUNCTIONS

THESE CONTROLS ARE SPECIFIED USING KEYWORDS IN CODE CALLED

ACCESS MODIFIERS

PUBLIC

MEMBER VARIABLES OR MEMBER FUNCTIONS
MARKED PUBLIC CAN BE ACCESSED BY ANY CODE
ANYWHERE

IN GENERAL, DO NOT MARK MEMBER VARIABLES
(DATA) AS PUBLIC

(UNLESS THAT DATA IS ALSO MARKED FINAL -
AND EVEN THEN TRY TO AVOID DOING SO)

MARKING DATA AS PUBLIC
VIOLATES 'ENCAPSULATION',
THE IDEA THAT EACH OBJECT
IS SELF-CONTAINED AND CONTROLS
ITS OWN DATA

INSTEAD, MARK MEMBER VARIABLES AS
PRIVATE AND HAVE PUBLIC MEMBER
FUNCTIONS TO ACCESS (GET/SET)
THEIR VALUES

PRIVATE

MEMBER VARIABLES OR MEMBER FUNCTIONS MARKED AS PRIVATE CANNOT BE ACCESSED BY ANY CODE OUTSIDE THAT CLASS

BTW OBJECTS OF THE SAME CLASS CAN ALWAYS ACCESS EACH OTHER'S PRIVATE MEMBER DATA OR FUNCTIONS

THERE ARE NO EXCEPTIONS - SUBCLASSES OF A CLASS CANNOT ACCESS PRIVATE MEMBERS OF THE PARENT CLASS

PRIVATE MEMBER VARIABLES ARE QUITE COMMON; PRIVATE MEMBER FUNCTIONS ARE LESS COMMON, BUT MAKE SENSE FOR LOGIC PURELY INTERNAL TO A CLASS

IN GENERAL, MARK MEMBER VARIABLES (DATA) AS PRIVATE, AND HAVE PUBLIC GETTER AND SETTER METHODS TO CONTROL ACCESS TO THEM

PROTECTED

PROTECTED: PUBLIC TO SUBCLASSES, PRIVATE TO EVERYONE ELSE

MARKING A MEMBER VARIABLE OR MEMBER FUNCTION AS PROTECTED MAKES IT EASIER FOR OTHER CLASSES THAT DERIVE FROM A CLASS

IF YOU EXPECT A CLASS TO BE SUB-CLASSED OFTEN USING THE 'PROTECTED' ACCESS MODIFIER MAKES SENSE

PACKAGE PRIVATE

A **Java package** is a technique for organizing **Java** classes into namespaces similar to the modules of Modula, providing modular programming in **Java**. **Java packages** can be stored in compressed files called JAR files, allowing classes to be downloaded faster as groups rather than individually.

Java package - Wikipedia, the free encyclopedia
https://en.wikipedia.org/wiki/**Java_package**

IF NO ACCESS MODIFIER (PUBLIC, PRIVATE, PROTECTED) IS EXPLICITLY USED TO MARK A MEMBER VARIABLE OR MEMBER FUNCTION,

THEN, BY DEFAULT,

THE MEMBER IS PACKAGE PRIVATE

PACKAGE PRIVATE MEMBERS ARE PUBLIC WITHIN THEIR PACKAGE, BUT PRIVATE TO EVERYONE ELSE (INCLUDING SUBCLASSES IN DIFFERENT PACKAGES)

ACCESS MODIFIERS SUMMARIZED

Access Levels

Modifier	Class	Package	Subclass	World
`public`	Y	Y	Y	Y
`protected`	Y	Y	Y	N
no modifier	Y	Y	N	N
`private`	Y	N	N	N

RULES OF THUMB

USE PRIVATE AS YOUR ACCESS MODIFIER
UNLESS YOU HAVE A GOOD REASON NOT TO

NEVER EVER MAKE A MEMBER VARIABLE (DATA)
PUBLIC, UNLESS IT IS MARKED FINAL

AND EVEN IF IT IS, MARKED FINAL, REALLY THINK TWICE
BEFORE DOING SO