

DieHandle new vs. self class new

When classes are first class citizen

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Goal

- `self` represents the receiver
- Classes receive messages too



Context

To support

```
(DieHandle new add: (Die faces: 4); yourself)  
+ (DieHandle new add: (Die faces: 6); yourself)
```

We defined + as

```
DieHandle >> + aDieHandle  
| handle |  
handle := DieHandle new.  
self dice do: [ :each | handle addDie: each ].  
aDieHandle dice do: [ :each | handle addDie: each ].  
^ handle
```



What happens when subclassing?

```
DieHandle << #MemoDieHandle
```

```
...
```

```
(MemoDieHandle new add: (Die faces: 4); yourself)  
+ (MemoDieHandle new add: (Die faces: 6); yourself)  
> aDieHandle
```

- We get a DieHandle instance back and not a MemoDieHandle instance!
- Current DieHandle»+ always returns an instance of DieHandle (**hardcoded class use**) even if the receiver is a subclass



Solution 1: Creating a hook method

```
DieHandle >> + aDieHandle  
| handle |  
handle := self handleClass new.  
self dice do: [ :each | handle addDie: each ].  
aDieHandle dice do: [ :each | handle addDie: each ].  
^ handle
```

```
DieHandle >> handleClass  
^ DieHandle
```

A subclass may **redefine** handleClass

```
MemoDieHandle >> handleClass  
^ MemoDieHandle
```



Solution 1: Creating a hook method

```
(MemoDieHandle new add: (Die faces: 4); yourself)  
+ (MemoDieHandle new add: (Die faces: 6); yourself)  
> aMemoDieHandle
```

We get an instance of the subclass!



But we can do better!

Pros:

- Extensibility

Cons:

- In each subclass we should redefine the hook method `handleClass`
- This is tedious and error prone (developer might forget)



Solution 2

```
DieHandle >> + aDieHandle
| handle |
handle := self handleClass new.
self dice do: [ :each | handle addDie: each ].
aDieHandle dice do: [ :each | handle addDie: each ].
^ handle

DieHandle >> handleClass
^ self class
```

- `self class` always returns the class of the receiver (it works for subclasses too!)
- We get instances of the same kind of the receiver



Summary

- Do not hardcode class use
- Encapsulate class use in a self send (a **hook**)
- Extensible solution but requires redefinition
- Return the class of the receiver
- Gracefully adapt to future subclasses
- Still extensible by redefinition

```
DieHandle >> + aDieHandle  
| handle |  
handle := DieHandle new.  
...
```

```
...  
handle := self handleClass new.  
...
```

```
DieHandle >> handleClass  
^ DieHandle
```

```
DieHandle >> handleClass  
^ self class
```

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