

# Exploring Causes of Frustration for Software Developers

Denae Ford & Chris Parnin ♦ {dford3,cjparnin}@ncsu.edu  
North Carolina State University, Raleigh, NC, USA

## Introduction

Developers must be able to constantly learn new technologies, adapt to new environments, and overcome challenges when learning and practicing their craft.

When learning to program, frustrating experiences contribute to negative learning outcomes and poor retention in the field.

However, failure to overcome obstacles in these situations can introduce a sense of mounting frustration in developers that can negatively impact learning outcomes and influence retention in a field.

Defining a common framework that explains why these experiences occur can lead to better interventions and learning mechanisms.

## What is Frustration?

'An interference with the occurrence of an instigated goal-response at its proper time in the behavior sequence.'

## Method

- 16 question survey posted in Computer Science affinity groups
- 45 participants:  
23 students, 12 industry, 10 as both
- Survey asked for severity of frustration
- Performed open card sort on single question:

*When is the last time you were frustrated?*

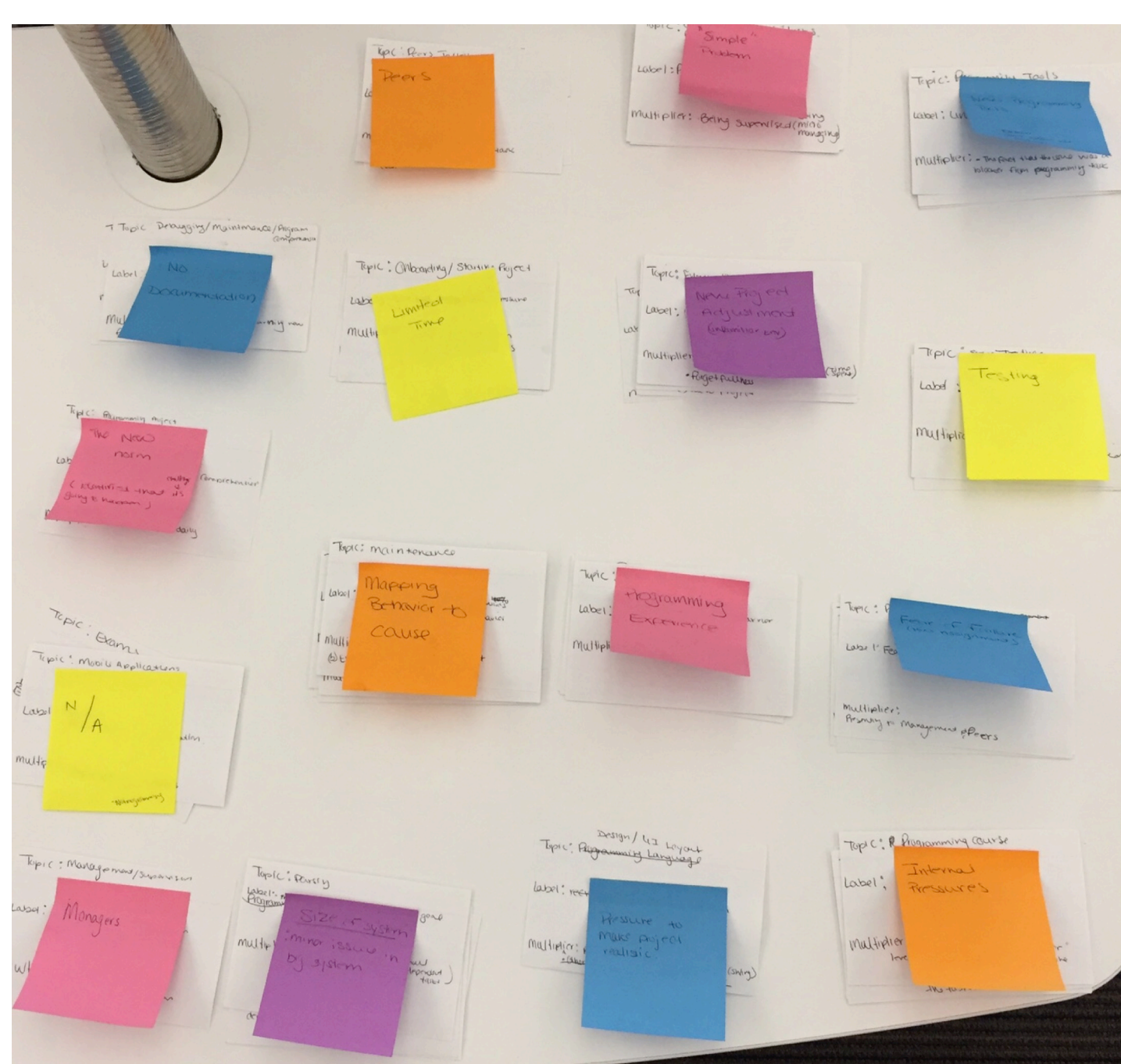


Image above is from the card sorting process used to group responses

## Categories Defined

67% considered frustration severe

### • Mapping Behavior to Cause

*"I was frustrated when I couldn't figure out why there was a random gap of space on my website..."*

### • Programming Tools

*"I've been trying to transition to using an IDE I never have before..."*

### • Size

*"There were some logical errors in a big code base..."*

### • New Project Adjustment

*"I was trying to set up some software for a study I'm working on. I expected some configuration obstacles, but I became frustrated..."*

### • Unavailability Of Resources

*"The server I needed for my files was not letting me log in and the only person who could fix it was too busy working..."*

### • Programming Experience

*"I had to code something in Perl and I didn't know the language syntax..."*

### • Simple Problem

*"Inability to code something that I know should be simple..."*



### • Fear Of Failure

*"It builds a strong sense of anxiety. I feel like I may not solve the issue..."*

### • Internal Hurdles

*"The problem that I faced with frustration is I tend to procrastinate..."*

### • Limited Time

*"I had to deal with an ambitious project in a limited time frame..."*

### • Peers

*"Peers were terrible programmers, less experienced, and refused to use libraries/patterns to make things easier..."*

## Discussion

### Scenarios

Managers and peers can claim a task to be a *simple problem* which gives the developer high expectations for a task.

High expectations can cause developers to place pressure on themselves if the *simple problem* is not as easy as others claim it to be.

### Interventions



Image was created for BuzzFeed Post on this research

## The New Norm

*"My work revolves around it, so it's frequent and recent."*

- Expecting these obstacles is half the battle.
- The other half is how these challenges are approached
- Perspective comes with experience and being able to reflect on those experiences

## Conclusion

- Problem space of frustration is still prevalent for all developers
- 11 causes discussed can apply to other fields besides Computer Science
- Interventions pave the way for tool modifications
- Survey responses encourage new best practices and further research into coping mechanisms

## What's Next?

We plan to look into combinations of these factors and how often they correlate.

A second survey to rank the severity of these causes will support this study.