PreCompiler Day 1 Morning

Architecting and Building Serverless Solutions in Azure

Brian Gorman

This workshop is a guided activity to learn, architect, and implement a real-world, serverless solution in the Microsoft Azure ecosystem.

The tools utilized will include Azure Functions, Cosmos DB, Event Grid, Logic Apps, Application Insights, and Azure storage.

After completing the workshop, attendees will be able to take the skills they've learned and apply them to solutions for both enterprise and personal projects.

K3s - Half the Size, Twice as Awesome: Kubernetes for All of Us (Workshop)

Chris Houdeshell

Getting started with Kubernetes is a daunting task. Everyone you talked to said it was a pain to get started, but it eventually paid off (unless you're Docker). What if I told you there was a solution to the startup pain? What if it was something to get your feet wet with, cut your teeth on -- but just as conformant and production ready? Enter K3s – lightweight Kubernetes for all of us.

In this workshop, we will not only get our feet wet with Kubernetes, we will get a production-ready instance of Kubernetes up and running all thanks to K3s.

Prerequisite instruction are available at https://github.com/choudeshell/codemash-k3s-workshop

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Building Trust and Breaking Barriers (with LEGO!)

Thomas Haver

LEGO(R) sets are fun to build, but who has ever attempted to build a set without looking at the instructions? In this workshop, attendees will form teams and attempt to build a LEGO(R) set without instructions. Through a series of iterative exercises that provide more product details, the teams will attempt to build & test their product as close to the instructions as possible without peeking.

Each group will learn different approaches to collaborate on product development and testing during the meeting to build a set according to a customer's needs. The workshop will highlight the gap between what we set out to build & the finished product as well as the gap between what our customers expect & the finished product. Our goal as a group will be to refine our techniques so we deliver a product on-time & on-budget that customers will love.

Learning Objectives:
*Teams will learn collaboration techniques to build & test with limited information.
*Attendees will learn to approach testing from the perspective of customer needs rather than strict requirements.
*Attendees will learn how to question assumptions by breaking down requirements before testing begins.
*BONUS: Some attendees will receive LEGO(R) sets of their own to take home

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Building Your First Voice Experience with Alexa

Jeff Blankenburg

This workshop will dive right in to getting you set up and started building a voice-based experience with Alexa. You will leave this session with a working Alexa skill that you can customize and publish as your own.

We will cover topics around voice design best practices, voice interactions, persistence, and making calls to external APIs.

This session will be taught using node.js, but you don't have to have prior experience as a node developer.

PREREQUISITES
In order to get off to a fast start, please create accounts on both of these websites before the session:

Amazon Developer Portal - http://developer.amazon.com

Amazon Web Services - http://aws.amazon.com

Have you ever thought of joining the Mob?

Fred Estabrook & Chris O'Connor

Ahh!! It's a Mob of philanthropic humanitarians. What will we do?!?!

Quick pull down an open source refactorable project from GitHub and set them on it.

In this session team members can and will participate in this interactive workshop.

Come join the group mind, all roles and experience levels welcome. and help to transform code in a mob. We will start the session with basic mob etiquette and ground rules then pull a project and start mobbing. Which project, what we change, and where we go from there, only the mob will determine.

The goal will be real world practice mobbing with real world impact. The mobbed work will be submitted back to the repo at the end of the session! This will be an extreme live coding experience.

Mobbing is a great way to get high productivity from a large group of people with a mix of skill sets and experience. Come see for yourself!

Build Your Own Portable Gaming System - Part 1

Paul Pagel

Looking for a portable gaming system that you can hack on? Want to learn how to solder and assemble your own circuit board? Perhaps you want to re-experience the classic games and computer systems of your childhood. Maybe you want to make and process CD-quality audio from a variety of sources. If so, this is YOUR workshop!

Gain electronic hacker skills and bragging rights by building and programming your very own compact hardware system based on the Teensy 4.1. Don't let the cute name fool you - this microcontroller

board is a little BEAST featuring a Cortex M7 running at 600 MHz, which provides plenty of horsepower for graphics and audio.   In part 1 of the session, we'll explore the components needed to make the system, basic soldering skills, and the techniques used to test and troubleshoot the hardware.

Participants will be guided through the creation of their own mobile platform with integrated joystick/controls, onboard stereo speakers, hi-resolution audio input, and built-in battery charger that can be used to run custom and commercial firmware - which will be covered in Part 2.

No prior electronics or soldering experience is required. Soldering equipment will be provided. Participants must bring a fully-charged laptop with an accessible USB A port or adapter, and VS Code or Arduino IDE installed. Pre-requisite software and library installation instructions will be sent out before the conference. The goblins running the internet kindly request that you load these to your laptop prior to the workshop.

***Special note: an additional ticket purchase is necessary to keep the hardware that you will build in this session. Tickets will be available on Eventbrite a few weeks prior to CodeMash.

PreCompiler Day 1 Afternoon

Test-Design Based Thinking For Fun and Profit

Jenna Charlton & Jenny Bramble

Test design-based thinking is critical at every level of software development, starting at the user story and continuing until the code has been deployed to production. Testers, developers, designers, and product owners all benefit from understanding the basic techniques for developing good test cases. Developers will find this invaluable when writing unit tests and engaging in TDD, automation engineers can apply these techniques to test creation, and of course manual testers use these techniques to build meaningful and targeted test cases.

Explore the science and the art of designing test cases for unit testing, manual testing, and automated testing, getting hands-on with practical exercises designed to challenge and deepen your skills. Jenna and Jenny share key agile, focused test design techniques, including equivalence class, boundary-value, decision table, state transition, and pair/triwise. Leave this workshop with a newfound confidence for developing test cases that find important bugs earlier, and methods to apply these techniques while pairing and mobbing with your team.

Event Streaming, Catch of the Day!

Barry Tarlton & David Day

Have you heard enough event streaming fish stories to fill a cooler? Are you ready to wade in deeper and lure out some new skillz on event-driven architectures? Come join our catch-of-the-day session to experience first-hand designing and building an event-driven solution from start to finish. We'll cast off with an an event storming session (bring your umbrella) to scope out our domain. Once we've netted out the relevant events, we'll code our producer and consumer microservices with SpringBoot while using Apache Kafka as the connecting tributaries. Whether you are an avid angler or not, this session will have you navigating streams of data with code and Kafka in no time.

Rea11y Simple #A11y: A Focused Accessibility Workshop

Chris DeMars

Accessibility on the web is increasing in visibility, yet some web creators are still unfamiliar with how to create an amazing, accessible user experience. Spoiler alert, it starts with design, but what happens after that? In this workshop, I will walk the attendees through a site that has multiple violations, and a low score in Lighthouse. I will also touch on aXe Core, what it is, and how to use it. After we comb through the site, I will introduce easy wins like semantic markup, alt attributes, and ARIA labels to remove all violations. You'll walk away with the knowledge to build your sites with accessibility in mind.

Create a Cloud Environment with Terraform and Ansible

Gene Gotimer

Hashicorp Terraform allows you to define your infrastructure as code. You write code to define systems, networks, security groups, firewalls, and more, making standing up an environment repeatable and reusable. Red Hat Ansible lets you remotely interact with those systems you stood up, configuring them, installing and upgrading software, and doing all sorts of system administration and maintenance tasks all using code. No more logging in to dozens of servers to update a package on each- Ansible can handle it from a central location without the risk of typos or missed steps.
Join Gene Gotimer as we start building infrastructure using code. We'll instantiate a cloud environment, set up the network and security, and then build and configure an application on top of it. Along the way, we'll use tools to ensure we are following recommended practices and creating a maintainable ecosystem with easy-to-follow code. You won't be a master by the end of the half-day, but you will understand the basics and start to be comfortable with infrastructure-as-code.
This is a hands-on workshop. You'll need a laptop with an IDE (e.g., Visual Studio Code or IntelliJ IDEA) and an SSH client (e.g., PuTTY or OpenSSH, which is included in Git for Windows).

Build Your Own Portable Gaming System - Part 2

Paul Pagel

Looking for a portable gaming system that you can hack on? Want to learn how to solder and assemble your own circuit board? Perhaps you want to re- experience the classic games and computer systems of your childhood. Maybe you want to make and process CD-quality audio from a variety of sources. If so, this is YOUR workshop!

This session will show participants how to harness the power of the Teensy 4.1 and hardware peripherals in the system that they built in Part 1.   Using a variety of sketches and tools, we'll learn how to make interesting sound effects and custom graphics for games or other multimedia applications. Participants will also be guided through the process of loading several popular games and emulators such as Doom, Nintendo NES, Atari ST, and others for a retro mobile gaming experience.

Part 1 is a prerequisite for this session. Prior coding experience with a C-based language is helpful, but not required. Participants must bring a fully-charged laptop with an accessible USB A port or adapter, and VS Code or Arduino IDE installed.

PreCompiler Day 2 Morning

Prepare Your ASP.NET Core Application for ? Liftoff: Hardening Your Applications for Production 1/2

Kevin Griffin & Kendall Miller

You're about to push your latest project out to the launch pad - nearly every feature is complete, it's quick, and you're excited for launch day. But are you ready to achieve orbit and stay there safely?
* Will it still be responsive when everyone uses it at the same time?
* Do you have enough instrumentation in place to know if it's on course or heading for a crash?
* Once you find a problem, can you efficiently ship a fix?

In this full-day workshop, you'll be taken on a journey to build a launch-ready, battle-hardened ASP.NET Core application. You'll learn practical techniques you can put in place to:

* Design for scale without breaking your schedule.
* Track and understand application health
* Provide telemetry to your dev & ops team, product team, and marketing team.
* Deploy quickly and safely when you have updates and fixes
* Scale to handle surges of inactivity.

.NET offers a fantastic set of tools and strategies to solve these problems, but you can't (and shouldn't) try to employ them all. Benefit from multiple perspectives as Kevin and Kendall blend their real-life experience building and delivering applications in .NET. You'll be guided through making good decisions on what's worth it for your situation and what you can afford to leave back in the workshop.

After all, the whole point of a rocket is to go into space - so join us and launch your next app with the confidence of SpaceX!

The Demystifying Docker DOJO

Barry Tarlton & Mark Ramsey

Hearing all about the container craze, but haven't had time to really learn about it yet? Well, this session has you covered. Come roll up your sleeves and get ready to learn all about Docker in this hands on session. There will be no long pontificating about how Docker is better than other virtualizing options. No long power point slides…. Just you, your keyboard, and lots of fun guided tutorials to help you grasp what makes containerization so cool. From learning how to use published containers to increase productivity, to creating and publishing your own containers to do super important things like making cows talk. Yes, we will use Docker to make cows talk! I guess we will cover how to use Docker to run your production code as well, but come on, talking cows is more fun. So, step into the Dojo where we will roundhouse kick your Docker skills into high gear!

Foundations for the New DBA

Peter Shore

It doesn't matter if you are a Junior DBA, an accidental DBA or all the way up to a Senior DBA, the infrastructure your SQL Server environment runs on is important. Many among the DBA community came in as developers or perhaps directly into database administration roles it is equally possible that you have been out of the operations world long enough to have fallen out of the loop with what is happening. This session is intended to provide a full stack lifrastructure overview so that you can talk shop with your cohorts in operations to resolve issues and maybe even be proactive. We will discuss,

in an introductory fashion, hardware, network, storage, virtualization, and operating system layers. Additionally, some suggestions as to where to find more information will be provided.

IoT from Sensing to Insights Workshop

Brandon Lewis & Christopher Judd

In today's world, everything from tooth brushes to cars are connected to the internet and collecting data from sensors. Having the ability to capture the data and turn them into actionable insights can improve efficiencies, reduce cost and increase safety. Creating a IoT solution requires a lot of different skills including working with hardware, networking, cloud computing and analytics. During this hands-on workshop, you will build an internet connected IoT device, send data to the cloud and produce insights that will impress your boss.

Realizing The Benefits Of Container DevSecOps With AWS

James Strong & Colin Detwiller & Matthew Garber

Attendees will learn how to set up, harden, & secure a container pipeline in AWS in this workshop using no servers for that pipeline. Please attend, If you're interested in integrating security and compliance into a container pipeline to realize the benefits of DevSecOps. We will be using these tools and techniques to secure a container pipeline and runtime.

Github Repo - Code Signing
Kind - Local Development
AWS ECR - Image Scanning - CVE
AWS Codepipeline/Build - CI/CD A
WS ECR - Immutable Tags
Run Time Security - Falco
Logging - FireLens Alerting - Cloudwatch
Auditing - Cloudtrail

Let's play!

Jean Lange & Remy Porter

Have you become a feral person who doesn't remember how to interact with other humans? Let's exercise those interaction muscles by playing some improv games! You will practice cheerfully celebrating failure, figuring out when it's your turn to talk or listen, and negotiating uncertainty - and these skills build up to real world benefits like understanding the people around you better, being a good teammate, and embracing failure as part of progress.

No experience is required, just readiness to jump in. You'll meet people, learn activities that you can take back to your teams/families/friends, practice and reflect on a variety of skills, and walk out full of joy and energy. Come play with us!

PreCompiler Day 2 Afternoon

Prepare Your ASP.NET Core Application for ? Liftoff: Hardening Your

Applications for Production 2/2

Kevin Griffin & Kendall Miller

Part 2 of "Prepare Your ASP.NET Core Application for ? Liftoff: Hardening Your Applications for Production"

Decouple and Scale Applications with Queues

Curtis Darst

Queues are not just for theme park rides. Understanding the process of decoupling your application to support massive scale. Session includes discussion and examples around queue type, security, delivery, DLQ, and integration with your existing applications.

Workshop includes a hands-on development of a serverless application utilizing queues.

Freaky-Fast Full Stack with the FERN Stack

Keith Kurak

Can you code, build, and deploy a full-stack app with a web, iOS, and Android front-end in four hours? If it's possible, you'll at least have a fighting chance with the FERN stack: Firebase, Expo, and React Native. This fast-paced session will walk you through writing a messaging app front-end in React Native that uses Firebase for authentication, data storage, and API. Then we'll build and deploy the app to web, iOS, and Android in a flash with the help of Expo. Along the way, we'll meet some other tools that are great for fast prototyping of tri-platform apps, including React Navigation and MobX State Tree. This is a great session for anyone looking for shortcuts for their next hackathon project, as well as those interested in learning about any of the aforementioned technologies through realistic hands-on examples.

Learning Feedback with LEGO: The Building Blocks of Giving and Receiving Feedback

Arthur Doler

You dread your annual review time. You cringe at retrospectives. You wince in the face of a 360 Review. You don't like feedback - and you're not alone. Receiving feedback is hard, and when we ask for help with it we just get more feedback. On top of that, your brain doesn't like feedback, and it has some sneaky tricks it uses to convince you to argue about, pick apart, or even outright ignore that feedback. But there's hope - you can fight your brain and win!

This workshop will use exercises with LEGO to help teach you the following: the types of feedback and when to use them; how to structure a feedback conversation for maximum benefit; what are the questions you should be asking at each step in the conversation; what a feedback trigger is and how to recognize, defuse, and redirect those triggers; and more! You'll apply all of this to both giving and receiving feedback. By the end of the workshop you should be able to face even the most brutal peer review with a straight face (though maybe not a smile).

General Session Day 1 8:00 AM

Modern Cross-Platform Development with .NET 6

Sam Basu

Slated for Nov 2021, .NET 6 ushers in modern development stacks and polished tooling throughout much of the .NET ecosystem. With .NET MAUI, developers get to build native cross-platform apps for mobile & desktop from single codebase. With Blazor component model, C# can power modern web apps on the server, client or in hybrid mode on mobile/desktop. .NET 6 also promises faster inner loops, performance tuning and no-drama Minimal APIs. In all with .NET 6, developers get a modern stable framework with excellent tooling to build cross-platform apps with chosen technology stacks and share code better. Come live the future!

Leadership is Not Management, Expectations Versus Reality.

Stacie Bacon

Moving from the role of a software engineer to a technology leader is both a rewarding and challenging experience. In this session, I will share helpful tips, strategies, resources, and insights regarding the shift into leadership as I pull back the curtain on my journey going from expert doer to servant leader.

I will go over some expectations vs reality, attempt to debunk some myths, and offer practical suggestions on preparation. I will also share all sorts of anecdotes from my time leading up to, during, and after my first 90 days in leadership. This talk is geared toward both technical and non-technical roles/audiences.

The Art of Readable Code: Rethink Your Approach to Coding

Steve Green

We all have a lofty goal: programming style as documentation. Inspired by Steve McConnel's "Code Complete," Uncle Bob's "Clean Code," and Andrew Hunt's "The Pragmatic Programmer," this session will:

• Review some best practices for writing code in a style that's easy to create, maintain and understand
• Give you vocabulary for pragmatically evaluating code quality
• Discuss various refactoring techniques, code smells, anti-patterns, and rules of thumb

There will also be a portion where we'll be refactoring a confusing, ugly chunk of code into something beautiful, easy to read and maintain. Examples will be in C#, but coders in any language should be able to follow along and apply the principles discussed.

Dark UX Patterns

Vitaliy Matiyash

Congratulations! You are the 1,000,000th visitor to our website. Click here to redeem your prize! Just provide your date of birth and phone number to get started.

Learn about Dark UX Patterns, how they work, how they trick you and what companies are the worst offenders. Roach Motel, Privacy Zuckering? Let's visit Dark Patterns Hall of Shame and see who joined the dark side!

This talk will break down the most popular dark patterns using real life examples from websites and apps you use every day. If you are a designer, a developer or a product manager, you will learn what to avoid when building your product and how to integrate digital well-being and safety features into your service. If you are an end user, we will teach you how to respond to dark patterns in order to stay safe online, protect your privacy, save your money and keep your sanity.

Life in the Fastlane: App Store Deployments That Won't Make You Lose Your Mind

Keith Kurak

Imagine deploying your shiny new app to the Apple App Store- creating certs, uploading your app to Testflight, adding testers, taking screenshots on four different devices, filling in dozens of fields on the store description, clicking through EULA's, and resubmitting five times because the reviewer didn't like the drop shadow on your home screen icon. Now imagine doing that 70 times for each update because you've just inherited 70 white label apps. With examples from the real-life tribulations of a developer faced with this "automate-or-die" scenario, learn how to use Fastlane to build scripts that do all that annoying App Store Connect and Google Play Console stuff for you. Highly-recommended for mobile developers suffering from app store fatigue who have never used Fastlane, or who want to go beyond the one or two Fastlane scripts they copied from Stack Overflow- whether they support one app or a thousand.

The Science of Testing

Thomas Haver

In the past decade the software development paradigm has shifted to "deliver fast" -- with concomitant frameworks and methodologies to support that emphasis – but without proper consideration of quality. So most teams end up failing fast and hard when development continues beyond a shaky foundation. To bring about positive change, we must improve both our knowledge base and our processes to achieve quality delivery without disturbing the bookkeeper's project delivery timelines. Lessons learned from a career in research science can be applied to QA, with parallels to industry product quality models. Testing techniques and product delivery processes from research science will aid not just testers but the entire team in delivering quality software. More than just day-to-day team activities and testing tools, the science of testing is about the pursuit of knowledge and understanding for its own sake. Testers should foster their skills in the community with professional development activities. Those in attendance will learn about the successes and failures of applying a scientist's approach to testing software, from the "publish-or-perish" mindset of science to "deliver fast" in IT.

Watch How The Giants Fall: Learning from Bug Bounty Results

John Melton

Security is hard. We all miss things. Attackers find things.

"You must learn from the mistakes of others. You can't possibly live long enough to make them all yourself." -Samuel Levenson

This talk is a fun, fast-moving survey of some of the best recent bug bounty finds against some of the largest and best-known applications in the world. Some of the bugs are really simple, some are super complex, but all are entertaining. As we go through these, we'll take a look at what caused the issue, and how to fix it.

From this talk, you'll walk away with:
* a few minutes of entertainment
* a view of the wide breadth of security issues
* practical ideas on testing and shoring up security in your own applications
* (maybe) a new side gig as a bug bounty hunter!

General Session Day 1 9:15 AM

Testing 101 for Devs

Jenna Charlton

In Agile, quality has become a team responsibility. Increasingly developers and non-testers are being asked to test and "shift left" but are rarely given the tools to ensure their testing is up to snuff. This often results in wasted time and effort and costly bugs. In this session we'll cover some of the basics of exploratory testing, testing terminology, and start to think like testers.

Takeaways
• Session based testing with charters
• Unit testing vs functional testing
• Testing lifecycle
• Shifting left and pairing
• Understanding and communicating risk
• Why automation isn't always the answer

Asynchronous JavaScript: Livin' On A Prayer

Bob Fornal

There is a unique world where Single-Threaded JavaScript manages to be much more. JavaScript interacts with its environment in ways that allow it to handle Asynchronous activities. Using several detailed code examples, we will examine these examples in a unique way to show how these interactions truly work.

This talk has been also called, "JavaScript Enjoys Your Tears" and "Lip Sync To The Async". If you are an experienced developer or new to the field, there is something in this presentation for you.

This session takes a look at how JavaScript manages Asynchronous events and some of the ways developer decisions may work for, or against them.

This discussion will examine the ways that JavaScript coordinates and manages events using several coding examples and we can determine which are the good, the bad, and ... the ugly.

Regex is for .*

Jean Lange

Regular expressions are a powerful tool available to coders in many programming languages - but they're so cryptic and hard to read/work with! Let's explore what they can do for you and where you might want to use them. Then we'll dive into regex101.com and the regex crossword for practical examples of how to use, test, and learn more about regular expressions.

Effective Data Visualization

David Giard

We spend much of our time collecting and analyzing data. That data is only useful if it can be displayed in a meaningful, understandable way.

Yale professor Edward Tufte presented many ideas on how to effectively present data to an audience or end user.

In this session, I will explain some of Tufte's most important guidelines about data visualization and how you can apply those guidelines to your own data. You will learn what to include, what to remove, and what to avoid in your charts, graphs, maps and other images that represent data.

End the Stigma: Become a Mental Health Ally

Matt Williams

It is estimated that in the US, approximately one in five will experience mental illness each year.

The incidence among IT professionals is likely higher -- a Japanese study of Software Engineers found that 32% of the participants suffered from depression or other mental illness.

And yet... Talking about mental illness is Taboo. It just isn't "proper", you know.

The social stigma of mental illness is real. It's illegal to discriminate against it, but it still happens.

There's a real fear that others will find out. That friends, family, and coworkers will judge those who experience mental illness.

This talk boldly goes where few others have gone before... talking openly about mental illness, exposing some of the myths, and how to be an ally of those who experience it.

The Four Principles of Accessibility

Homer Gaines

Within the WCAG 2.1, web-accessible content is broken into four principles collectively referred to as POUR. This acronym stands for Perceivable, Operable, Understandable, and Robust. These four areas specifically target areas where users have the most trouble when accessing digital content and provide guidelines for understanding how to think and approach accessibility.

Building Android for Everyone

Sierra OBryan

Accessibility creates a better experience for everyone. Jetpack Compose simplifies development and can help us more easily build more accessible apps. In this talk, we'll dive into some common use cases, Android Accessibility APIs, and compare these to the accessibility tools available in Jetpack Compose. We'll also talk about general best practices, helpful tools, and how to test accessibility in your app.

General Session Day 1 10:30 AM

Building Accessible Web Apps

Cory House

Are your apps accessible? Can a blind user navigate your app with a screenreader? Can the colorblind consume your content? Since 2017, multiple US court cases have ruled that the Americans with Disabilities Act applies to websites and mobile apps. So there are legal risks to consider as well. In this session, you'll see how easy it is to use assistive technologies to interact with your app, and you'll learn how to build web apps that everyone can enjoy.

Are You Ready for a Senior Role?

Jenny Bramble

Moving from being a mid level engineer a senior role can feel like a huge leap--especially when your new responsibilities aren't well defined. What does it mean to embrace a senior role? It's not just about experience and years on the job; it's an entire mindset shift.

Jenny Bramble, Director of Quality Engineering, takes a step back from formal job descriptions to talk about what she looks for in rising senior engineers including how we approach assessing risk, how we work to empower and lead others, and how our impact changes as we mature in our roles. By generalizing the senior mindset, you can apply these ideas to any type of role.

You'll leave this talk with a clearer picture on what seniors are often asked to do and how we can start building a senior mindset as early as possible in our careers. Most off, you'll be prepared to answer: Am I ready for a senior role?

The definitive deep dive into the .git folder

Rob Richardson

What's in the .git folder? How are commits stored? How do branches work? We'll dive deep into the objects folder, unpack commits, look at the types of DAG nodes, examine object content, and build a complete visualization of the stored content. We'll also quickly look through Git hooks, Git config, and ref logs. Come experience the zen of git.

Hacking Your Vacation: Using Data for Fun

Becky Gandillon

Data can be powerful, meaningful, AND fun. Making data-driven decisions can level up your family vacation from awful to awesome. In this session, attendees will walk through a specific example showing how to analyze various data sources to avoid crowds, save money, and piece together a Disney World vacation that's more enjoyable for everyone.

Let's Talk Bluetooth

Leah Vogel

Bluetooth has its own lingo. Don't know much about it? Want to learn to speak it? You've come to the right place!

In this talk, you will hear a high-level overview of Bluetooth Low Energy and explain how it differs from Bluetooth Classic (BR / EDR). You will become familiar with the terminology and learn about the main concepts like profiles, services, characteristics, etc. By the end of this talk, you'll have a better understanding of Bluetooth concepts for general knowledge or to develop your own amazing projects.

* Introductory session. If you know a lot about Bluetooth - you will be bored :)

Where has Jane Gone?

Karen Linden

Have you ever been told if you were like that male developer over there you get somewhere? Have you removed you first name from your Resume to get more interviews? Have you been excluded from a meeting because afraid that they will offend you?   Have you ever been called bossy? Have you ever others undermined your accomplishments? Have you ever refrained yourself from a job opportunity because you felt like you didn't meet all the requirements? If you answered yes to most of the questions, you've experienced some of the problems women face in the workplace.

With so much focus them to get women into tech why have the numbers changed. In a recent study concluded that the gender gap for women in technology as a whole is actually worse today than it was in 1984.

The study, led by Accenture and Girls who Code, showed that 50% of women abandon technology careers by the age of 35 and that women are leaving tech roles at a 45% higher rate than men. Only 21% of women in the study said they believed the technology industry was a place they could thrive; sadly, that number falls precipitously to 8% for women of color.

So, we cannot convince them to enter the tech industry with only 15% of the graduates are women in Computer Science. Then we chase them out by the age of 35.

I am not the norm. I survived and I will talk about my experience as a forty something women in tech. I know I can not solve the problem the only dominate culture can do that.   But I explain the pitfall that women are facing.   How you are making women feel unwanted and unneeded.   Also, if industry does not want to change that is OK too. Just do not make if harder for the ones that stay.

Common Accessibility Pitfalls: Climbing out, when you fall in.

Chris DeMars

You, your users, and Alice from Wonderland have something in common. At one point, everyone has fallen into a hole of perplexity, confusion, and sometimes hysterical madness. Unlike Alice, we can navigate ourselves and our users around the chaotic abyss that we call the web. Shipping inaccessible experiences to our users can have unpleasant effects. Being cognizant of all the things that can go wrong and who are potential users are will take us farther along our journey.

In this session we are going to learn about common accessibility violations that surface when we are lackadaisical about the experiences we ship. We will cover semantic markup, alt attributes and images, color contrast, and more. Attendees will walk away able to identify these problem areas in their codebases and learning techniques, tools, and best practices to keep our users happy and not drive them mad.

What a global pandemic can tell you about better DevOps practices

Jeremy Meiss

In early 2020 a global pandemic set in motion events which none of us could predict. With anonymous data collected from 900k+ devs, 50K orgs, and 60m+ builds/mo we found some interesting insights into better DevOps practices. Since then, we've seen even more interesting activities happen, which shed new light on high-performing engineering teams. In this session, we will seek to uncover what this unique dataset can tell us about high-performing engineering teams, and what trends stand out through the aggregated platform usage.

General Session Day 1 11:45 AM

10 Ways to Write Clean JavaScript Code

Avindra Fernando

Written in just 10 days, JavaScript continues to be very successful in modern software development. The flexibility of JavaScript empowered rapid innovation in software. But, this flexibility comes at a cost of readable, maintainable, and scalable JavaScript code.??

Over the years, after working with JavaScript, there are many things that I have learned the hard way. JavaScript and its ecosystem is fast changing. When you think you have grasped a concept in JavaScript, it loves to throw another curveball at you.

In this talk, let's discuss 10 ways that I found useful to write clean JavaScript code. These guidelines will help you keep the clutter away, and write maintainable JavaScript code.

Dungeons, Dragons, and Graph Databases

Guy Royse

Are you an adventurer? Do you want gold? Experience? Levels? Of course you do! And where do you get these things? The dungeon, where else? That wonderful container of all things adventurous! But, unfortunately, dungeons aren't setup for the convenience of adventurers who wish to extract these fine things. It's almost as if the dungeon master just made the dungeon up at random. And so you wander about and you get what you get.

But you're also a developer. You could build a database of all the rooms with their shiny and

monstrous content. Then you could query it and find the optimal route to get the gold and the experience and the levels. But how would you model this data and write these queries? The rooms. The corridors. The monsters. The sparkling hoozits. That's a lot of entities to relate to each other. And that's gonna be a monster of a SQL query. Whoa–look at that JOIN! Better get my text editor ready.

Or, you could use a graph database. A graph database allows you to model these relationships simply and intuitively with nodes and edges. Being schema-free, you can evolve your graph as you encounter new things such as traps or secret doors. And, using the Cypher query language, you can write elegant and easy to understand queries that find the best routes to get the stuff adventures desire most.

In this talk, I'll use the aforementioned example to introduce you to the concepts of graph databases. I'll compare how to solve this problem with a relational database and how a graph database makes it easier. I'll show you how to query and modify your graph. And, as no talk would be complete without a live demo, I'll do it all using a real-time procedurally generated random dungeon (I am a dungeon master after all).

So come, have a flagon of mead as you learn about graph databases, optimize your dungeon crawl, and equip another weapon in your quest for better software!

The Elegance of "The Simplest Possible Thing": Applying Simplicity Principles to Complex Problems

Nate Berent-Spillson

Software development is complex work. Business requirements, platforms, and technology itself are all complex elements. Through all this complexity, software developers often try to create complex solutions that meet all the requirements at once. Similarly, when faced with a complex problem, they often don't know how or where to start solving that problem. The key to solving complex problems quickly and elegantly is to master a series of small problems in fast succession, constantly evaluating and re-evaluating the path toward the goal.

In this talk, we'll dissect the process of simple and fast problem solving, applying feedback loops, and test-driven development to tackle complex problems. As developers get the feel for the technique, they can push themselves faster and faster through the loops and find that they're able to solve very complex problems in a short period of time.

Explain DevOps To Me Like I'm Five: DevOps for Managers

Gene Gotimer

Organizations and leaders are often supportive of DevOps, but they don't always understand what DevOps is and what it will change. It isn't a one-size-fits-all issue; different environments need different benefits from a DevOps transformation. Join Gene Gotimer as he explains the most important parts of understanding DevOps. We'll discuss how to determine what parts of DevOps your organization needs to concentrate on first and how you should measure improvement. This session boils DevOps down to its most basic parts and makes sure you have a foundation for understanding how to make it work for your situation and organization.

Finding Your Flow With Kanban

Jeremy Jarrell

More and more teams are discovering that they're more productive and more effective with Kanban. Many of these teams who choose Kanban do so out of a desire to work in an agile way, but without the overhead of sprints. But, if your team has adopted Kanban simply because there are no sprints, then you're only scratching the surface of what Kanban can do.

In this session, you'll learn how to put Kanban to work for you. You'll learn how to use the key metrics most often associated with Kanban to tune your team's throughput and increase their predictability. You'll also learn how to use common Kanban visualization tools to spot emergent smells in your team's process so you can improve your team's way of working. And, you'll learn how complementary agile techniques like agile release planning, daily stand-ups, and retrospectives can coexist alongside Kanban.

By the end of this session, you'll have the tools and techniques necessary to help your team get the most out of Kanban while still allowing them to work with one of the lightest-weight agile frameworks available.

The Human Side to Testing

Amanda Perkins

We're known for breaking things and testing the limits, and patience, of our team and our systems. We advocate for quality in all things and we advocate for the end user. But, none of us actually think about how our varied backgrounds influence what we do and how we test. In this session we'll explore how our previous (and current) experiences subconsciously affect our testing and how to bring those experiences to the forefront in order to be better testers all around.

Automating & Monitoring Seedling Growth in the Cloud Using IoT, Messaging & Micronaut

Todd Sharp

It all started with a small project to pass the time during The Great Quarantine of 2020. I bought some chiles from the local farmer's market (with proper face coverings and social distancing, of course), fermented my first batch of hot sauce, and shared it with a few friends around the globe. I had no idea the sauce would be such a massive success, so I resolved to build on that triumph in 2021. But this time, I knew that I would have to start from the very beginning and grow the chiles myself. Of course, this presented the wonderful opportunity to combine two of my life's greatest passions - the culinary arts and technology - to ensure that my growth operation was the ultimate success. Join me in this session where I show you how I used a microcontroller, some sensors and the cloud to monitor and automate the germination and maturation of this year's crop.

General Session Day 1 1:00 PM

Protecting your API with OAuth

Dan Moore

OAuth is a well known standard and is useful for delegating authentication and authorization decisions to a central identity provider. As a developer, you've given a token when a grant completes.

But what happens then? This talk will discuss client and server side code and logic needed when calling an API after you have a token. This will include how to store a token in the API client and what your API code should examine when presented with a token.

Sabotage Productivity the CIA Way

Matt Williams

In 1944, the Office of Strategic Services (OSS), predecessor of the CIA, published the Simple Sabotage Field Manual -- a guide for resistance forces to characterize simple sabotage, outline its possible effects, and to present suggestions for inciting and executing it.

Ironically, many of the organizational and business suggestions are considered good, if not best, business practices. By following these few simple tips, you, too, can sabotage productivity the CIA way.

Rock-Solid Components with TypeScript and GraphQL

Mat Warger

Most recent javascript frameworks bring a solid component model to modern web development, but how can you guarantee that your components work correctly? In this session, you learn how the features of TypeScript can be leveraged to bring clarity and dependability when constructing components with React. Using TypeScript can help to catch errors early in the development life-cycle. GraphQL and its type system can ensure confidence in your components while fetching remote data. This comprehensive approach ensures that your components behave as you expect, and allows you to eliminate run-time errors. Learn how using types can keep your users happy!

Implementing an Event Sourcing strategy on Azure

Eldert Grootenboer

In recent years the Event Sourcing pattern has become increasingly popular. By storing a history of events it enables us to decouple the storage of data from the implementation of the logic around it. And we can rebuild the state of our data to any point in time, giving us a wide range of opportunities around auditing and compensation.

In this demo-heavy session Eldert Grootenboer and Olena Borzenko will show how we can use Azure Event Hubs to process and store these events to build our own event store based on Cosmos DB. Moreover, we will also dive into options around connecting to other Azure services and even Kafka applications to easily implement this popular pattern in our own solutions.

This will be a hybrid session, with Eldert Grootenboer in person, and Olena Borzenko calling in virtually. Olena is a software developer from Berlin in Germany. She has previously worked in a service company based in Ukraine and took a part in the creation of various products from small startups, B2B applications, to enterprise platforms.
Moreover, she is passionate about new technologies, clean code, and best practices.
In her free time, when she's not spending it on hobbies, she likes to build demos around real-life use

cases, share knowledge with others, and the opposite, learn about someone else's experience.

Olena can be found on Twitter at https://twitter.com/borzenko_lena, and on LinkedIn at https://www.linkedin.com/in/olena-borzenko/.

Enterprise Observability with OpenTelemetry

Christopher Judd

Enterprise applications are complex. A transaction starting in the browser will go through proxies, api gateways, security appliances, application performance monitoring tools, logs, microservices and more microservices. Historically there has been no standard way to get observability and traceability between all the enterprise components. Each product and framework has it's own proprietary way of identifying a transaction making it difficult if not impossible to stitch together a complete picture of a transaction. This is changing with the introduction of the W3C Trace Context standard and the open source initiative of OpenTelemetry.

In this session, you will learn how using Trace Context, OpenTelemetry and other open source and commercial products can improve your observability to help you better triage production issues, improve performance, be proactive and make your users happier.

Who's Afraid of the Big Bad Bluetooth?

Leah Vogel

With the buzz around IoT devices, Bluetooth Low Energy technology has become increasingly popular. Apple's CoreBluetooth has been around since iOS 5, and offers a host of utility APIs. This talk will cover the basics of Bluetooth LE technology and its history and terminology. Attendees will learn about services and characteristics, and then dive into the CoreBluetooth APIs and become familiar with the CBManager, CBPeripheral and their respective delegates. Additionally, the challenges in making the code testable will be discussed, as well as some practical tips that are easily overlooked from the documentation. Attendees will come away with a better understanding of Bluetooth LE and the tools to build apps using this powerful framework.

* If you have worked with Bluetooth before - you will be bored :)

Time traveling in the cloud. Time series analytics with Microsoft Azure.

Sam Vanhoutte

The data collected in IoT scenarios are often thought of as a 'time series'. Through this data it's possible to understand the past and use this data to anticipate the future. But time traveling is never straight forward. That's why in this session Sam will walk you through the processing of time series data and he'll discuss some common roadblocks in time series analytics.

Not only will we focus on time series analytics and predictions for the future but you'll also see which Azure services can be used and how they can be applied. We will tackle Time Series Insights, Azure Machine Learning and Azure Data Explorer and how they can be combined in data driven solutions.

General Session Day 1 3:30 PM

Designing Reusable Components…That Are Actually Reusable

Cory House

Modern UIs are often composed of reusable components written in React, Vue, Angular, whatever. In these modern technologies, creating a component is easy. However, creating a truly reusable component is hard. In this session, we'll explore the tradeoffs inherent in reusable component design, and discuss the questions to ask along the way. The examples presented will use React, but the concepts presented apply to anyone building components. After this session, you'll understand the key considerations required to create UI components that are truly reusable.

Failing Successfully

Cassandra Faris

Failure is normal. It's so normal that many software development teams encourage people to fail and fail fast. Failure is also scary. It makes us feel vulnerable. We may even worry that our jobs, relationships, or goals are on the line. Yet we hear countless stories of people turning failure into success in seemingly magical ways. This session will teach you what's behind that magic. You'll discover how to help yourself and others fail successfully. You'll learn how to reflect on failures and apply those reflections in the future. Because success is hard to see in the midst of failure, we'll also discuss techniques for surviving the challenging times. With this knowledge, you can use your failures as the building blocks of your own seemingly magical successes.

Using SVG to create responsive, interactive and animatable graphics

Ben Hoffmann

A message is often best stated visually. Traditional methods of designing graphics, diagrams, and charts produce something that retains its aspect ratio, regardless of the size it is viewed. This may work fine for print and slide media, but fails to take advantage of viewing digital content on devices of various screen sizes and resolutions, especially when text associated with the graphic is to be readable. On small devices, while the graphical element may retain its intent (e.g. two overlapping circles), associated text may be shrunk to unreadable point size. This session will describe how to use SVG (Scalable Vector Graphics) as a vector graphic format not just to render the graphic as it was originally designed, but transform itself using technologies such as CSS transforms and javascript to retain its readability on smaller layouts. Methods for exporting vector art from designer software such as Illustrator will be discussed. Demonstrations of mixing SVG and HTML into the same graphic using responsive techniques will be given. Integrating SVG elements with reactive frameworks to enhance interactivity and animation of the graphic will be covered. At the conclusion of the session, participants will have a better understanding of how to use SVG as a high quality format for rendering graphics on the web for a variety of screen sizes, retaining readability without compromising the impact of the graphic.

Introduction to Functional Programming: It Isn't So Scary

Justin Pihony

Functional programming has been around for decades, yet only recently has it become mainstream. It yields simpler, terser code which is easier to both test and debug, among other benefits. However it is still often seen as unapproachable, with zealots touting words like monad, functor, and other, daunting jargon. In this session you will tear down those walls, exposing how much of your code is already

functional and even learn the correlated jargon. Then touch on functional dogmatism, and how to combine it all into a pragmatism. Whether you have been on the fence or just want to dig deeper into functional programming, this session will demystify the jargon and show how easy it is to add a functional flare to your own code.

Keeping your Kubernetes Cluster Secure

Gene Gotimer

Many organizations are shifting to containers and Kubernetes, and that move means learning new ways to secure their environments. Kubernetes clusters have to be hardened at different levels. We have to consider the nodes where the Kubernetes control plane is running. We also need to secure the Kubernetes workloads and check the files that create them. And we need to inspect the containers we are using for vulnerabilities and unusual behavior.
Gene will show you some open-source tools that can find issues and vulnerabilities at each layer. You will see how they can be used in a pipeline to build your Kubernetes cluster safely and keep it secure.

Automate Mobile Application Testing in the Cloud with Microsoft App Center

Aaron LaBeau

Every year new mobile devices are released for iOS and Android. With the list of supported devices growing, testing applications on physical devices is becoming more challenging and costly.

In this session, Aaron will review mobile application testing strategies, frameworks, and solutions around automated integration and UI tests on physical devices.

Finally, Aaron will demo a mobile application for iOS and Android running UITests from a GitHub action pushing the testing to the cloud using Microsoft App Center on a physical device.

Exploring the Reactive Landscape

Mary Grygleski

As Java is an object-oriented language that inherently supports the imperative programming style, asynchronicity presents a challenge that can turn the code into nightmare. One way to deal with the complexity of asynchronicity is to introduce reactivity onto the coding level (reactive programming), and/or to handle it on the design and architecture level (reactive systems design).

Reactive programming and reactive systems are not brand new concepts, as the underlying problems that they are trying to solve, namely, concurrency processing and distributed systems, have existed since the beginning of computing time, and there have always been various techniques and implementations that are "reactive" in nature to address those problems. With the advances in multicore hardware and virtualization, plus cloud technologies in the 2010's, the time has become ripe for reactive software tooling and frameworks to take center stage. This talk introduces the concepts of reactive programming and reactive systems, discusses the Reactive Manifesto and the Reactive Streams specification, as well as highlights a few popular reactive libraries that include MicroProfile Reactive Messaging, SmallRye/Mutiny, Vert.x, RxJava, Spring Reactor, and RSocket.

The takeaways for the audience will be an understanding of the key differences between reactive programming versus reactive systems, the purpose of the Reactive Streams specification, and the

strength and weaknesses of each of the surveyed libraries and frameworks.

General Session Day 1 4:45 PM

Monolith Decomposition and Evolutionary Architectures: How to Safely Modernize Legacy Systems

Ben Hoffman

Replacing and re-engineering a new system to replace a legacy or monolithic system, in its entirety, is risky. And after significant investment, the new system often suffers from many of the same issues the old system had. When you combine long development times with big-bang-style deployment, the risk goes through the roof.

A much less risky approach is to do a long-term evolution and decomposition of a legacy or monolith system toward a new target architecture. This approach reduces risk but requires the application of a new set of patterns as each piece is identified, analyzed, separated, and deprecated.

In this session, we'll dive into:
• A collection of strategies and patterns that will help you identify the seams in an application
• Breaking dependencies
• How to establish test fixtures to support regression-free restructuring
• The trade-offs in pattern purity vs. pragmatic reality

By the end of the talk, attendees will have real tools and techniques they can use to safely rebuild and restructure applications with lower risk.

Better Interviews, Better Work

John Lange

Being an interviewer for technical jobs is hard. Checking for technical competency can feel impossible. Asking questions that start with "tell me about a time when" can feel like it has no value. And for many people giving interviews, there is no training; you're left to figure it out on your own.

There are better ways. There are better ways to find out if someone is technical than asking them to invert a binary tree. There are better ways to ask for "a time when" that can give you better insight into the person you're interviewing. There are better ways to create interviews than making one based on the person you know best: you. Because interviews tailored to a single person end up only hiring people just like that person.

In this talk, you will not only gain new ways to be a better interviewer, you will learn why you should ask some questions and not others. You will learn how to ask better technical questions. And you will learn which skills you can train on the job and which ones you must interview for.

A Perfect Ten: The Data Model

Leslie Andrews

Do you know what makes a great data model? What does it mean to be Third Normal Form or a Star

Schema? When would you use one over the other and why? How can you identify bad designs? Join Leslie Andrews for a discussion on good and bad data models, and learn what you should do in order to create a perfect ten model of your own!

Putting the FUN back in Fundamentals: Data Structures, Algorithms, and More!

Matt Williams

In this session, we will bring FUN back to Fundamentals as we:

* Look at favorite data structures and algorithms from the 70s, 80s, and 90s: where are they today? You won't believe #7!

* Discover why hashes aren't just for breakfast.

* Discover the Lolrus' favorite data structure (hint: it's got a bukkit).

* Discover why some searches gallop and others proceed at a snail's pace.

* Face hard truths: sometimes brute force is the best method.

* Face harder truths: someone has to maintain the code you write today... and they know where you live.

* Face the hardest truth: CPU, Memory, Storage, and I/O are not infinite.

And... most importantly... discover the BEST algorithm and the BEST data structure.

Making the most of your DevOps Artifacts

Matthew Sheehan

With greater emphasis placed on automating the creation of predictable software bundles, you may be asking what are DevOps artifacts and what can you do with them? Well, it turns out you can do many things with them. Artifacts can be the compiled output for your app deployment, or a Nuget or NPM package ready to be pushed to a private (or public) registry; sometimes they can just be a place for temporary storage before becoming the input of another job in the pipeline.

Understanding your pipeline artifacts will help your CI builds become more predictable and possibly shrink the time it takes your pipelines to complete. Using Azure Pipelines as our CI tool, you'll learn the different uses for build artifacts, where they are stored, how they integrate with your deployments and unit tests, and how to compose your pipeline to make the best use of intermediate artifacts.

Getting started with Kubenetes Policy Development

Robert Sirchia

This session is designed to get a user started in writing Kubernetes policies in Rust. We will, touch on what is a policy. How we are going to leverage Rust and Web Assembly to write our policy. What

tools you will need to develop a policy. Build out a sample policy and test it on a local Kubernetes cluster.

Connecting Systems that Never Planned for Each Other - An Introduction to Apache NiFi

David Snyder

Apache NiFi can be described as a Swiss army knife for data flow programming. Joe Witt, the creator of NiFi, describes it as a "broker between systems that never knew to plan for each other". This session will illuminate the main features of Apache NiFi, expand on the problems it is best suited for, and demo an example data integration flow. Attendees will leave with a better understanding of what NiFi is and how it might solve their data integration challenges.

General Session Day 2 8:30 AM

Tribal Knowledge in Agile Teams

Jeffrey Miller

Let's face it. We don't communicate well, and we document even less.

Is it possible to wield information well in an Agile software team?

Yes, it is!

With consideration, change, and commitment to doing your work differently, it is possible to have relevant and vibrant knowledge resources in an Agile environment.

Instead of being told, "You're doing it wrong," teams can move to a new model that builds on empathy and excellence.

Better on-boarding means more confident teammates, a more inclusive workflow, and a focus on continuous improvement.

No matter what methodology you use, you'll gain practical techniques to improve your team's handling of know-how and achieve better collaboration.

Crafting an interpreted programming language in 60 minutes

Granville Schmidt

Are you curious how programming languages are designed and implemented? Do you have nightmares about the "magic" that happens when you run/compile your code? Have you ever wanted to create your own programming language from scratch?

If you answered yes to any of these questions, then this session is for you!

In this session, you will learn the fundamentals of programming language design and will create and run an interpreted programming language called "Mash". When this session is over, you will emerge a

stronger software engineer and can say you had fun "Mash"-ing code at CodeMash.

Visualizing Code
Matt Eland

What happens if we combine the fields of software architecture and data visualization? In this talk, we'll explore what git can tell us about software projects and the teams supporting them by looking at a variety of ways to visualize codebases.

Over the course of the talk we'll examine an open-source project from the outside and examine data visualizations generated in a Jupyter Notebook using Python, Plotly, and Pandas to see what information can be gleaned from the raw file structure, git history, GitHub releases, and issue data. We'll then pivot to looking at several static code analysis tools (CodeScene, Sonar Cloud, and NDepend) to see what they can tell us about the health of this codebase and identify any problem areas.

We'll also talk a bit more about some of the specific concerns you might have in data cleaning that relate specifically to source control and work item management systems and close with a discussion on how to get started analyzing your own code.

While the main point of this talk is to get you thinking differently about your code, you'll probably learn a thing or two about data analysis and leave with a starter template for analyzing your own code.

Understanding Probabilistic Data Structures with 112,092 UFO Sightings
Guy Royse

There are three reactions to the title of this talk:

- What the heck's a probabilistic data structure?
- UFO Sightings… wha?
- 112,092 is an oddly specific number.

This is a talk about the first bullet point with the second thrown in just for fun. I like weird stuff—UFOs, Bigfoot, peanut butter and bologna on toast—maybe you do too? As far as the third bullet point, well, that's how many sightings I have.

Now, if you're like most developers, you probably have no idea what probabilistic data structures are. In fact, I did a super-scientific poll on Twitter and found that out of 119 participants, 58% had never heard of them and 22% had heard the term but nothing more. I wonder what percentage of that 22% heard the term for the first time in the poll. We're a literal-minded lot at times.

Anyhow. That's 4 out of 5 developers or, as I like to call it, the Trident dentist ratio. (It's actually a manifestation of the Pareto principle but I'm a 70s kid). That's a lot of folks that need to be educated. So, let's do that.

A probabilistic data structure is, well, they're sort of like the TARDIS—bigger on the inside—and JPEG compression—a bit lossy. And, like both, they are fast, accurate enough, and can take you to interesting places of adventure. That last one might not be something a JPEG does.

More technically speaking, most probabilistic data structures use hashes to give you faster and smaller data structures in exchange for precision. If you've got a mountain of data to process, this is super useful. In this talk, we'll briefly go over some common probabilistic data structures; dive deep into a couple (Bloom Filter, MinHash, and Top-K); and show a running application that makes use of Top-K to analyze the most commonly used words in all 112,092 of my UFO sightings.

When we're done, you'll be ready to start using some of these structures in your own applications. And, if you use the UFO data, maybe you'll discover that the truth really is out there.

Mission Impossible Prep: Testing with Cypress

Bekah Hawrot Weigel

Your mission, should you choose to accept it, is to ship reliable code. The mission is no different than the others as developers; it's complex, smart, and maybe even seemingly impossible. With no time to waste, you start writing your tests.

And with that, you know your mission will succeed. With Cypress, you've got the Swiss Army Knife of end-to-end testing that gives you confidence your code won't break, your mission will succeed, and provides you with extra backup.

In this session, we'll take a look at how to get started with Cypress, how to write reliable tests to give you confidence in your code, and how using Cypress enables you to get the mission accomplished.

Web A11y Patterns and Pitfalls

Robert Cochran

The internet is no longer an optional aspect of modern life. It is how many of us conduct business and maintain relationships. A tool as critical as the internet needs to be usable by everyone. It is our responsibility to create a good user experience for ALL users.

This session aims to instill empathy, provide knowledge, and identify helpful tools that can be used to help those in need.

RediSearch: Completing the Beyond SQL Story with Search

Brian Sam-Bodden

Do you automatically reach for a relational database for your application's data needs? There is an unspoken impedance mismatch between expected rates of maturity between an application's model and its data model. NoSQL/NewSQL and now "beyond SQL" solutions are often met with incredulity from the die-hard SQL crowd. Brian will introduce you to the power of RediSearch to query structured and unstructured data in Redis and show how RediSearch helps to narrow the SQL to NoSQL gap by allowing common SQL patterns to be implemented in a key-value and document data store like Redis.

Using the RediSearch module, you'll learn:

How to query data in Redis with SQL-like flexibility How to use boolean logic, full-text search, numeric ranges, geo radiuses, and more How to create secondary indexes for your existing Redis data How to build reporting and analytics queries using aggregations (COUNT, SUM, etc.)

General Session Day 2 9:45 AM

Building rugged DevOps pipelines with GitHub Actions

Brian Gorman

This session dives into using GitHub actions to build out robust DevOps pipelines. In the session, we'll implement an architecture to build a temporary dev environment, and then push the code changes through the pipeline to an end release into production. In addition to just getting the CI/CD implemented, we'll examine what it takes to add in static code scanning and other security considerations for our repositories.

Effective React State: 7 Years of Lessons Learned

Cory House

Managing React state is hard. Why? Because there are so many options to consider! Local state, reducers, custom hooks, context, and over a dozen third-party libraries. In this session, we'll explore the lessons I've learned from managing complex state in React over the last seven years. I'll share my strategy for categorizing React state including local, server, global, derived and many more. After this session, you'll understand how to identify different types of state, where to declare state, and how to choose between these different options.

Consistent cloud environments with Infrastructure as Code

Matthew Sheehan

Your SaaS app is doing great, but your cloud environment is growing more and more complex. After years of provisioning additional resources to keep it growing, nobody on the team remembers all of the dependencies anymore, and deployments are hitting snags because the development, testing, and production environments are inconsistent.

In this talk, you'll learn how to embrace Infrastructure as Code starting with Microsoft Azure. Together we'll create a robust Bicep script that can deploy to multiple environments, keeping them consistent. The days of your infrastructure being undocumented and inconsistent are over with a code-first, version-controlled method of managing cloud resources.

The Case for GraphQL

Kyle Schrade

We will be diving into why someone would want to use GraphQL and what are the benefits of using it. Starting from what is GraphQL and ending with how it can make your stack much more flexible and improve your day-to-day developer experience. We will look at many examples from our work at StockX that have been changed for the better by using GraphQL.

Yarn Berry: a next generation package manager

Michael Richardson

The recently released Yarn Berry (aka Yarn 2) brings a host of great new features for JavaScript developers. The slick new CLI, more readable output, clear errors, and significant enhancements to workspaces make Yarn Berry a solid upgrade from the already impressive Yarn 1. But with an incredible feature called Plug-n-Play (PnP), Yarn Berry takes a massive leap ahead.

Have you ever thought "I really love dealing with this ginormous node_modules folder." No, and no one else has either! With Yarn Berry and PnP you can forever be free of node_modules. PnP dispenses with the node_modules folder entirely and creates an opportunity for perfect module resolution, faster startup, and instant package installs. Imagine cloning a node app and running it immediately, no install step required. With PnP and Yarn Berry, this dream is a reality.

Come away with an overview of all the new features and the knowledge you need to migrate your app to Yarn Berry.

Ten Things Every Voice Application Should Do

Jeff Blankenburg

In my experience building dozens of skills for Alexa, and working with hundreds of developers on their own voice applications, I've identified ten specific patterns that are common to the most successful of the bunch. This presentation will cover these ten topics, giving you the insight an acceleration your voice app needs to get to the next level.

Performance tuning for Azure Cosmos DB

Hasan Savran

Azure Cosmos DB is a fully managed service that takes database administration off your hands. Fully Managed Database sounds good, but developers end up with some of the database administration work anyway.
As a developer, you will be responsible for changing Indexing policies, configuring connections to Cosmos DB, estimating the workloads, and selecting throughput options for containers. All these tasks determine your application performance and monthly Azure Cosmos DB bill.
We will explore .NET/SDK settings, connection types, and indexing types to keep your application fast. Then we will focus on selecting correct throughput options, Query Execution Metrics and using the right server-side programming to keep your Cosmos DB fast.
Please join me as we explore how to keep your Azure Cosmos DB solutions fast.

General Session Day 2 11:00 AM

Let's Build a VR Game! Oculus Quest 2 + Unity + C#

Lance Larsen

The Oculus Quest 2 has sold over 8 MILLION devices so far and is projected to sell 18-20 MILLION next year! For the first time VR has broken through the early adopter crowd and is increasingly becoming a mainstream consumer gaming and production device!

What does that mean for you? Well you now have a captive market that is HUNGRY for new VR games!

So together we'll build a VR game! A compelling VR experience of a developer alone in a VR forest? Can they survive? Can they build a VR fire? Can they avoid getting eaten by a bear? We'll find out together!

We'll start from a new project in the latest Unity 2021 and walk all the way through the process of building a VR game. :)

Lance Larsen is a Microsoft MVP for Mixed Reality and passionate community speaker. Lance has led MADdotNET, the Madison .NET User Community for over 15 years - www.MADdotNET.com. He's also the CTO for Holosoft, a company focused on XR (Augmented, Virtual and Mixed Reality) technologies - www.Holosoft.com.

Supercharge Your ASP.NET Core Applications
Kevin Griffin

For many developers, the transition from ASP.NET 4.0+ to ASP.NET Core was a minor change. Depending on your application's complexity, you could make a couple syntax changes and be fully upgraded within a couple of days.

Transitioning from one version to another is just the beginning. ASP.NET Core brought with it a slew of new, powerful features designed to supercharge your applications.

In this talk, we'll walk through a couple of the critical features in ASP.NET Core that some developers are not even aware of. We will show them in action, and most importantly, discuss why you'll want to stop what you're doing to integrate them today.

Finding Bigfoot with Redis + RediSearch
Guy Royse

Bigfoot has been a staple of American folklore since the 19th century. Many are convinced that Bigfoot is real. Others suggest he's merely a cultural phenomenon. And some just want to believe. There is even a group, the Bigfoot Field Researchers Organization, that tracks Bigfoot sightings and makes the reports available online. And they have thousands of reports.

I want to explore this delightful data but, unfortunately, it's been made for the convenience of humans and not computers. While this makes it easy for me to read, searching for reports can be a bit of a challenge. Some of the data is tidy and computer friendly—like the latitude and longitude. Other bits are really for us humans—like the eyewitness accounts. So, how can I find the Bigfoot sightings that interest me most with data structured like this?

Well, I'll show you! In this talk, I'll load these Bigfoot sightings into Redis and use RediSearch to index them, making it easy to query both the computer friendly bits and the human friendly bits. I'll also show you how to search on fields, find keywords within text, find nearby Bigfoot sightings using geolocation data, and run queries that aggregate these searches.

When we're done, you'll know how to quickly search, query, and aggregate data in Redis using RediSearch. You can use this newfound power for boring old corporate data, but I'm going to use it to find Bigfoot!

ChatOps and DevOps: How to Use Comms as Incident Response

Pj Hagerty

The most important tool in your DevOps toolbox is communication. Without it, nothing can be accomplished, especially resolving incidents when they occur.

In this talk, we will discuss how to use a comms platform to tie-in playbooks, integrate the DevOps processes in place, and bring together remote teams to work together as if they were in the same room.

Extending Spring Data and Spring Data Redis

Brian Sam-Bodden

In this session, Brian will take you along for a journey into the codebases of Spring Data and Spring Data Redis to help you understand how to build your own annotation-based Spring Data extensions. Whether you are building a framework or a business/application-specific extension, understanding the framework beyond the surface will make you a more efficient Spring Developer.

General Session Day 2 12:15 PM

CSS Houdini - Just what CSS needed, more JavaScript

John Lange

Coming soon to a browser near you is a brand new technology that will revolutionize your websites. Finally, JavaScript can be embedded into your CSS!

CSS Houdini is new, exciting, lets you do some really cool things, and is going to change everything you know about layout and display in CSS. Like, everything, not just little things. Seriously, you can make your own version of flex. Or totally redefine how z-indexes work. Or make really sweet buttons.

So let's talk about Houdini, what it is, and how we can support each other in this time of... magic.

Stand Back; I'm going to try Data Science!

Matt Eland

Curious about data science and its relation to software engineering? Want to know how to dabble in artificial intelligence or machine learning side projects before taking the plunge? Come check out this session.

In this session we'll explore the types of machine learning tasks as I share my own journey in layering data science skills on top of a software engineering background. I'll highlight some common terms, roles, languages, libraries, and tools you'll encounter and help you understand what skills you'll need as you consider this journey.

We'll talk at length about various ways to learn data science and I'll help you identify things that you should learn when starting out and point out tools and libraries that can help defer other areas until later in your journey. You'll also discover a number of ways to get started with Python and R and get

connected to the data science community.

By the time the session is finished, you'll know how to find out if data science is a good fit for you and how to take it to the next level if you discover you like it.

Design Patterns for Loosely Coupled Applications in .NET

Barry Stahl

Building loosely coupled applications is critical to creating solutions that follow good object oriented principles. These principles help make sure our applications are testable, maintainable and extensible. In this session we will explore several design patterns that are key to building applications that maintain loose coupling. We start by reviewing a tightly coupled application. Then, we explore several critical design patterns by using them to convert the application into a maintainable and extensible solution that can be validated using unit tests.

Stop your instincts from ruining your career: the science behind emotional intelligence

Natalie Hylton

According to the Center for Creative Leadership, 75% of careers are derailed for reasons related to emotional competencies, including inability to handle interpersonal problems, unsatisfactory team leadership in times of difficulty or conflict, or inability to adapt to change or elicit trust.
This is not new, you may say. We know WHAT to do, and HOW we should act. So why don't we? There are reasons behind our "illogical" behaviours. And those reasons are rooted in our desire… to survive. This session dives into the neuroscience of emotions and offers plenty of practical tips on how we can learn to control them better and consistently. Your boss/customer/spouse (select the correct answer) is not a saber-toothed tiger, so don't let your brain treat them as one!

The Super Spectacular Interactive Event Driven Light Show

Barry Tarlton

The ability to properly design and implement highly resilient event driven systems is critical in our data centric world. But getting one's mind around the complex choreography of this data driven architecture can be absurdly difficult. By using a Raspberry Pi Kafka Cluster, light bars, and arcade buttons, we will bring event driven architectures into the physical world to help visually understand all the things. Send messages with our portable Raspberry Pi producers and see them flow through our message brokers and to the consumers. With your own eyes, see how tweaking your messaging system impacts your distributed architecture. Do your messages need delivered in order? Or maybe architecting for throughput is more important. Whether it's streaming real-time data or decoupling microservices through event notifications, this presentation will bring to light the important concepts you need to consider. Come join our interactive session as we trip the light fantastic in this colorful eye-opening journey into the event streaming dream.

How to build an Android application with JetPack Compose and Kotlin

Aaron LaBeau

The world of mobile development is constantly changing and evolving. Google's new JetPack Compose framework for Kotlin allows developers to write mobile applications quickly by using design principles from functional programming while keeping the learning curve down. In this session, Aaron LaBeau will walk through how to build a new mobile application in Kotlin using JetPack Compose. In this session, he will review how to write custom composable functions, get an application up and running for debugging, and how navigation works. Finally, Aaron would show how to pull data from an embedded database and dynamically update the state in the application.

General Session Day 2 2:45 PM

Easy Domain Driven Design

Ryan Foote

Software development is hard. Even with the best intentions, and the most deliberate design processes, we often end up mired in the "big ball of mud" scenario. Where modifications are tedious, enhancements are fraught with unknown side-effects, and troubleshooting is downright nasty. By practicing Domain Driven Design, you can mitigate these issues that contribute to the overall complexity of large applications.

Our goal is to thoroughly cover the core concepts and to walk away with the ability to employ practical Domain Driven Design in your own applications.

You're Not Just Tired: The Psychology of Burnout

Arthur Doler

After the events of the last year, burnout has been on everyone's minds. Are you feeling nostalgia for the days when your job wasn't such a hassle? Do you find yourself struggling to care about your job… or anything at all? You may be wrestling with burnout.. But what exactly IS burnout? If you're dealing with it, what do you do about it, or how do you talk to someone else about it?

Come and get a glimpse beneath the surface of this phenomenon in this talk pulling from both personal experiences and psychological studies. You'll learn the basics of burnout... and also what sorts of situations lead to it, how it can intertwine with other mental challenges including trauma, and why fixing it isn't just as simple as taking time off work. Most importantly, you'll learn things you can start doing tomorrow to bounce back from burnout, and how you can even help prevent it for yourself and others.

Confessions of a TDD Late Adopter

Jeffrey Miller

After two decades of rehashing Test Driven Development techniques, what's left to say?

A lot! Hear from a seasoned software developer and consultant about the journey to TDD adoption despite objections, skepticism, insecurity, and procrastination along the way. Old dogs can learn new tricks!

This talk examines thoughts like, "TDD is too hard! TDD is for elitists and snobs! Isn't TDD too dogmatic? Doesn't TDD take too long? Won't my code be harder to change?"

Are there any REAL answers that make TDD worth it, even after all the "experts" throw their weight around? Can TDD *REALLY* work as much as claimed?

Take it from someone who has been in the trenches WITH and WITHOUT systematic testing techniques. Learn from real-world situations about misconceptions and eureka moments experienced firsthand by someone who didn't drink the Kool-Aid right way.

This is not your run-of-the-mill TDD talk! With surprising illustrations from parenting (Toddler-Driven Development?!), business self-help, and scientific learning techniques, attendees will leave with practical advice on how to unlock TDD's promised value and how to approach the learning curve that TDD requires.

Learn how to overcome objections and obstacles for a more rewarding development experience by *FINALLY* adding TDD to your toolbox.

Scaling Systems: Architectures that grow

Kendall Miller

It's harder than ever to predict the load your application will need to handle in advance, so how do you design your architecture so you can afford to implement as you go and be ready for whatever comes your way. It's easy to focus on optimizing each part of your application but your application architecture determines the options you have to make big leaps in scalability.

In this talk we'll cover practical patterns you can build today to meet the needs of rapid development while still creating systems that can scale up and out. Specific code examples will focus on .NET but the principles apply across many technologies. Real world systems will be discussed based on our experience helping customers around the world optimize their enterprise applications.

Surfing in Maui

Sam Basu

You are invested in .NET and Xamarin technology stacks. But there are some pain points in the present reality. Perhaps you crave for cohesiveness, maturity and want to have more confidence in the Xamarin and Xamarin.Forms ecosystem?

Let's take a look at the future with .NET MAUI – the evolution of Xamarin.Forms, slated for .NET 6. While early days, the promise is exciting with major updates to most parts of the Xamarin stack. Developers would be able to write more cross-platform code to target a wider selection of platforms, across mobile & desktop. Major design patterns include traditional MVVM and also the newer MVU pattern for additional developer flexibility. MAUI also opens the funnel to invite more developers into the ecosystem by offering choices in the UI stack – web technologies, like Blazor, are welcome towards building native/hybrid apps. The tools you know get better, projects get smarter, apps aim to be more performant and developer cycles get tighter loops. .NET MAUI is a combination of technologies to evolve the Xamarin stack for future – a state of mind for surf & fun. Let's explore!

Moving Massive Mountains of Magnificent Data

Barret Blake

Data over here. Data over there. These days there are massive piles of data everywhere. Companies use many different systems. Those systems need to interact and share data to be useful. But how to get that data from place to place? Most of the time, what's built in to these various systems doesn't make it easy to move that data between them. Enter ETL. ETL stands for "extract, transform, load". ETL systems make it easier to move and manipulate large amounts of data between various systems. Using examples from Azure Data Factory, we'll gain an understanding of how ETL systems can make these complex interactions easier.

Jakarta EE 10 is Coming Your Way!

Ivar Grimstad

Jakarta EE 9 lowered the barriers of entry and established a foundation for future innovation paving the way for Jakarta EE 10.

With Jakarta EE 10, we are introducing a new profile - the Jakarta EE Core Profile.
This profile will enable certification of smaller runtimes suitable for microservices as Jakarta EE compatible.
The Jakarta EE Core Profile also aims to be an even better fit for compiling to native images.
But it does not stop there. Both Jakarta EE Web Profile and Jakarta EE Platform is moving forward as well with updates to almost all the individual specifications.

Join this session for the latest updates on the progress with Jakarta EE 10.
I will go through what Jakarta EE 10 brings to the table, and what to expect when the specifications are moving forward.
The session will also give you a clear understanding of how to migrate from previous versions of Jakarta EE and Java EE.