

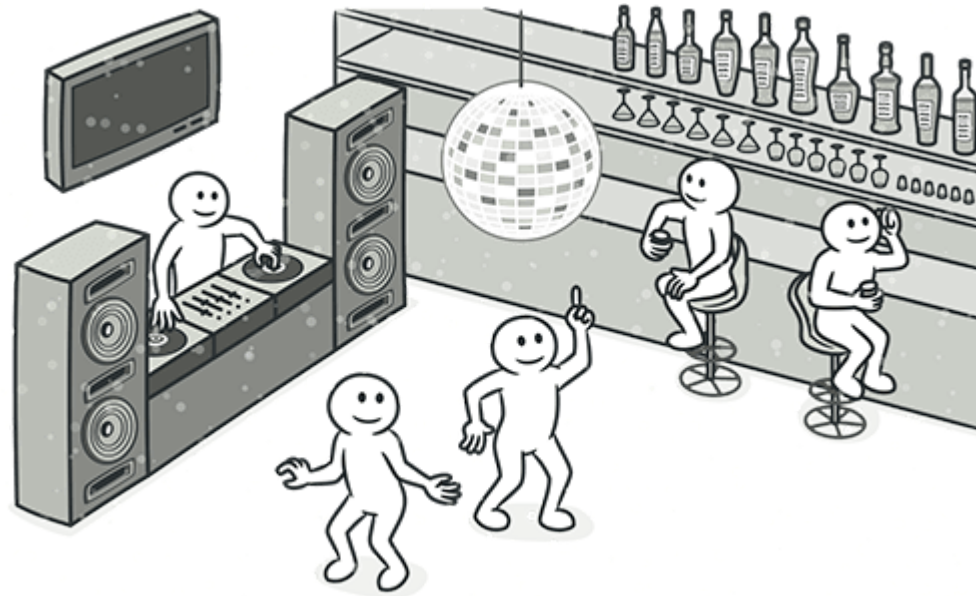


[Home](#) / [Refactoring](#) / [Code Smells](#) / [Bloaters](#)

# Data Clumps

## Signs and Symptoms

Sometimes different parts of the code contain identical groups of variables (such as parameters for connecting to a database). These clumps should be turned into their own classes.



## Reasons for the Problem

Often these data groups are due to poor program structure or "copypasta programming".

If you want to make sure whether or not some data is a data clump, just delete one of the data values and see whether the other values still make sense. If this isn't the case, this is a good sign that this group of variables should be combined into an object.

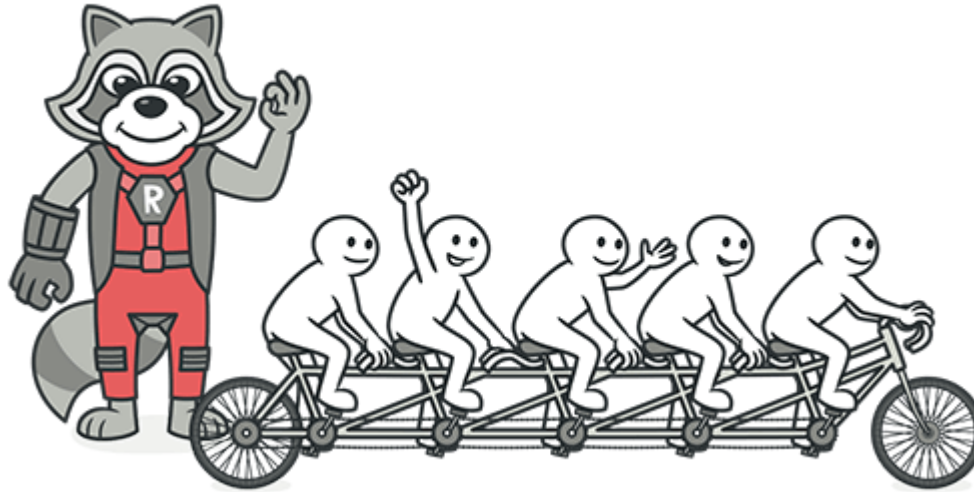
## Treatment

- If repeating data comprises the fields of a class, use **Extract Class** to move the fields to their own class.
- If the same data clumps are passed in the parameters of methods, use **Introduce Parameter Object** to set them off as a class.
- If some of the data is passed to other methods, think about passing the entire data object to the method instead of just individual fields. **Preserve Whole Object** will help with this.
- Look at the code used by these fields. It may be a good idea to move this code to a data class.



## Payoff

- Improves understanding and organization of code. Operations on particular data are now gathered in a single place, instead of haphazardly throughout the code.
- Reduces code size.



## When to Ignore

Passing an entire object in the parameters of a method, instead of passing just its values (primitive types), may create an undesirable dependency between the two classes.

