Gender: Representation and Online Participation in StackOverflow

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Context

• under-representation of women in STEM-related subjects
  • EU: “Science: It’s a girl thing!”
• less unbalanced representation of women in the use of Internet technologies
  • <5% of open-source developers are women
Compare double to zero using epsilon

Today, I was looking through some C++ code (written by somebody else) and found this section:

```cpp
double someValue = ...
if (someValue < std::numeric_limits<double>::epsilon() &&
    someValue > -std::numeric_limits<double>::epsilon()) {
    someValue = 0.0;
}
```

I'm trying to figure out whether this even makes sense.

The documentation for `epsilon()` says:

The function returns the difference between 1 and the smallest value greater than 1 that is representable [by a double].

Does this apply to 0 as well, i.e. `epsilon()` is the smallest value greater than 0? Or are there numbers between 0 and 0 + epsilon that can be represented by a double?

If not, then isn't the comparison equivalent to `someValue == 0.0`?

- [cpp] [double]

+1 for good find, good research and good question – Krishnabhadra Dec 4 at 8:44

- The epsilon around 1 will most likely be much higher than that around 0, so there will probably be values between 0 and 0+epsilon_at_1. I guess the author of this section wanted to use something small, but he didn't want to use a magic constant, so he just used this essentially arbitrary value. – enobayram Dec 4 at 8:53
With IEEE floating-point, between the smallest non-zero positive value and the smallest non-zero negative value, there exist two values: positive zero and negative zero. Testing whether a value is between the smallest non-zero values is equivalent to testing for equality with zero; the assignment, however, may have an effect, since it would change a negative zero to a positive zero.

It would be conceivable that a floating-point format might have three values between the smallest finite positive and negative values: positive infinitesimal, unsigned zero, and negative infinitesimal. I am not familiar with any floating-point formats that in fact work that way, but such a behavior would be perfectly reasonable and arguably better than that of IEEE (perhaps not enough better to be worth adding extra hardware to support it, but mathematically 1/(1/INF), 1/(-1/INF), and 1/(1-1) should represent three distinct cases illustrating three different zeroes). I don’t know whether any C standard would mandate that signed infinities, if they exist, would have to compare equal to zero. If they do not, code like the above could usefully ensure that e.g. dividing a number repeatedly by two would eventually yield zero rather than being stuck on "infinitesimal".

Isn’t "1/(1-1)" (from your example) infinity rather than zero? – Sebastian Krysmanski Dec 5 at 8:34

The quantities (1-1), (1/INF), and (-1/INF) all represent zero, but dividing a positive number by each of them should in theory yield three different results (IEEE math regards the first two as identical). – supercat Dec 5 at 14:22
“I know a lot of female programmers, and I know there are a good number of them out there.

But I don’t recall ever having one of my questions answered by, nor have I ever answered a question by a female programmer here at Stack Overflow. [...] why aren’t there more of them participating, both with questions and answers?

What can Stack Overflow do to persuade female programmers to participate more?”
Answer from a female user:
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“This isn’t the first time I’ve thought of [why] my question/answer ratio on SO is DEPLORABLE. The answer is there is NO appeal for me in answering questions. [...] I WILL answer if I am on and happen to see a question that I know the answer to. However, I don’t go looking for them, really.

I think the answer is it doesn’t entertain me and I don’t find much fulfillment in it.”
What is the participation rate of women in StackOverflow?

Do men and women contribute equally?
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Do men and women contribute equally?

How to identify gender?
Sara Chipps

Website: sarajchipps.com
Location: New York, NY

72 Questions

68 NHibernate.MappingException: No persister for:

11 How hard is it to incorporate full text search with SQL Server?

10 Possibly lost some changes via git

10 Interview questions for Flash developers [closed]

9 ASP.NET controls cannot be referenced in code-behind in Visu...

3,903 Reputation

5 NHibernate.MappingException: No persister for:

5 Delegate event firing twice

-2 Live() keyword not working on load with dynamic html images

5 Translating javascript json parse to rails

165 Tags

57 Answers
(Sara, USA): female
(Andrea, Italy): male; (Andrea, Germany): female
(Bogdan, ): male
(Anna Akhmatova, Russia): female
(Andrea Demirović, Montenegro): unknown
In which I answer all of the questions

This blog post has been in the corners of my mind and nipping at my ankles for a while.

Please don’t linkbait this, or pick comment fights. This isn’t for upvotes, or HN fame.

Many people I meet ask me a variant on this question “I understand we want more women in technology, but why?” It’s a great question, and not at all something we should be offended by. Often men are afraid to ask questions like this for fear there will be backlash, I think that fear can lead to stifling of an important conversation.

Frankly, the internet is thriving without women building it, why should that change?

I put together the following answer for a Quora thread, I thought it would be also advantageous to put it here, so I (and maybe you) can reference it in the future.

I think the reason why we need more women building technology is threefold, I will outline below.

You will notice I stay away from generalizations like “women are better at xyz,” because such generalizations imply that we therefore must be worse at other things that men may be able to do better. I don’t think approaching the argument that way is productive.

Diversity leads to better products and results

As illustrated in the Cornell study included below and many more to be found online, diversity improves performance, morale, and end product. More women engineers means building a better internet, and improving software that can service society as a whole.

Building a better internet is why I started doing software development in the first place, I think we can all agree this is of utmost importance.


The Internet is the largest recording of human history ever built

Right now the architecture for that platform is being built disproportionately by white and Asian males. You’ve heard the phrase “he who writes history makes history”? We don’t yet know how this will affect future generations.
website sarajchips.com
Sara J Chipps
Sara Chipps

website: sarajchipps.com
location: New York, NY
age: 21

visits: 4 years, 3 months
seen: yesterday

3,903 reputation

Questions

NHibernate.MappingException: No persister for:
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Answers

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Translating javascript json parse to rails

Tags

165
(Sara Chipps, USA)
(Sara Chipps, USA)

(Tomalak Geret'kal, UK)
Same email hash as George Washington
How to identify gender?

~50% resolved → sample and check manually
Are women underrepresented?
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1-5% of open source developers are women

28% female employees with computer and mathematical occupations
Do men and women contribute equally?

Mann-Whitney tests (95% confidence), e.g. reputation:

- $H_0$: women and men achieve similar levels of reputation
- $H_1$: men achieve higher reputation levels
Do men and women contribute equally?
"I don't recall ever having one of my questions answered by a female programmer"

Female user: “There is NO appeal for me in answering questions, it doesn’t entertain me”
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