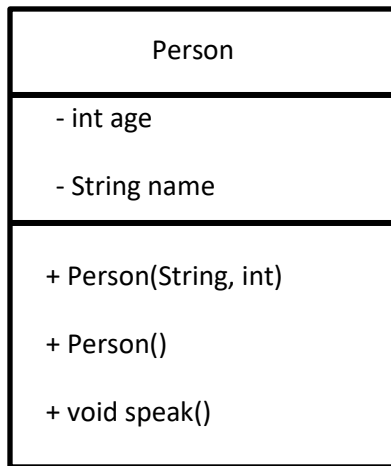


Group exercises #2

- 1) Consider the following class (given as a class diagram)



Among the following statements, indicate which are valid and which are invalid. A valid statement is a statement that compiles and executes in any class, which has access to the Person class. If a statement is invalid, explain why. Assume that the variables p and q are of type Person and have been correctly initialized before being used.

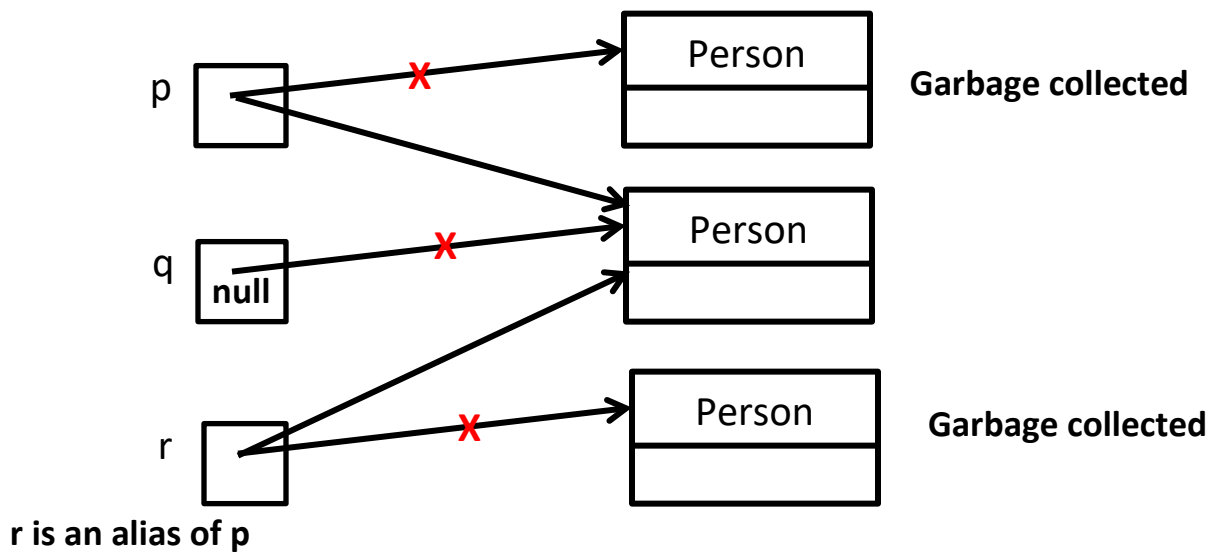
- a) `Person p = new Person("Maryjane", 30);`
- b) `p.speak();`
- c) `p.sleep();`
- d) `Person p = new Person;`
- e) `Person.speak();`
- f) `Person p = new Speak();`
- g) `p.age = 25;`
- h) `System.out.println("p.name");`
- i) `System.out.println(p.name);`
- j) `p = q;`
- k) `new Person("Huy",26).speak();`

- 2) For each snippet of code below, draw an object diagram showing the memory organization once the snippet of code has been executed. The variables p, q and r are all of type Person (as defined in question 1)). Indicate on the object diagram any alias and any object that has been garbage-collected (see the given example).

Example:

```
Person p = new Person();  
Person q = new Person();  
Person r = new Person();  
p = q;  
r = q;  
q = null;
```

The execution of the above code is illustrated by the following object diagram:



a) `Person p = new Person();`
`Person q = new Person();`
`Person r = new Person();`
`p = q;`
`q = r;`
`r = p;`

b) `Person p = new Person();`
`Person q = p;`
`p = new Person();`
`Person r = p;`
`p = new Person();`
`q = p;`
`p = new Person();`
`r = p;`
`p = null;`

c) `Person p = new Person();`
`Person q = new Person();`
`Person r = new Person();`
`p = q;`
`q = null;`
`r = q;`
`q = p;`

3) Consider the following piece of code:

```
Person p = null;  
p.speak();
```

- a) Does it compile? Explain.
- b) Does it execute? Explain.

4) You are given three variables `p`, `q`, and `r` of type `Person`. The three variables have been correctly initialized. Write a piece of code that writes the initial value of `p` in `q`, the initial value of `q` in `r`, and the initial value of `r` in `p`. Try to make your code as compact as possible.