Assignment 6: SCOOP type system

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1 Subtyping

1.1 Background

Have a look at the attributes shown in listing 1.

Listing 1: Attributes

1 \texttt{px: PROCESSOR}
2 \texttt{py: PROCESSOR}
3 \texttt{a: separate X}
4 \texttt{b: separate <px> X}
5 \texttt{c: separate <py> X}
6 \texttt{d: X}
7 \texttt{e: detachable separate X}
8 \texttt{f: detachable separate <px> X}
9 \texttt{g: detachable X}

1.2 Task

Decide whether the following attachments are valid or not. Justify your answer.

1. \texttt{a := b}
2. \texttt{a := d}
3. \texttt{b := a}
4. \texttt{b := c}
5. \texttt{b := d}
6. \texttt{d := a}
7. \texttt{d := b}
8. \texttt{a := e}
9. \texttt{e := a}
2 Valid targets

2.1 Background

Have a look at listing 2.

Listing 2: Enclosing Feature

```
p: PROCESSOR
2
r (a: detachable separate X; b: separate <p> X; c: separate X)
4   local
d: separate <p> X
6   e: separate <c.handler> X
   f: separate X
8   do
10  end
```

Imagine that the class X has a function twin: like Current and a procedure do_something. You can assume that the type of c.twin is attached and that its class type is X. You can also assume that the type of c.twin denotes that c.twin is on the same processor as c.

2.2 Task

Decide for each of the following feature calls, whether the calls are valid or not when they appear in feature r of listing 2.

1. c.do_something
2. c.twin.do_something
3. e := c.twin; e.do_something
4. f := c; f.do_something
5. a.do_something
6. d := b; d.do_something

3 Separate Generics or Generic Separate?

3.1 Background

The interplay between generics and separate types are important to understand, and enforce a good understanding of the type system.

3.2 Task

Consider the differences between:

- separate LIST [BOOK]
- LIST [separate BOOK]

Explain the distinction using the object/processor diagram.