From Barriers To Bridges

Designing Infrastructure for Help in Online Programming Communities

Denae Ford Robinson
North Carolina State University
http://denaeford.me
What does a software engineer look like?
What does a software engineer look like?
What does a software engineer look like?
What does a software engineer look like?
Poll: How many of you heard of Stack Overflow?
Degree Centralization - Star graph not evaluated as 1

I'm working with a series of undirected small graphs using igraph in R. I'm interested in graph-level degree centralization, and am using the centr_degree function from igraph.

However, I noticed that even in cases of "star" graphs (one node connected to all other nodes, with no other connections), the code does not return a degree centralization of 1, though it seems from Freeman 1979 that they should. Am I missing something in how this is supposed to be calculated?

I think the actual problem may be an off-by-one error for the theoretical max. Calculating it manually gives you 3 * 4 = 12, which agrees with use of centralize(normalize=FALSE), but the R output from centralization_degree seems to be 4 * 5 = 20. To solve your problem I'd suggest using the following code to normalize it yourself.

```r
newCentralization = function(h) centralize(degree(h),normalize=FALSE)/((vcount(h)-1)*(vcount(h)))
newCentralization(h)
```

Thanks so much Patricia! – Abby Jones

[1 Answer]

1935 How to make a great R reproducible example?

3 Sort and subset neighbors by edge property in R using igraph
5 Changing node/vertex opacity in igraph in R
5 Using geo-coordinates as vertex coordinates in the igraph R-package

[2x2 to 1282x722]
Degree Centralization - Star graph not evaluated as 1

I'm working with a series of undirected small graphs using igraph in R. I'm interested in graph-level degree centralization, and am using the `centr_degree` function from igraph.

However, I noticed that even in cases of "star" graphs (one node connected to all other nodes, with no other connections), the code does not return a degree centralization of 1, though it seems from Freeman 1979 that they should. Am I missing something in how this is supposed to be calculated?

I think the actual problem may be an off-by-one error for the theoretical max. Calculating it manually gives you $3 \times 4 = 12$, which agrees with use of `centrize(normalize=FALSE)`, but the R output from `centralization_degree` seems to be $4 \times 5 = 20$. To solve your problem I'd suggest using the following code to normalize it yourself.

```r
newCentralization = function(h) centralize(degree(h), normalize=FALSE)/((vcount(h)-1)*(vcount(h))
newCentralization(h)
```

~ Abby Jones ~ Sep 216 at 20:57

Thanks so much Patricia! ~ Abby Jones ~ Sep 7 16 at 17:08
Degree Centralization - Star graph not evaluated as 1

I'm working with a series of undirected small graphs using igraph in R. I'm interested in graph-level degree centralization, and am using the `centr_degree` function from igraph.

However, I noticed that even in cases of "star" graphs (one node connected to all other nodes, with no other connections), the code does not return a degree centralization of 1, though it seems from Freeman 1979 that they should. Am I missing something in how this is supposed to be calculated?

```
> newCentralization = function(h) centr_degree(h, normalize=FALSE, weight=NA, loops=FALSE)
> newCentralization(h)
[1] 1
> sessionInfo()
attached base packages:
[1] stats  graphics grDevices utils  datasets  methods  base
```

1 Answer

I think the actual problem may be an off-by-one error for the theoretical max. Calculating it manually gives you 3 * 4 = 12, which agrees with use of `centralize(normalize=FALSE)`, but the R output from centralization `degree` seems to be 4 * 5 = 20. To solve your problem I'd suggest using the following code to normalize it yourself.
Asha, The Programmer
MOTIVATING EXAMPLE

![Character waving to Bing icon](image_url)
MOTIVATING EXAMPLE

1 Answer

I think the only way to import only a single type from a module is to use type alias (as you already noted). To get a qualified access to members of the module (under a different name), you can use module alias:

type Item = Item.Type // Type alias for type(s) from module
module1 = Item // Module alias for accessing members.

I don't think there is any way for importing members from module selectively (as in Haskell), so this is probably the best option.
I am having a problem with getting this code to work.

```java
if (x) {
    print("here is some sample code!");
}
```

Thank you.
I am having a problem with getting this code to work.

```java
if (x) {
    print("here is some sample code!"),
}
```

Thank you.
1. did not see other users who look like her post questions
WHAT HAPPENED?

1. did not see other users who look like her post questions

2. unfamiliar with community expectations and feels her question is unfit

protected by Aniket Thakur Oct 2 '15 at 18:54

This question is protected to prevent "thanks!", "me too!", or spam answers by new users. To answer it, you must have earned at least 10 reputation on this site (the association bonus does not count).
WHAT HAPPENED?

3. The question may be a duplicate since list of existing questions appear.
WHAT HAPPENED?

1. did not see other users who look like her post questions

2. unfamiliar with community expectations and feels her question is unfit

3. question may be a duplicate since list of existing questions appear
WHILE 50 MILLION PEOPLE VISIT STACK OVERFLOW MONTHLY

(Stack Overflow 2018 Developer Survey)
While 50 million people visit Stack Overflow monthly, only 10 million have accounts.
LESS THAN 7% WOMEN IN OPEN SOURCE

Open Source Communities: 7% vs. Software Engineers: 20%

[David 2008] [Zlotnick 2017] [SO Developer Survey 2018] [USBLS 2016]
Many users are new

<table>
<thead>
<tr>
<th>Years Since Learning to Code</th>
<th>All Respondents</th>
<th>Professional Developers</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 years</td>
<td>11.4%</td>
<td></td>
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<tr>
<td>3-5 years</td>
<td>24.3%</td>
<td></td>
</tr>
<tr>
<td>6-8 years</td>
<td>20.6%</td>
<td></td>
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<tr>
<td>9-11 years</td>
<td>13.0%</td>
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<tr>
<td>12-14 years</td>
<td>8.6%</td>
<td></td>
</tr>
<tr>
<td>15-17 years</td>
<td>6.5%</td>
<td></td>
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<tr>
<td>18-20 years</td>
<td>5.4%</td>
<td></td>
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<tr>
<td>21-23 years</td>
<td>2.8%</td>
<td></td>
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<td>24-26 years</td>
<td>2.0%</td>
<td></td>
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<tr>
<td>27-29 years</td>
<td>1.1%</td>
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</tr>
<tr>
<td>30 or more years</td>
<td>3.8%</td>
<td></td>
</tr>
</tbody>
</table>

[SO Developer Survey 2018] 93,835 responses
WHILE 50 MILLION PEOPLE VISIT STACK OVERFLOW MONTHLY
ONLY 10 MILLION HAVE ACCOUNTS

LESS THAN 7% WOMEN IN OPEN SOURCE

Open Source Communities: 7% vs. 20% Software Engineers

1/3 OF USERS HAVE <=5 YEARS EXPERIENCE

Many users are new

<table>
<thead>
<tr>
<th>Years Since Learning to Code</th>
<th>All Respondents</th>
<th>Professional Development</th>
</tr>
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<tbody>
<tr>
<td>5-6 years</td>
<td>29.6%</td>
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</table>
WHILE 50 MILLION PEOPLE VISIT STACK OVERFLOW MONTHLY
ONLY 10 MILLION HAVE ACCOUNTS

$50+ /hour:
owns popular OSS products
Stack Overflow score > 5K

$100+ /hour:
owns popular OSS products
Stack Overflow score > 20K

LESS THAN 7% WOMEN IN OPEN SOURCE

Open Source Communities

7% vs. 20%

Software Engineers

1/3 OF USERS HAVE <=5 YEARS EXPERIENCE

Many users are new
PROBLEM

Programmers, especially underrepresented groups and novices, encounter challenges when interested in participating in online programming communities.

[ Vasilescu 2013, Steinmacher 2015, Filippova 2015, Stack Overflow 2017 ]
RESEARCH AREA

Social Computing

Identity Signals

Software Engineering

Identity Movements [CSCW 18]

Characterizing Devs [ESEM 17]

Tool Notifications [FSE 16]

Interview Eye-Tracking [ICSE NIER 18]

Tech Talk [CHASE 17]

Sustained Attention [EMIP 15]

GH Signals [ICSE SEIS 19]

Peer Parity [VLC 17]

SO Mentorship [CHI 18]

SO Compiler Errors [FSE 18]

SO Barriers [FSE 16]

Frustrated Devs [CHASE 15]
Today

Barriers to Participation
[Ford, Smith, Guo, Parnin. FSE 2016]

Mentorship
[Ford, Lustig, Banks, Parnin. CHI 2018]

Vision
The Future of Asking
RESEARCH QUESTIONS

RQ1
What barriers do women face on Stack Overflow?

RQ2
How do barriers vary by gender?

RQ3
How do barriers manifest across usage and experience?
EXPERIMENT

MIXED METHODS

RQ1

Interviews

RQ2

Surveys
EXPERIMENT

SEMI-STRUCTURED INTERVIEWS

Emailed ‘Women in Computer Science’ Lists

22 Responses
EXPERIMENT

SEMI-STRUCTURED INTERVIEWS

Emailed ‘Women in Computer Science’ Lists
22 Responses
1 of 22 in “SO Top 100 of All Time”*

Demographics

- Students
- Professionals
- Lurkers
- Active Users

*http://stackexchange.com/leagues/1/alltime/stackoverflow
EXPERIMENT

SEMI-STRUCTURED INTERVIEWS

Emailed ‘Women in Computer Science’ Lists
22 Responses

1 of 22 in “SO Top 100 of All Time”*

Demographics

- Students
- Professionals
- Lurkers
- Active Users

Interview Topics

- Personal usage of the site
- How people communicate on the site
- Personal incentives to using the site
- Response to potential scenarios on the site

*http://stackexchange.com/leagues/1/alltime/stackoverflow
Barrier Statement Examples
Any mechanism imposing participation

"...don't contribute because...."
"... don't post on Stack Overflow because..."
EXPERIMENT

INTERVIEW ANALYSIS

Barrier Statement Examples
Any mechanism imposing participation

“...don’t contribute because....”
“... don’t post on Stack Overflow because...”

P: I’m only looking for stuff that I really don’t understand myself. I don’t feel like my expertise ... for me to actually post an answer that would be of any help to anyone else. 3:07

Justin
#8.8 Doesn’t feel like an expert or qualified to help others.

Denae
#8.8 Doesn’t feel like her expertise is high enough to help others.
EXPERIMENT

INTERVIEW ANALYSIS

Barrier Statement Examples
Any mechanism imposing participation

“...don't contribute because....”
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P: I'm only looking for stuff that I really don't understand myself. I don't feel like my expertise |... for me to actually post an answer that would be of any help to anyone else. 3:07
“I don't feel like my expertise [is enough] for me to actually post an answer that would be of any help to anyone else.”
RESULTS

QUALIFICATIONS

“I don't feel like my expertise is enough for me to actually post something that would be of any help to anyone else.”
“I feel like everyone else already knows what it is. And [I] want to stay away from that extra work to figure out how to use it. Just figuring out what the etiquette is, all the little social things too that are kind of unspoken”
RESULTS

ONBOARDING HOOPS

“I feel like everyone else already knows what it is. And [I] want to stay away from that extra work to figure out how to use it. Just figuring out what the etiquette is, all the little things too that are kind of confusing.”
FEAR OF NEGATIVE FEEDBACK

“It’s hard enough to ask for help, then to ask for help and get rude help. You are kind of like, ‘never mind’.”
RESULTS

FEAR OF NEGATIVE FEEDBACK

“It’s hard enough to ask for help and get rushed. You are kind of like, ‘never’.
RQ1
What barriers do women face on Stack Overflow?

RQ2
How do barriers vary by gender?
**RESULTS**

“How often is this a barrier for you?”

\[ n = 134 \quad n = 1336 \]

**WILCOXON RANK SUM TEST**

\[ \alpha = 0.05; \quad \alpha = 0.0012 \text{ with Bonferroni Correction} \]

<table>
<thead>
<tr>
<th>Barrier</th>
<th>( p )-value</th>
<th>SigDiff</th>
<th>Effect Size</th>
<th>Women Likert</th>
<th>Men Likert</th>
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<td>Intimidating Community Size</td>
<td>&lt;0.001</td>
<td>★★★★</td>
<td>0.5</td>
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<tr>
<td>Awareness of Features</td>
<td>&lt;0.001</td>
<td>★★★★</td>
<td>0.5</td>
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<tr>
<td>Stranger Discomfort</td>
<td>&lt;0.001</td>
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<td>0.4</td>
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<tr>
<td>Qualifications</td>
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<td>★★★★</td>
<td>0.4</td>
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<tr>
<td>Perception Of Slacking</td>
<td>0.001</td>
<td>★★★★</td>
<td>0.4</td>
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<tr>
<td>Fear of Negative Feedback</td>
<td>0.003</td>
<td></td>
<td>0.4</td>
<td></td>
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</tr>
</tbody>
</table>

[FSE 2016]
RESULTS

“How often is this a barrier for you?”

n=134  n=1336

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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</thead>
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<td></td>
<td>19%</td>
<td>25%</td>
<td>26%</td>
<td>14%</td>
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<tr>
<td></td>
<td>F</td>
<td>M</td>
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<td>Strongly Agree</td>
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<td>Fear of Negative Feedback</td>
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<td>38%</td>
<td>12%</td>
<td>9%</td>
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<tr>
<td>Fear of Contributing to Clutter</td>
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<td>10%</td>
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<td>Nothing Left to Answer</td>
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<td>34%</td>
<td>17%</td>
<td>8%</td>
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<tr>
<td>Awareness of Features</td>
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<td>35%</td>
<td>16%</td>
<td>11%</td>
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<td>Research Pressure</td>
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<td>32%</td>
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<tr>
<td>Posting is Hard, Friends are Easy</td>
<td>28%</td>
<td>39%</td>
<td>18%</td>
<td>10%</td>
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<td>Abstraction Process</td>
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<td>21%</td>
<td>13%</td>
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<tr>
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<td>21%</td>
<td>20%</td>
<td>28%</td>
</tr>
<tr>
<td>Intimidating Community Size</td>
<td>8%</td>
<td>17%</td>
<td>25%</td>
<td>35%</td>
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<td>17%</td>
<td>25%</td>
<td>35%</td>
</tr>
<tr>
<td>Perception of Slacking</td>
<td>9%</td>
<td>15%</td>
<td>28%</td>
<td>27%</td>
</tr>
</tbody>
</table>
BARRIERS BY FACTORS

Wilcoxon Rank Sum Test
\( \alpha = .05; \alpha = 0.0012 \) with Bonferroni Correction

ACCOUNT ACTIVITY
HAS ACCOUNTS VS. NOT
\((n = 1003, n = 467)\)
- Awareness of Features
- Stranger Discomfort
- Intimidating Community Size
- Fear of Contributing to the Clutter
- Posting is Hard, Friends are Easy
- Qualifications
- Onboarding Hoops

EXPERIENCE
FULL TIME DEV VS. NOT
\((n = 1003, n = 467)\)
- Qualifications
- Time Constraints
**Observations**

**Language Divide:** There are two types of language that contribute to the *unwelcoming atmosphere* on Stack Overflow: complex questions and idle "boy's club" chatter.

**Helpful Intentions:** Participants *want to contribute, but do not feel like they can* based on difficulty finding opportunities to post.
IMPACT OF IDENTIFYING BARRIERS

Jeff Atwood
@codinghorror

I am a big fan of this new feature Stack Overflow added. A research study via @Denaeford in mid-2016 highlighted the need, and I forwarded multiple rounds of direct email feedback at that time. Glad to see it finally getting worked on.

Barriers also resonate with SO users on blog.denaeford.me

Stack Overflow founder acknowledges novice implications of the work

Really interesting. As a female, minimally-active, but long-time/frequent reader of SO I definitely went through a ran emotions from of early, naive use, intimidation, empathy, regret, etc. A period of pretty active answering on another SE board gave me a much better understanding of the source of some frustration (and seeming hostility) for SO power users. The Help Vampire is real, and I can see how it’d be easy to become impatient with that. I really like the question suggestion feature, and when editors take the time to comment with the asker in mind, I think it can make a big difference.
TODAY

Barriers to Participation
[Ford, Smith, Guo, Parnin. FSE 2016]

Mentorship
[Ford, Lustig, Banks, Parnin. CHI 2018]

Vision
The Future of Asking
Questions are ill-received

0. Why aren't my icons showing?
0. Why aren't my rectangles showing?
0. IF... Else + JOption. Why aren't my JOptionPanels showing?
1. Why Aren't My Cards Random?
3. Why aren't my divs showing? [closed]
6. Why aren't my validation messages showing?

Questions do not follow community etiquette

Interested in contributing but don’t know how

"Is there some trick to making it worthwhile to post on Stack Overflow?"

More often than not, my posts get downvoted because I didn't follow some arcane etiquette. This hostility to outsiders and new contributors is exactly why I've never bothered editing Wikipedia.
How can users encourage novices to ask well-received questions?
as a Community of Practice
as a Community of Practice

where groups of people bound together by shared expertise and passion for a joint goal

[Lave 1991]
as a Community of Practice

where groups of people bound together by shared expertise and passion for a joint goal [Lave 1991]

Learning through mutual engagement.

Mutual engagement exposes newcomers to expert practices [Wenger 1998]
I've been working out of Python 2.7 and I found it difficult to determine which posts are for python 3 and which are for older versions. Do you know if there's a way to easily check this?

Unfortunately, there isn't as far as I know. Most people just tag it as python, not the version. Sometimes I will edit the post to add Python 3 sample code if it isn't already there.

For example:

```
Q: Problems installing python3 on RHEL
I'm trying to install python3 on RHEL using the following steps.
matches found for: python3 Followed by: yum search python.
What should I try next?
```

The tag python-3.x. But it's pretty inconsistent as to whether people use that tag.

Ohh so there is a tag they can use, they just don't typically use it. okay, well thanks!
EXPLORATORY STUDY

aho: I've been working out of Python 2.7 and I found it difficult to determine which posts are for Python 3 and which are for older versions. Do you know if there's a way to easily check this?

apollo: Unfortunately, there isn't as far as I know. Most people just tag it as Python, not the version. Sometimes I will edit the post to add Python 3 sample code if it isn't already there.

Q: Problems installing python3 on RHEL
I'm trying to install python3 on RHEL using the following steps, found for Python3. Followed by: yum search python.
What should I try next?

python python-3.x rhel

The tag python-3.x. But it's pretty inconsistent as to whether people use that tag.

ajax: Ohh so there is a tag they can use, they just don't typically use it. Okay, well thanks!
Novice: I've been working out of Python 2.7 and I found it difficult to determine which posts are for Python 3 and which are for older versions. Do you know if there's a way to easily check this?

Mentor: Unfortunately, there isn't as far as I know. Most people just tag it as python, not the version. Sometimes I will edit the post to add Python 3 sample code if it isn't already there.

For example:

Q: Problems installing python3 on RHEL

I'm trying to install python3 on RHEL using the following test matches found for: python3 Followed by: yum search python3

What should I try next?...
EXPLORATORY STUDY

novice

ajax: 12:57 PM
I've been working out of Python 2.7 and I found it difficult to determine which posts are for python 3 and which are for older versions. Do you know if there's a way to easily check this?

mentor

apollo: 7:09 PM
@ajax Unfortunately, there isn't as far as I know. Most people just tag it as python, not the version. Sometimes I will edit the post to add Python 3 sample code if it isn't already there.

For example:

Q: Problems installing python3 on RHEL
I'm trying to install python3 on RHEL using the following str matches found for: python3. Followed by: yum search python3
What should I try next? ...

python
python-3.x
rhe

The tag python-3.x. But it's pretty inconsistent as to whether people use that tag

ajax: 7:11 PM
Ohh so there is a tag they can use, they just don't typically use it. Okay, well thanks!

Context switching between platform
Asynchronous communication
Dialogue did not refine questions
I've been working out of Python 2.7 and I found it difficult to determine which posts are for Python 3 and which are for older versions. Do you know if there's a way to easily check this?

Unfortunately, there isn't as far as I know. Most people just tag it as python, not the version. Sometimes I will edit the post to add Python 3 sample code if it isn't already there.

For example:

```
Q: Problems installing python3 on RHEL
I'm trying to install python3 on RHEL using the following:

```
```
[Epstein et al., 2002]
[Kraut et al., 2012]

Allow mistakes in private space

Asynchronous communication

Dialog and not refinement
[Epstein et al., 2002]
[Kraut et al., 2012]

[Baron 1993] [Ford et al., 2016]
[Kraut et al., 2012]

- Allow mistakes in private space
- Provide formative and timely feedback
- Dialog and not definitions
**Allow mistakes in private space**

**Provide formative and timely feedback**

**Do not answer questions, help others ask better questions**

---

*Epstein et al., 2002*

*Kraut et al., 2012*

*Baron 1993*

*Ford et al., 2016*

*Kraut et al., 2012*

*Wenger, 1998*

*Kraut et al., 2012*
IMPLEMENTED FEATURE

COLLABORATIVE EDITING

Two core components:
IMPLEMENTED FEATURE

COLLABORATIVE EDITING

Two core components:

1. Collaborative question draft

Why aren't my arrays showing updates?

```javascript
if (x) {
  print("hello world!");
}
```

edit  copy draft back to Stack Overflow

stack overflow
IMPLEMENTED FEATURE

COLLABORATIVE EDITING

Two core components:

1. Collaborative question draft

2. Help Room to discuss and edit the draft
Just-In-Time Mentorship Study
STUDY DESIGN GOALS

✓ To observe and measure changes in question quality
✓ To understand feedback provided by mentors
✓ To improve experience for new question askers
✓ To learn how to scale these benefits to the whole community
Novice writes question

Title: Why aren't my arrays showing updates?

Questions that may already have your answer

- Why aren't my icons showing?
- Why aren't my rectangles showing?
- IF... Else + JOptionPane. Why aren't my JOptionPanees showing?
- Why Aren't My Cards Random?
- Why aren't my divs showing up? [closed]
- Why aren't my validation messages showing?

I am having a problem with getting this code to work.

```java
if (x) {
    print("here is some sample code!");
}
```

Thank you.
Would you like an experienced Stack Overflow user to help refine your question before you post it? They're here to help!

- No, just post my question
- Yes, join mentorship chat
Novice writes question

Novice selects to post their question

Novice selects to join Help Room

**Why aren't my arrays showing updates?**

*tags: javascript*

Hello, can you please help?

```javascript
if (x) {
    print("hello world!"

```

edit copy draft back to Stack Overflow

Hey @Mason, thanks for coming. :) This is the Stack Overflow chat room we're using to help people improve their questions. This message is automated but everything else is real! Before we start: do you have any particular concerns, or are you just double-checking before you post?

Isha @Mason! I'm here to help you with your question. Gimme a sec while I read over it.
Novice writes question

Novice selects to post their question

Novice selects to join Help Room

Novice edits question draft

Novice receives feedback on question
Novice writes question

Novice selects to post their question

Novice selects to join Help Room

Novice receives feedback on question
Novice writes question

Novice selects to post their question

Novice selects to join Help Room

Novice posts question

Novice edits question draft

Novice receives feedback on question
33 day study

4 Help Rooms

1 Private Mentor Room
33 day study

4 Help Rooms

1 Private Mentor Room

71,068 Eligible Novices

520 Entered Room
DATA COLLECTED

- 33 day study
- 4 Help Rooms
- 1 Private Mentor Room

- 71,068 Eligible Novices
- 520 Entered Room

- 343 conversations
- 271 Novices
- 63 Mentors
DATA COLLECTED

33 day study

4 Help Rooms

1 Private Mentor Room

71,068 Eligible Novices

520 Entered Room

343 conversations

271 Novices

63 Mentors

Transcripts + Question Scores

Surveyed Novices

Interviewed Mentors
MENTORED QUESTIONS HAVE HIGHER QUALITY.

MENTORED QUESTIONS HAD A 50% SCORE INCREASE ON AVERAGE

<table>
<thead>
<tr>
<th></th>
<th>GOOD</th>
<th>NEUTRAL</th>
<th>BAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>mentored</td>
<td>25%</td>
<td>49%</td>
<td>25%</td>
</tr>
<tr>
<td>not mentored (control)</td>
<td>18%</td>
<td>51%</td>
<td>30%</td>
</tr>
</tbody>
</table>

$\chi^2 = 7.48, p = 0.023$

[CHI 2018]
MENTORS SUGGEST HIGH-FIDELITY IMPROVEMENTS.

Paraphrasing title and content (Question Phrasing)

Formatting code to make question scannable

Community triage

Including all the pieces of a question (Question Framing)

Culture of asking
"ok the fact is that on SO you can’t ask for libs you would need to do that on another site [link]"  (Mentor)
“ok the fact is that on SO you can’t ask for libs you would need to do that on another site [link]” (Mentor)
"OK, the fact is that on SO you can’t ask for libs you would need to do that on another site [link]." (Mentor)
"ok the fact is that on SO you can’t ask for libs you would need to do that on another site [link]" (Mentor)
"ok the fact is that on SO you can’t ask for libs you would need to do that on another site [link]" (Mentor)
"ok the fact is that on SO you can’t ask for libs you would need to do that on another site [link]" (Mentor)
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"ok the fact is that on SO you can’t ask for libs you would need to do that on another site [link]" (Mentor)
"ok the fact is that on SO you can’t ask for libs you would need to do that on another site [link]” (Mentor)

"How do I hack a wifi password?” (Novice)
"Your question is off topic here. We’re not a hacking service.”(Mentor)
Mentors used identity as a signal. How and why?

Mentor: Hey! are you from Egypt by chance?

Novice: Yeah, actually I am! I thought I picked up on your name too!

[Stack Overflow 2018 Developer Survey]
Mentors used identity as a signal. How and why?
Stack Overflow Isn’t Very Welcoming. It’s Time for That to Change.

by Jay Hanson on April 26, 2018

We <3 and believe in Stack Overflow. But sometimes, loving something means caring enough to admit that it has a problem.

Let’s start with the painful truth:

- Too many people experience Stack Overflow® as a hostile or elitist place, especially newer coders, women, people of color, and others in marginalized groups.
- Our employees and community have cared about this for a long time, but we’ve struggled to talk about it publicly or to sufficiently prioritize it in recent years. And results matter more than intentions.

EVP acknowledges community challenge how mentorship forged a new experience

Resulted in Question Asking Template for Novices
IMPACT OF JUST-IN-TIME MENTORSHIP

Stack Overflow Isn’t Very Welcoming. It’s Time for That to Change.

We <3 and believe in Stack Overflow. So, it’s only fair enough to admit that it has a problem.

Let’s start with the painful truth:
• Too many people experience Stack Overflow as intimidating, rude, and unhelpful.
• Our employees and community have come to us asking about it publicly or to sufficiently prioritize these intentions.

Probably my favorite academic research partnership to date was the mentorship experiment, headed up by @kristinalustig and @DenaeFord. We are excited to be more organized from here on out to make space for more great projects! 🎉

Mentorship Research Project - Results + Wrap-Up
Check out SO Podcast 117 to hear Kristina talk about the mentorship experiment. First, if you haven’t read the original announcement post about the Stack Overflow ...

metis.stackoverflow.com

Resulted in Question Asking Template for Novices
Today

Barriers to Participation
[Ford, Smith, Guo, Parnin. FSE 2016]

Mentorship
[Ford, Lustig, Banks, Parnin. CHI 2018]

Vision
The Future of Asking
I think the actual problem may be an off-by-one error for the theoretical max. Calculating it manually gives you $3 \times 4 = 12$, which agrees with the use of `centralize(normalize=FALSE)`, but the R output from `centralization.degree` seems to be $4 \times 5 = 20$. To solve your problem I'd suggest using the following code to normalize it yourself:

```r
newCentralization = function(h) centralize(degree(h), normalize=FALSE)/(vcount(h)-1)*vcount(h)
newCentralization(h)
```

---

Thanks so much Patricia! – Abby Jones Sep 7 '16 at 17:06

Women who experience peer parity re-engage sooner.

What does asking for help in the future look like?
“Software is being developed by increasingly distributed and increasingly diverse groups of individuals.”

- Vasilescu
“Software is being developed by increasingly distributed and increasingly diverse groups of individuals.”

- Vasilescu

How a programmer’s identity is presented will become increasingly influential.

- Ford
1. HOW DO WE USE IDENTITY CUES TO TRUST CODE FROM STRANGERS?
1. HOW DO WE USE IDENTITY CUES TO TRUST CODE FROM STRANGERS?

How do signals change based on “code” attributes?
1. How do we use identity cues to trust code from strangers?

- How do signals change based on “code” attributes?
- How can we build tools to better reflect contributions?
How does asking change when audience is specialized?

2. HOW CAN WE NATURALLY TRANSITION BETWEEN PUBLIC AND PRIVATE HELP SPACES?
2. How can we naturally transition between public and private help spaces?

- How does asking change when audience is specialized?
- How does segmented anonymity become more helpful in these spaces?
2. How can we naturally transition between public and private help spaces?

How does asking change when audience is specialized?

How does segmented anonymity become more helpful in these spaces?

How do we manage context collapse across platform?
3. HOW DO WE EMPOWER MARGINALIZED PROGRAMMERS IN VIRTUAL TECH SPACES?

#ILookLikeAnEngineer

[CSCW 2018]
3. How do we empower marginalized programmers in virtual tech spaces?

Where are they seeking technical help?

[CSCW 2018]
3. HOW DO WE **EMPOWER MARGINALIZED PROGRAMMERS IN VIRTUAL TECH SPACES?**

- **Where are they seeking technical help?**
- **How can we make our communities more like those spaces?**

[AskQuestions.Tech](https://askquestions.tech)

- **About**
- **FAQ**
- **Terms of Service**
- **Privacy**

**About AskQuestions.Tech**

The inclusive place to ask tech questions.

**R Studio Community**

**Always Be Civil**

Nothing sabotages a healthy conversation like rudeness.

---

[CSCW 2018]
3. How do we empower marginalized programmers in virtual tech spaces?

Where are they seeking technical help?

How can we make our communities more like those spaces?

How can we encourage programmers to build these types of platforms?
Online Q&A communities are widely used, but present barriers of unfamiliar norms can leave programmers, specifically novices and women discouraged from participating.

[FSE 2016]

Just-in-time mentoring provided novices with help to ask a well-received question, precisely when they needed it.

[CHI 2018]

Vision: How can we empower, connect, and give control back to the users by constructing participation around identity signals?
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Vision: How can we empower, connect, and give control back to the users by constructing participation around identity signals?
3. How do we empower marginalized programmers in virtual tech spaces?

- Where are they seeking technical help?
- How can we make our communities more like those spaces?
- How can we encourage programmers to build these types of platforms?