

# Tech Debt

YEGOR BUGAYENKO

Lecture #14 out of 24

80 minutes

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“Shipping first time code is like going into debt. A little debt speeds development so long as it is paid back promptly with a rewrite. The danger occurs when the debt is not repaid. Every minute spent on not-quite-right code counts as interest on that debt.”

— Ward Cunningham, *Experience Report — The WyCash portfolio management system*, OOPSLA, 1992

## Puzzle Driven Development: Motivating Example

### Commit #1:

```
1 int fibonacci(int n) {  
2     if (n <= 2) {  
3         return 1;  
4     }  
5     // @todo I don't know  
6     // what to do when "n"  
7     // is larger than "2".  
8     // Implement it and uncomment  
9     // the assertion below.  
10    return 0;  
11 }  
12 assert fibonacci(0) == 1;  
13 assert fibonacci(2) == 1;  
14 // assert fibonacci(9) == 34;
```

### Commit #2:

```
1 int fibonacci(int n) {  
2     if (n <= 2) {  
3         return 1;  
4     }  
5     if (n == 9) {  
6         return 34;  
7     }  
8     // @todo Implement others  
9     // too, but I don't know  
10    // how to do it right.  
11    return 0;  
12 }  
13 assert fibonacci(2) == 1;  
14 assert fibonacci(9) == 34;  
15 // assert fibonacci(10) == 55;
```

### Commit #3:

```
1 int fibonacci(int n) {  
2     if (n <= 2) {  
3         return 1;  
4     }  
5     return fibonacci(n-1)  
6         + fibonacci(n-2);  
7 }  
8 assert fibonacci(0) == 1;  
9 assert fibonacci(2) == 1;  
10 assert fibonacci(9) == 34;  
11 assert fibonacci(10) == 55;
```

## Break-and-Fix Cycle



Source: <https://www.yegor256.com/2014/04/12/puzzle-driven-development-by-roles.html>

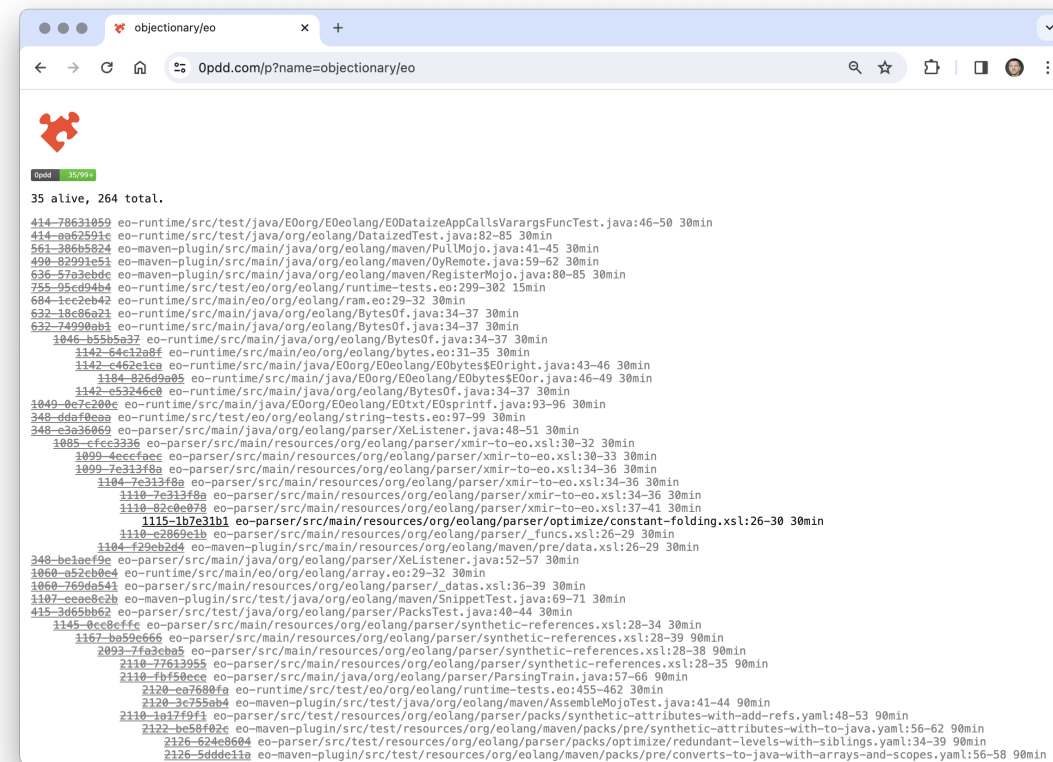
www.Opdd.com



## PDD Pipeline



# 250+ Puzzles in objectionary/eo



Source: <https://www.opdd.com/p?name=objectionary/eo>

# Sample Ticket Submitted by 0pdd.com to objectionary/eo



Source: <https://github.com/objectionary/eo/issues/2700>



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“This paper presents the benefits of considering the entire backlog when prioritizing tasks. We employ an iterative approach using Particle Swarm Optimization to optimize a linear model with various preprocessing methods to determine the optimal model for task prioritization within a backlog.”

— Yegor Bugayenko, Mirko Farina, Artem Kruglov, Witold Pedrycz, Yaroslav Plaksin, Giancarlo Succi, *Automatically Prioritizing Tasks in Software Development*, IEEE Access, Vol. 11, 2023

## Read this:

*Automatically Prioritizing and Assigning Tasks from Code Repositories in Puzzle Driven Development*, Yegor Bugayenko, Ayomide Bakare, Arina Cheverda, Mirko Farina, Artem Kruglov, Yaroslav Plaksin, Giancarlo Succi, and Witold Pedrycz, Proceedings of the International Mining Software Repositories (MSR), 2022

*Automatically Prioritizing Tasks in Software Development*, Yegor Bugayenko, Mirko Farina, Artem Kruglov, Witold Pedrycz, Yaroslav Plaksin, and Giancarlo Succi, IEEE Access, Vol. 11, 2023

Puzzle Driven Development (2010)

PDD by Roles (2014)

PDD in Action (2017)