

Types and component references

A class is also a type
Patient: a type (as well as a class)
 Values: names appearing in tabs of objects
 Operations: none

x 25 int y 7 int p null Patient

a()		
name	Jack Smith	Patient
address	23 Spruce, ...	getName() { ... }
owes	0	deposit(double) { ... }

function call: p . getName()
 s = p . getName();

procedure call: p . deposit(250.00);

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Method calls

A class is also a type
Patient: a type (as well as a class)
 Values: names appearing in tabs of objects
 Operations: none

a()		P null Patient
name	Jack Smith	Patient
address	23 Spruce, ...	getName() { ... }
owes	\$250.00	deposit(d) { ... }

function call: p . getName()
 procedure call: p . deposit(250.00);

General form:
 <variable-name> . <method-name> (...) ;

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Referencing fields

a()		P null Patient
name	Jack Smith	Patient
address	23 Spruce, ...	getName() { ... }
owes	\$250.00	deposit(d) { ... }

reference field name: p . name
 Example of use: s = p.name;

reference field name: p . owes
 Example of use: p.owes = p.owes - 250;

Common practice is *not* to reference fields but to use only the methods of p. Fields can be made "private" so they cannot be accessed this way. We discuss the reasons for this later.

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The value null

a()		P null Patient
name	Jack Smith	Patient
address	23 Spruce, ...	getName() { ... }
owes	\$250.00	deposit(d) { ... }

Patient p; ← declaration of p
 p.getName(); NullPointerException!!!!

null means the absence of an object name.

You can't reference a component (method or field) of a non-existent object.

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Creating an object

a()		P null Patient
name	Jack Smith	Patient
address	23 Spruce, ...	getName() { ... }
owes	\$250.00	deposit(d) { ... }

Patient p; ← declaration of p
 p = new Patient();

Evaluation of new Patient():
 1. Create new manila folder of class Patient
 2. Yield as value the name on the tab of the new folder.

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Summary

a()		P null Patient
name	Jack Smith	Patient
address	23 Spruce, ...	getName() { ... }
owes	\$250.00	deposit(d) { ... }

- Referencing a component of a manila folder (object) whose name is in a variable.
 p.getName()
 p.deposit(250);
 p.owes
- Value **null** in a variable means the absence of the name of an object.
- To evaluate new Patient()
 (a) Create (draw) a folder of class Patient;
 (b) Yield name of folder as the result.

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