How to Remain Relevant in a Changing IT Environment

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Powered by Jim Buck

Southeast Michigan IBM i User Group

How can imPower Technologies help your company?

- IBM i Education
  - Online IBM i Classes: Unique offering
- IBM i Concepts
  - Programming in ILE RPG – COMMON Certification
  - SQL Programming Class – Under development
- Onsite IBM i Classes:
  - Two-day hands-on lecture and exercises
  - Optional Third day - Let's design and code a new application
- Modernization: Getting started
  - Helping a company getting started down the modernization road
  - The thought process of modern development
- Learn to use these new tools and concepts

How to remain Relevant in a changing IT Environment

- Technology is Transforming Business
- Companies that Failed /Succeeded
- Lunatics Run the Asylum
- Careers and Learning
- The Secret Power of the Generalist
- Ways to Advance Your IT Career by Staying Relevant
- Stack Overflow Yearly Survey

4 Ways in Which Technology is Transforming Business

Clayton Christensen has studied why companies fail for the past 20 years. What is unique about his study is that he concentrates on companies that were once successful!

4 Ways in Which Technology is Transforming Business

Four principles that should guide us:

1. We Think in Linear Terms, but Technology Moves at an Exponential Pace

   We're taught to be logical but we make judgements based on Experience

2. Scale Advantages Have Diminished

   Banks used to be in large ornate building… scale meant safety

3. Business Models No Longer Last

   Business Models didn't change for generations

4. The Lunatics Run The Asylum

   Managers today, manage people with skills they don't have (sometimes don't understand)

4 Ways in Which Technology is Transforming Business

1 We Think in Linear Terms, but Technology Moves at an Exponential Pace

- Business schools teach us to think logically and methodically.
- Why We're Not as Rational as We'd Like to Think
  - What everyone knows – Remember March 2000 when the dot-com boom was in full swing… we were at the cusp of a whole new economic reality
  - Once many dotcoms began to report a lack of profits, the **dotcom bubble burst** in 2001.

4 Ways in Which Technology is Transforming Business

2 Scale Advantages Have Diminished

- Large companies allowed for economics of scale
  - Today in many industries small companies have access to resources that allow them to compete with large companies
- Doing business with Large companies was the accepted model
  - History told us the they would be around to stand by there products
  - No one ever got fired for buying from IBM

4 Ways in Which Technology is Transforming Business

3 Business Models No Longer Last

- In the Industrial age, the business model didn't change much for generations
  - Changed materials into a saleable product
  - Companies offered a product in a certain way for a valued price
- In the Knowledge age, the business model constantly changes
  - The economics are not related to scarcity but of abundance. Knowledge and information can be readily shared
  - Many products can be duplicated immediately and sold; Software, Music etc.
  - Where are we going with 3D Printers?

Companies that failed to innovate

Kodak

- Founded in 1884
- Was the company for pictures
- Access to early digital technology
  - Didn’t pursue because they felt it would Ruin the Film business

Companies that failed to innovate

Killed by Netflix

- Not really!
- Almost acquired Netflix in 2007

Infighting in boardroom

- Couldn't agree on their business model … Lack of focus

Netflix's online offering took over

Companies that failed to innovate

Sun Microsystems

- Began building high-end servers when the computer revolution was just starting.
- The Java programming language helped make it and industry giant in the 90's
- The dot-com took out many of its customers and the way customers met their computing needs changed…
- Ended up being bought by Oracle in 2010

Companies that failed to innovate

Borders

Companies failure can be traced to it's decision to NOT go online.

Out sourced its online presence to Amazon and stayed with the Brick & Mortar business model.

Oops!

Companies that failed to innovate

As Sears celebrates its 125th anniversary, it isn't the same as it once was — a household name, "the everything store" and the largest retailer in the U.S.

1887 Richard Sears moved to Chicago and partnered with Alvah C. Roebuck

Cars came along, and Sears adapted, opening retail stores in the 1920s that outsold the catalog by 1931.

1969 Sears, the largest retailer in the world, began construction on the world's tallest skyscraper.

[Who Killed Sears? 50 Years on the Road to Ruin]

Companies that failed to innovate

As Sears celebrates its 125th anniversary, it isn't the same as it once was — a household name, "the everything store" and the largest retailer in the U.S.

1984, together with IBM and (for a time) CBS Inc., the company created what would become Prodigy. Precursor of the internet!

When sales and profits began to fade, in the mid-2000s, other big box retailers—particularly Walmart—were thriving. In 2011, the year Sears lost over $3.1 billion, Walmart made $17.1 billion..

[Who Killed Sears? 50 Years on the Road to Ruin]

Companies that Succeeded by Changing Their Business Model

PayPal

- Started as a cryptography company and later as a means of transmitting money. Only through trial and error did they become the default online payment system.

Companies that Succeeded by Changing Their Business Model

- Not much of a business model for years. In 2003, it launched it's AdWords program. By 2008, it reported $21 billion in advertising revenue. AdWord still plays a significant role in it's total revenue.

Google AdWords

Companies that Succeeded by Changing Their Business Model

- At first, comprised only of college students. This limited it's ability to expand. Then in 2005, Mark Zuckerberg decided to open to anyone over 13 with a valid email address. By 2017 Facebook is worth over $500 Billion

4 Ways In Which Technology Is Transforming Business

4 The Lunatics Run The Asylum

- When the modern corporation was created at General Motors by Alfred Sloan, the military was its primary model.
  - Companies were split into divisions, each with their own leadership.
  - Orders flowed downwards and your rank determined your responsibility.
- In the new Knowledge economy, Managers need to manage employees with expertise they don't have!
- Competent performance can no longer be driven by Rules and Regulations. The business changes too fast.

Why The Lunatics Really Do Run The Asylum

- Business is like Combat
- It is significant that detailed orders have fallen out of fashion in military circles in favor of commander's intent.
- The idea is that detailed orders often end up being either useless or worse in the heat of battle when facts are changing by the minute, if not by the second.
- Plans, no matter how well thought out, can't foresee how events will unfold in the real world.

Why The Lunatics Really Do Run The Asylum

The Role of Leaders has changed

They still manage resources, Create plans, set Goals and manipulate timelines.

Most of the actual decision making needs to be done at a lower level by people with skills they don't have…

Therefore "Commanders intent" is gaining acceptance in industry like in the military

Why The Lunatics Really Do Run The Asylum

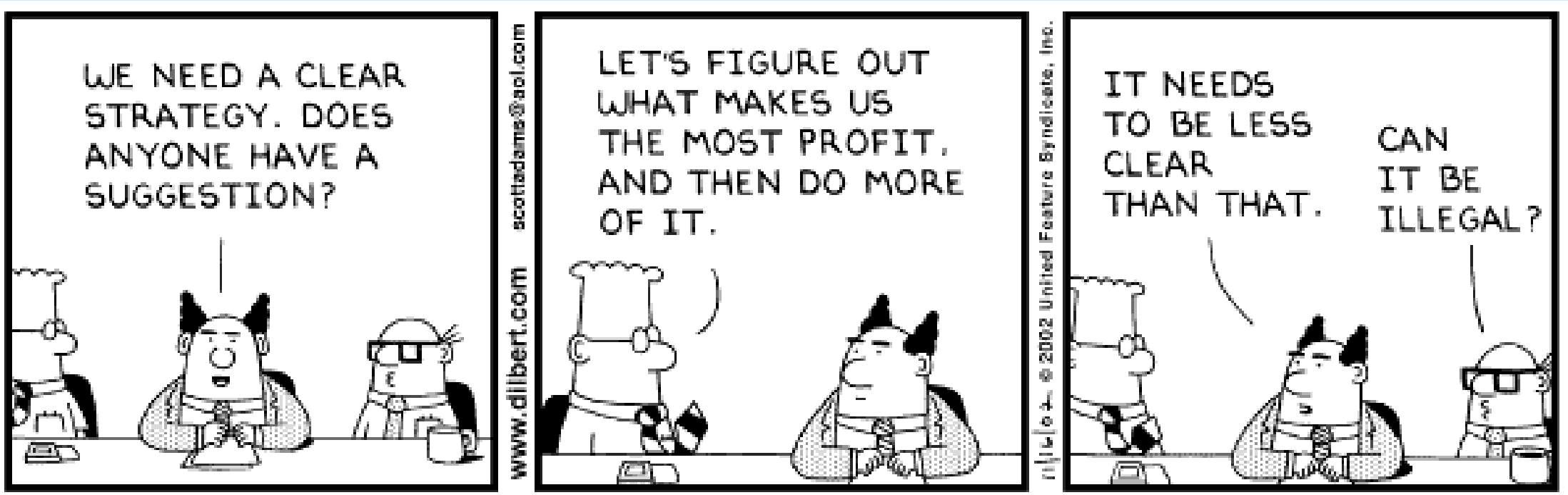
The Military Version

- Commander's Intent is "**the commander's stated vision which defines the purpose of an operation, the end state.”**

The Product Development Version

- The reason why project is being done
- The real project requirements
- What will the end state be once the project is done successfully

Somedays we feel!



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What Does it Mean to Have a Career Today?

Specifically, what does it mean in a world where careers span 60 years, even as the half-life of learned skills continues to fall to only about five years?

In the past, employees learned to gain skills for a career; now, the career itself is a journey of learning.

The New Rules of Learning

Figure 3. Careers and learning: Old rules vs. new rules

Old rules	New rules
Employees are told what to learn by their managers or the career model	Employees decide what to learn based on their team's needs and individual career goals
Careers go "up or out"	Careers go in every direction
Managers direct careers for people	People find their career direction with help from leaders and others
Corporate L&D owns development and training	Corporate L&D curates development and creates a useful learning experience
People learn in the classroom and, sometimes, online	People learn all the time, in micro-learning, courses, classrooms, and groups
The corporate university is a training center	The corporate university is a "corporate commons," bringing leaders and cross-functional groups together
Learning technology focuses on compliance and course catalog	Learning technology creates an always-on, collaborative, curated learning experience
Learning content is provided by L&D and experts	Learning content is provided by everyone in the organization, and curated by employees as well as HR
Credentials are provided by universities and accredited institutions; skills are only certified through credentials	Credentials come in the form of "unbundled credentials," where people obtain certificates in many ways

Deloitte University Press | dupress.deloitte.com

The new rules call for a learning and development organization that can deliver learning that is always on and always available over a range of mobile platforms

The Secret Power Of The Generalist…And How They'll Rule The Future

In the Animal Kingdom

Specialists thrive when the conditions are "Just right!"

Generalist are able to survive under many conditions.

In a Professional Setting – Employees Follow a Similar Pattern

The Specialist Programmer….

I only write fixed format RPG

The Generalist programmer…
Expert RPG (new and traditional), some mobile/web technologies.

Who will succeed in today's Information Technology Environment?

Which One are YOU?

Ways to Advance Your IT Career by Staying Relevant

Stay Current with Industry News

IT Jungle, IBM System Magazine, Computerworld

Conferences & User Groups

- COMMON, PLUS, MAGIC, WMSUG, OCEAN, STATUS, MRMUG, SEMIUG, WMCPA, MITEC…

Boot Camps and Classes

- Weekend Boot Camps – RDi/RPG one day Seminars

Certifications

Take time and get "Certified" if your current employer doesn't care… the next one might

Online User Communities

- LinkedIn, Twitter, Facebook

Ways to Advance Your IT Career by Staying Relevant

Industry Blogs – Who's Blogging?

- Steve Will, Susan and Jon, Dawn May, Liam Allan, Ted Holt, Scott Klement, Brian May… to name a few

Job Boards

- Tell a Larger Picture
- Find out what jobs are available, and the skills needed

Stay Current

- If you are writing fixed format RPG using SEU… you aren't current!

Standing Out

- As a seasoned professional, you need to take on tasks that highlight your skills. Do a video or develop a website on you IBM i. Show people that you still "Have it!"

Legacy Programming Languages

- COBOL, RPG and Fortran were the only legacy languages in town; now C, Turbo Pascal, Delphi, Microsoft Basic, some C++, ActionScript and Ada are on that list.

Don't be a Dinosaur

- Older developers are often perceived as "Stuck in their ways" There are two camps… those who embrace new technology, and those who stay stuck in the past.
- You need to learn a new technology or a new language tomorrow

Why Look at Older Developers?

- I've told students for years, the hardest language you'll ever learn is the first one. How many ways can you write an "If" statement?
- "Business knowledge" and "Soft Skills' are important promote them!

Conclusion

Never get off the "Learning curve" after all that's what IT is about!

Don't just focus on programming languages learn a new technology

Don't forget that you bring more than programming to your company

Realize… you might have to learn this on your "Own time!"

Conclusion

Embrace Technology – Don't get stuck in the past.

Have you ever heard, "I only have 'X' years to retirement…"

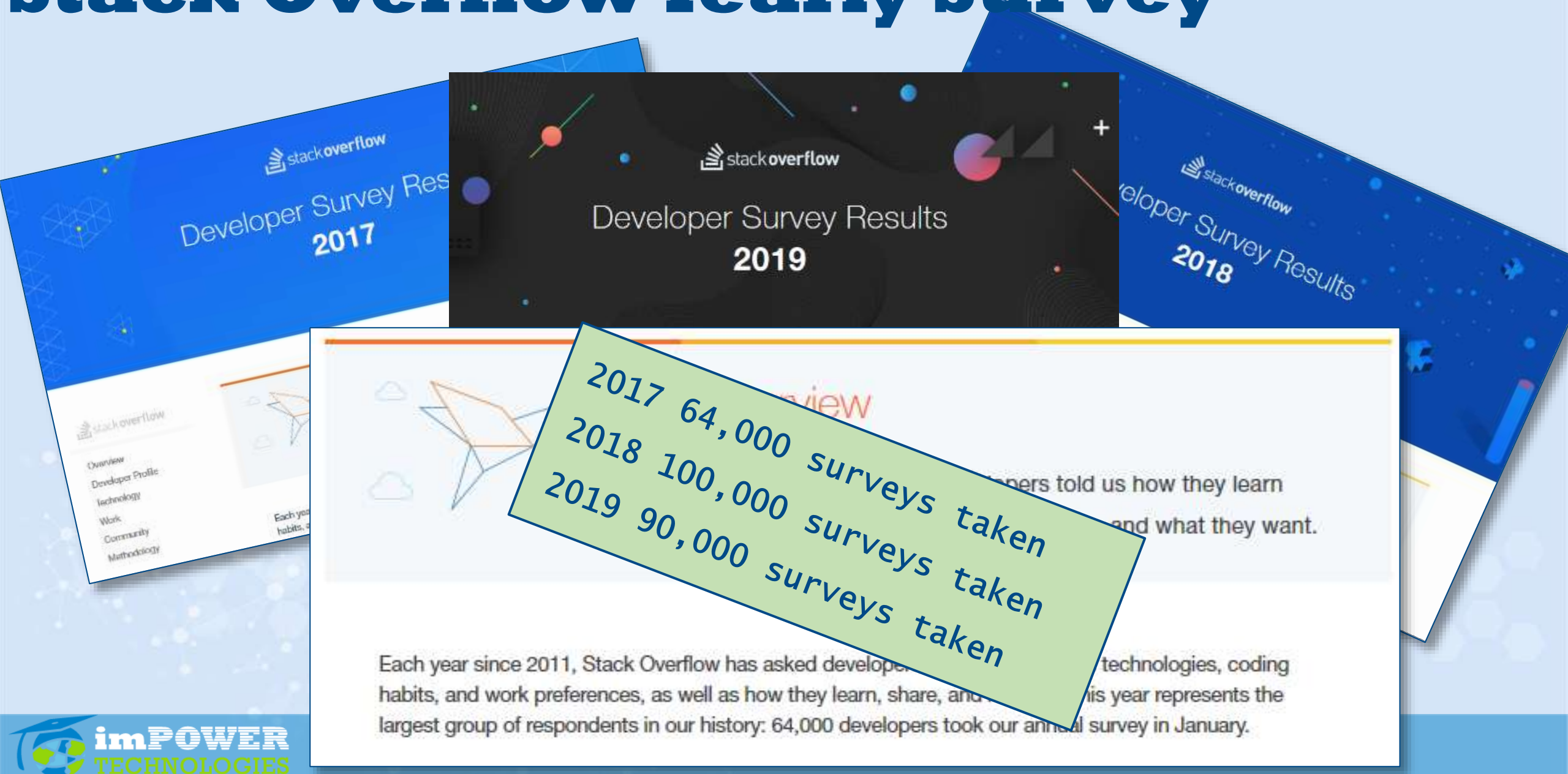
I don't want to learn this new technology!

We put the email server on a Microsoft email server… I won't have to worry about it

Fixed format RPG has worked just fine for 35+ years

I can do anything in SEU that you can do in RDi

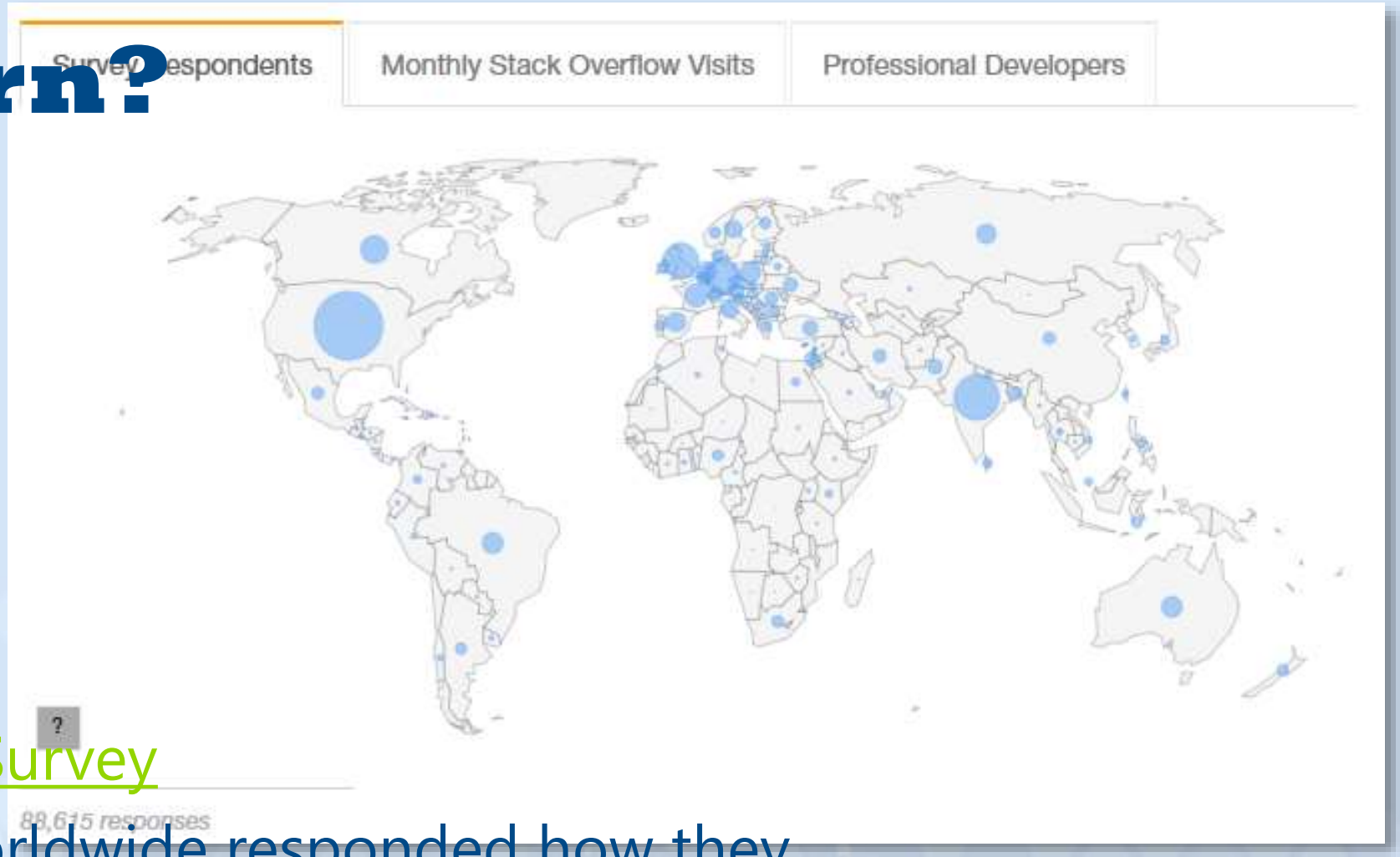
Stack Overflow Yearly Survey



What to learn?

- For this survey to work, we need your help. If you're reading this, you're probably an engaged Stack Overflow user. We've been testing with some beta users and found that it takes about 20 minutes to complete the survey.

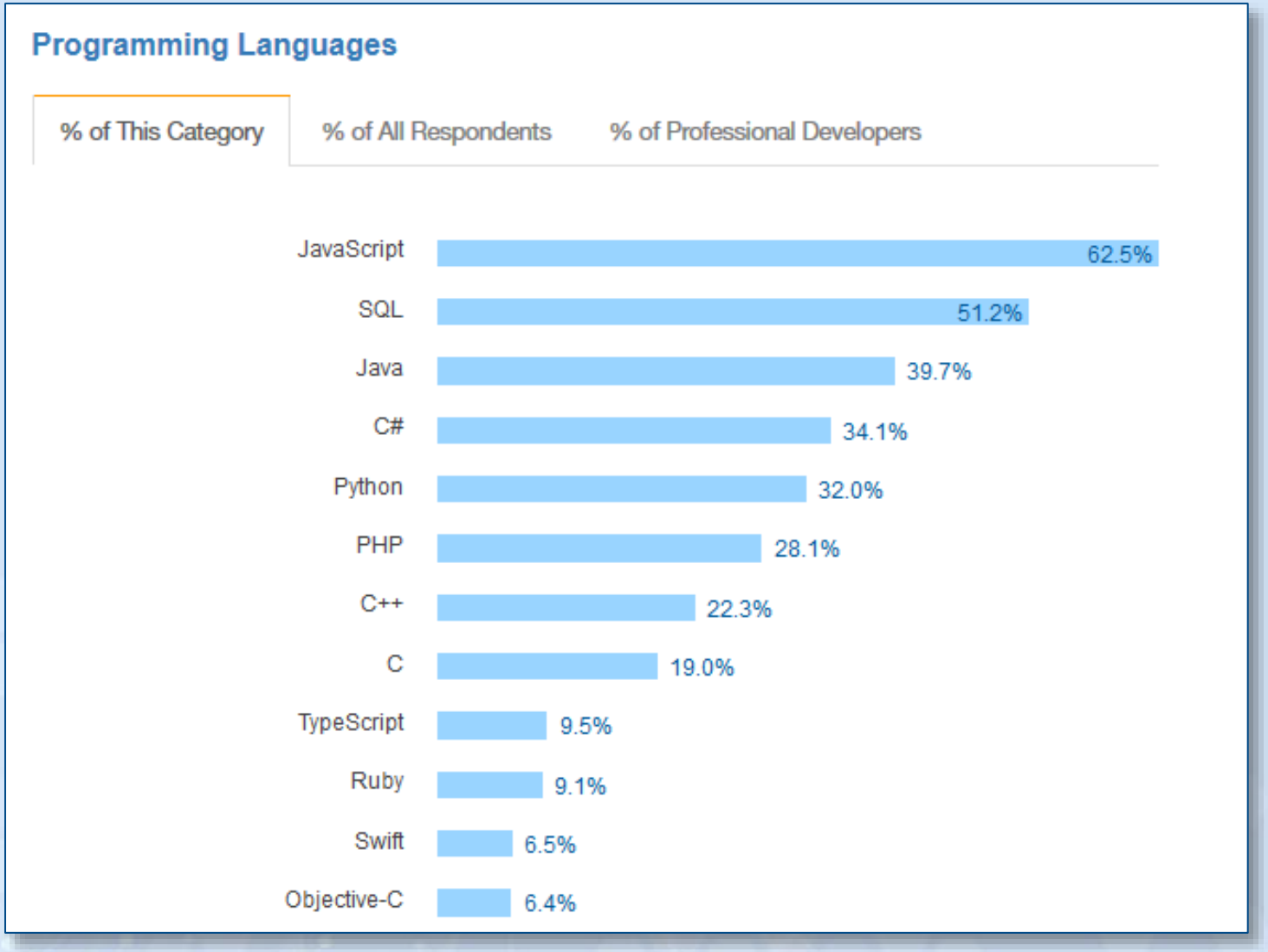
What to learn?



- 2019 Stack Overflow Survey
- 90,000 developers Worldwide responded how they learn which tools they're using and what they want.

What to learn?

- 2017 Stack Overflow Survey
- Most Popular Languages



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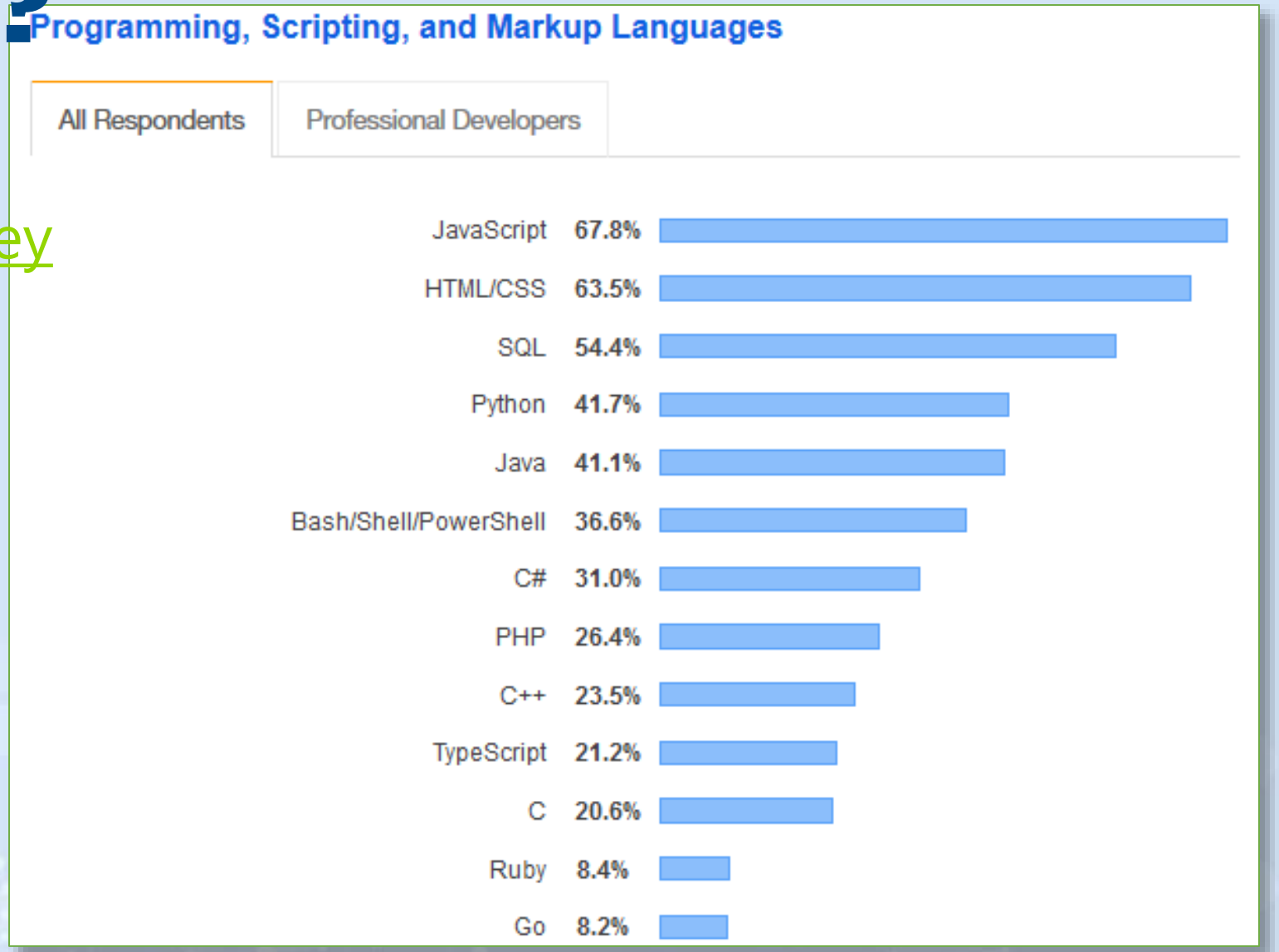
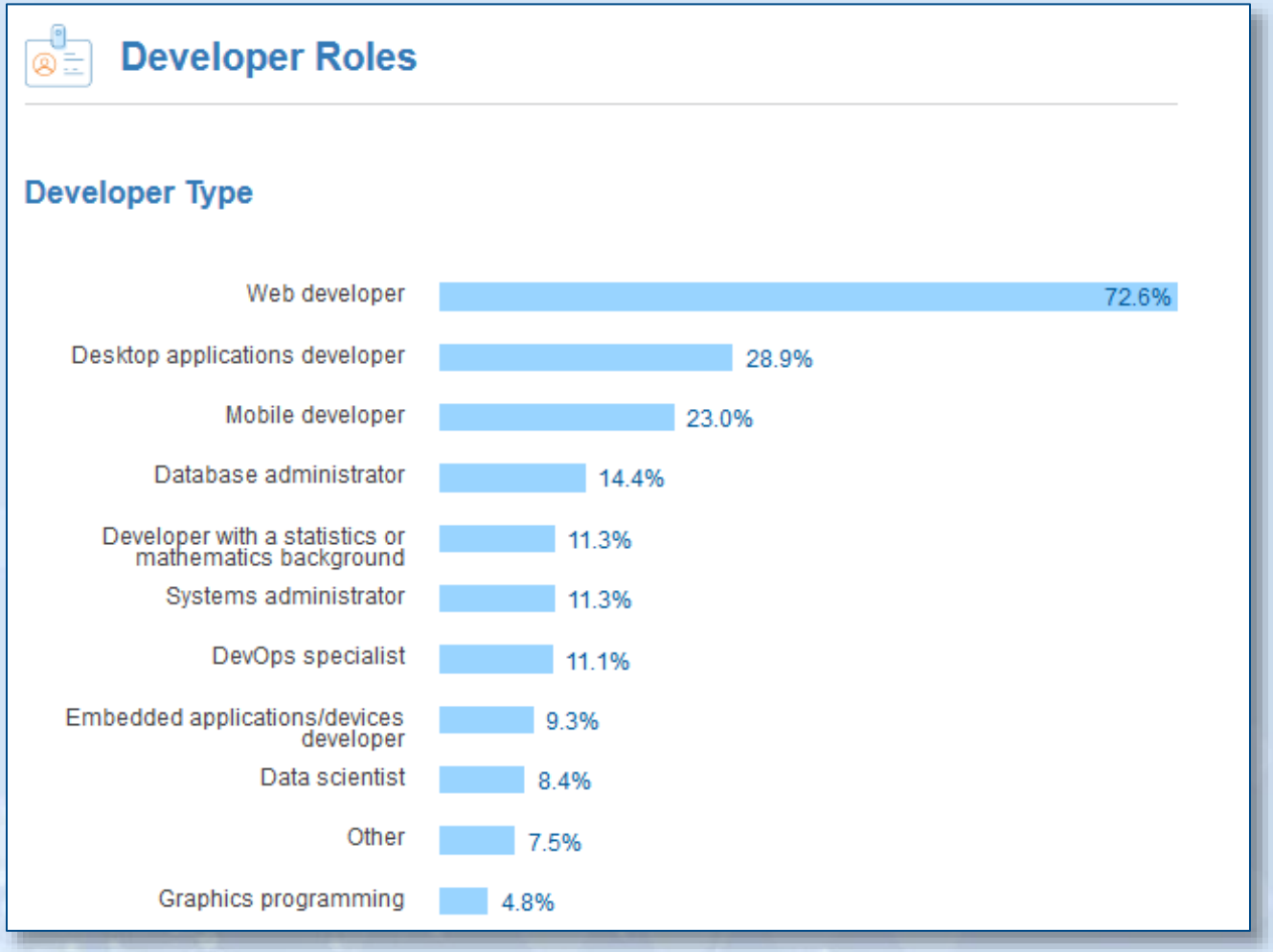


What Developer Roles?

- 2017 Stack Overflow Survey
- 72.6% of respondents identify as web developers but also stated they work on Desktop and Mobile Apps



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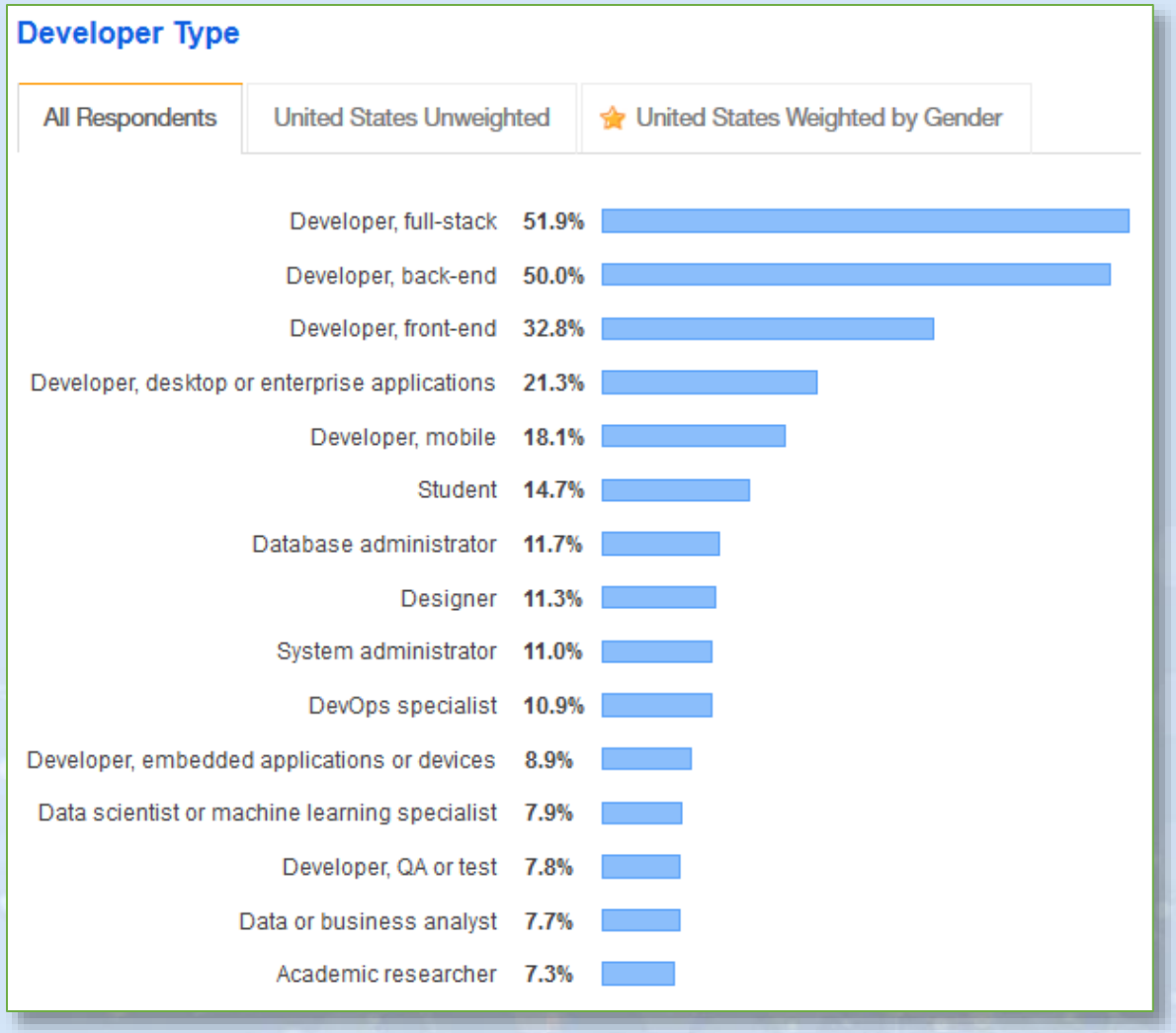
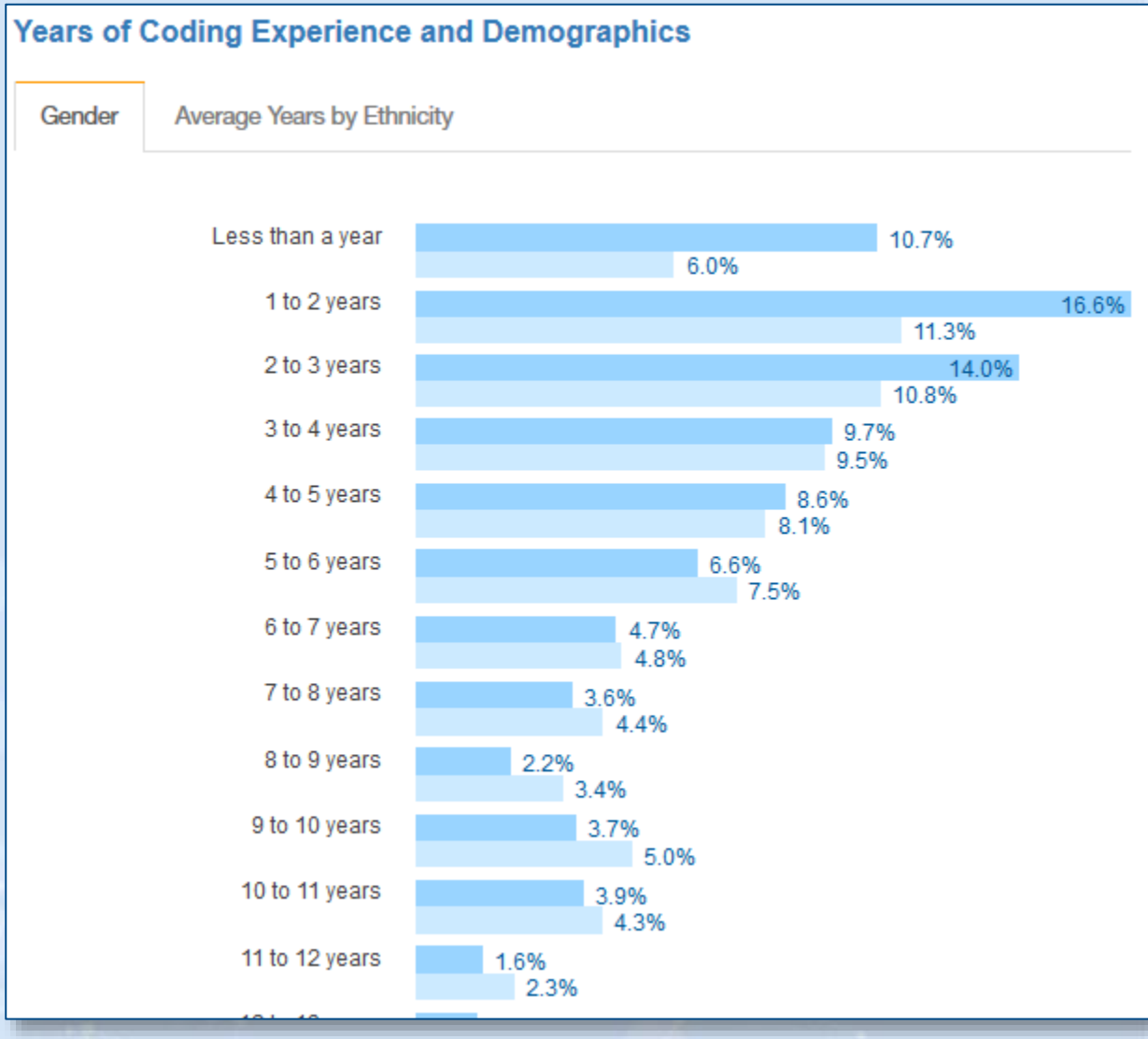
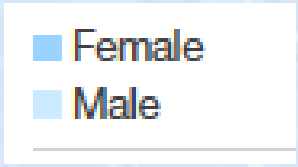


- 2019 Stack Overflow Survey
- 51.9% of respondents as full-stack developers
- 50% of respondents as back-end developers

Years Coding

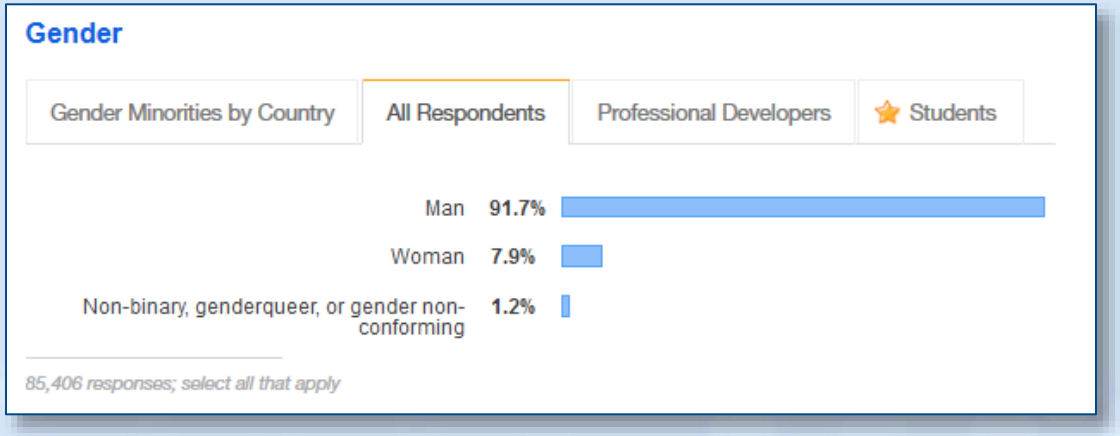
- 2017 Stack Overflow Survey
- Between respondents who identified as men or women, nearly twice the number of women said they had been coding for less than a year.
- Women in IT… Great News!





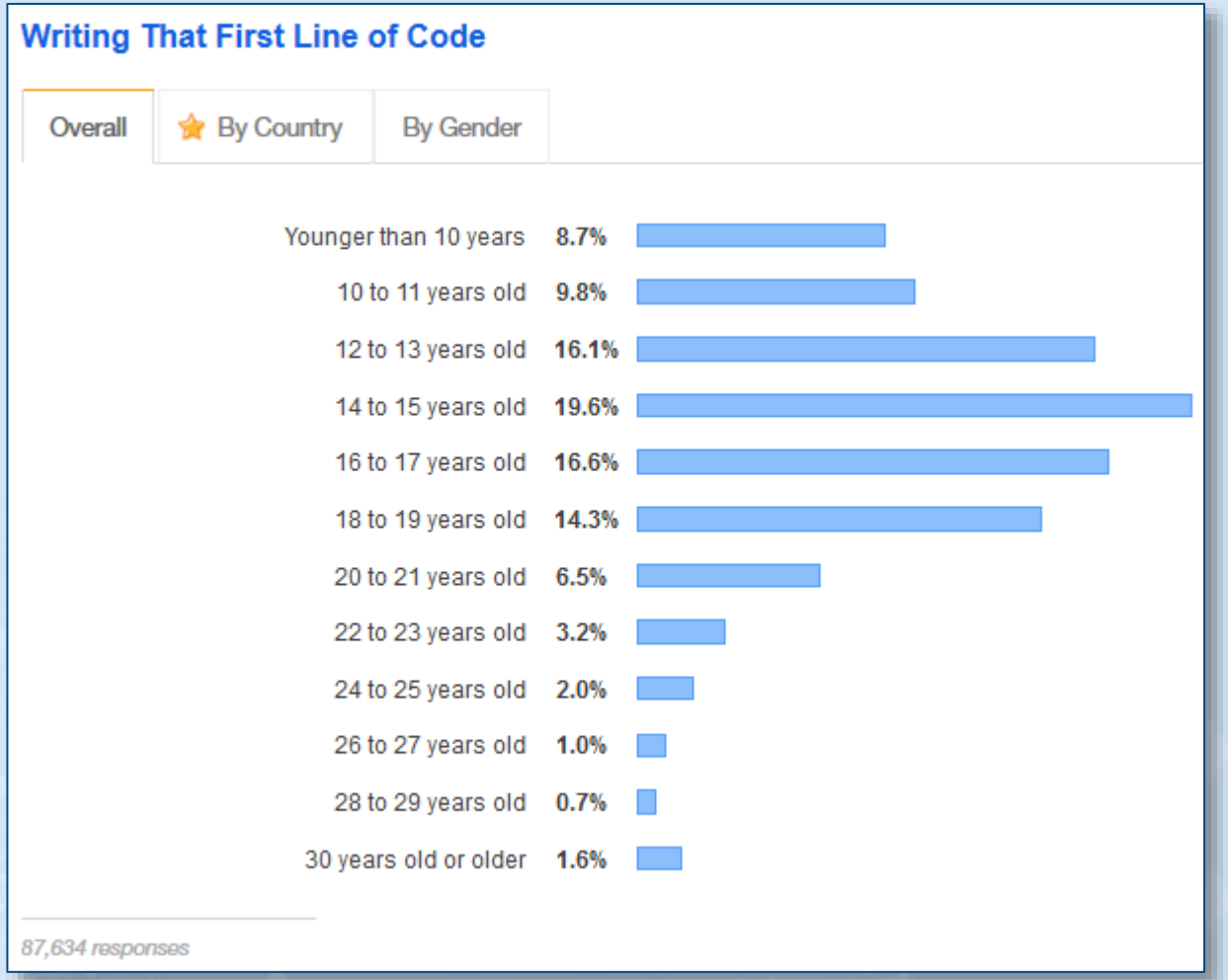
Gender

- 2019 Stack Overflow Survey
- Globally 90% of our respondents are men
- 11% of US survey respondents are women, up from 9%
- 1.2% of respondents identified as transgender, about double from last year



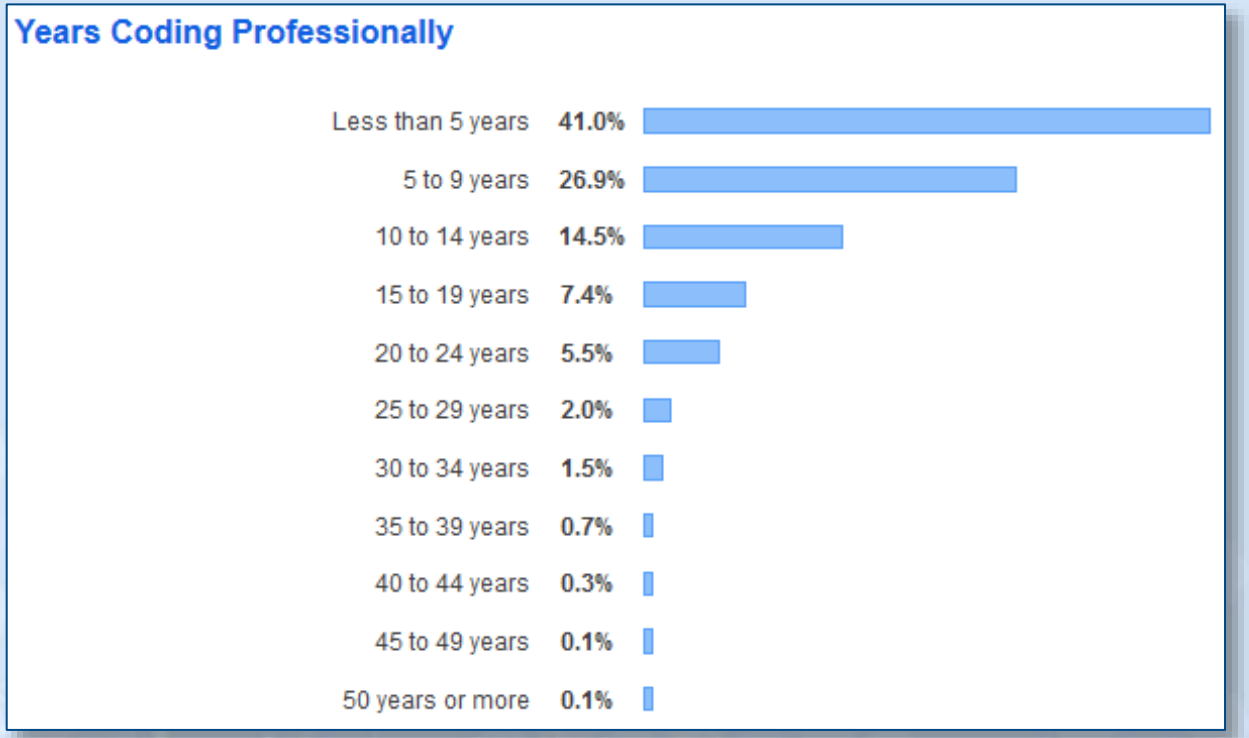
Wrote First Line of Code

- 2019 Stack Overflow Survey
- Overall, over half of respondents had written code by the time they were sixteen, but experience varies widely



Years Coding Professionally

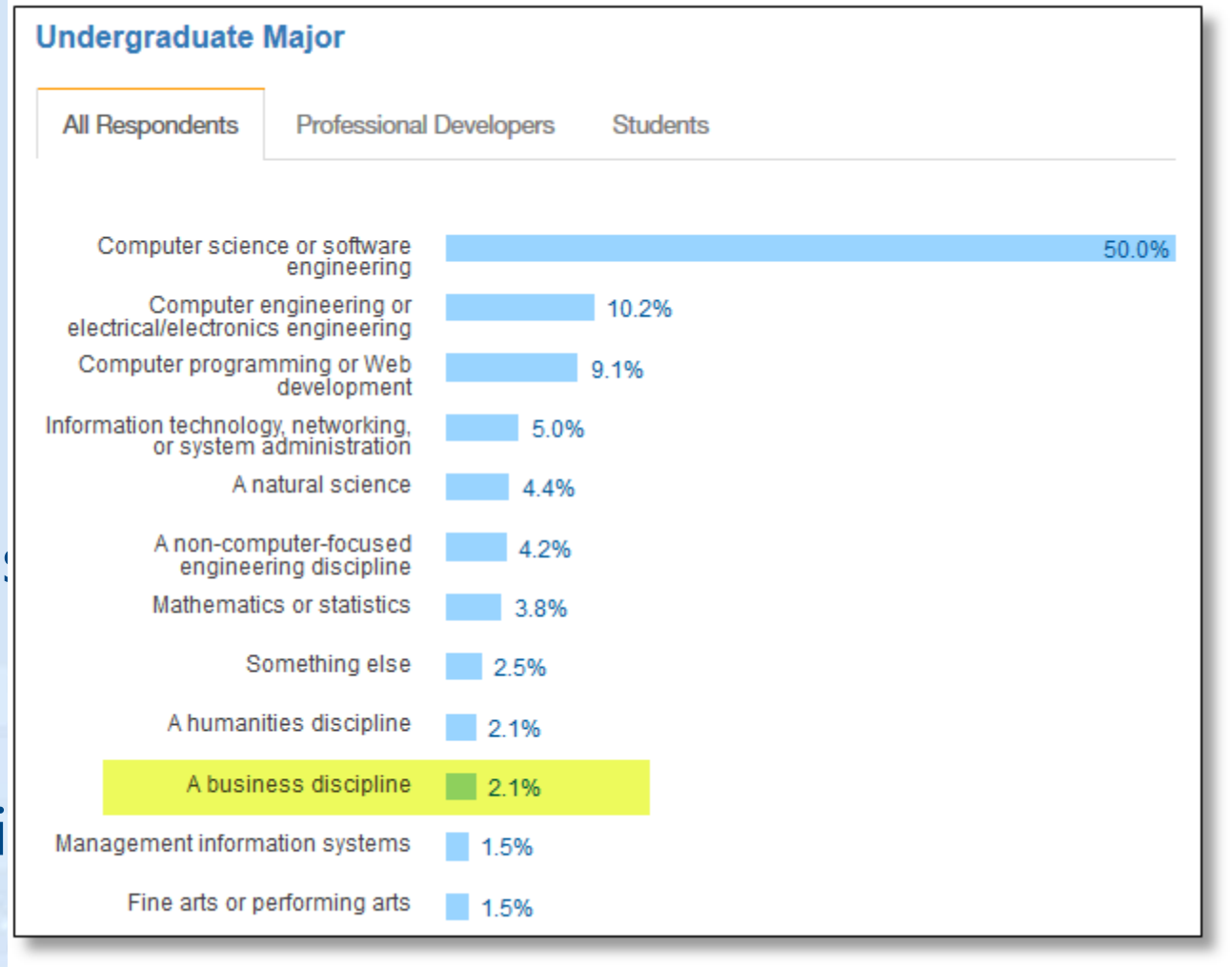
- 2019 Stack Overflow Survey
- Over 40% of respondents have less than five years of professional coding experience
- VBA, F#, and Clojure developers have the most years
- Python, PHP, and Kotlin have the fewest.



Formal Education

- 2017 Stack Overflow Survey
- Among current students :
- 48.3% said they were majoring in computer science
- 30.5% said they were majoring in closely-related fields
- 5.1% said they were studying a busines related function

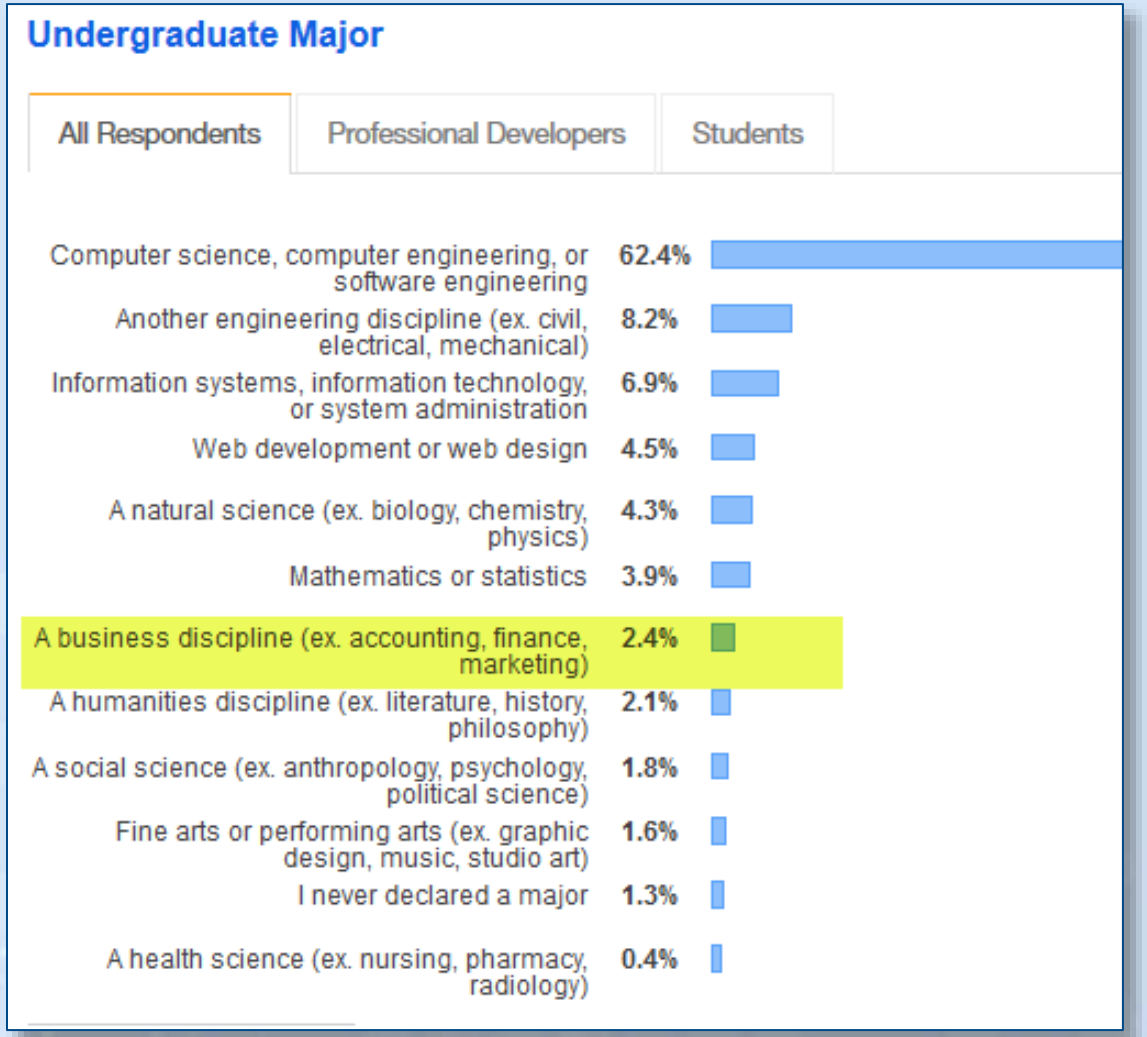
- These people are technologists and usually don't have a great understandi of Business!!!



Formal Education

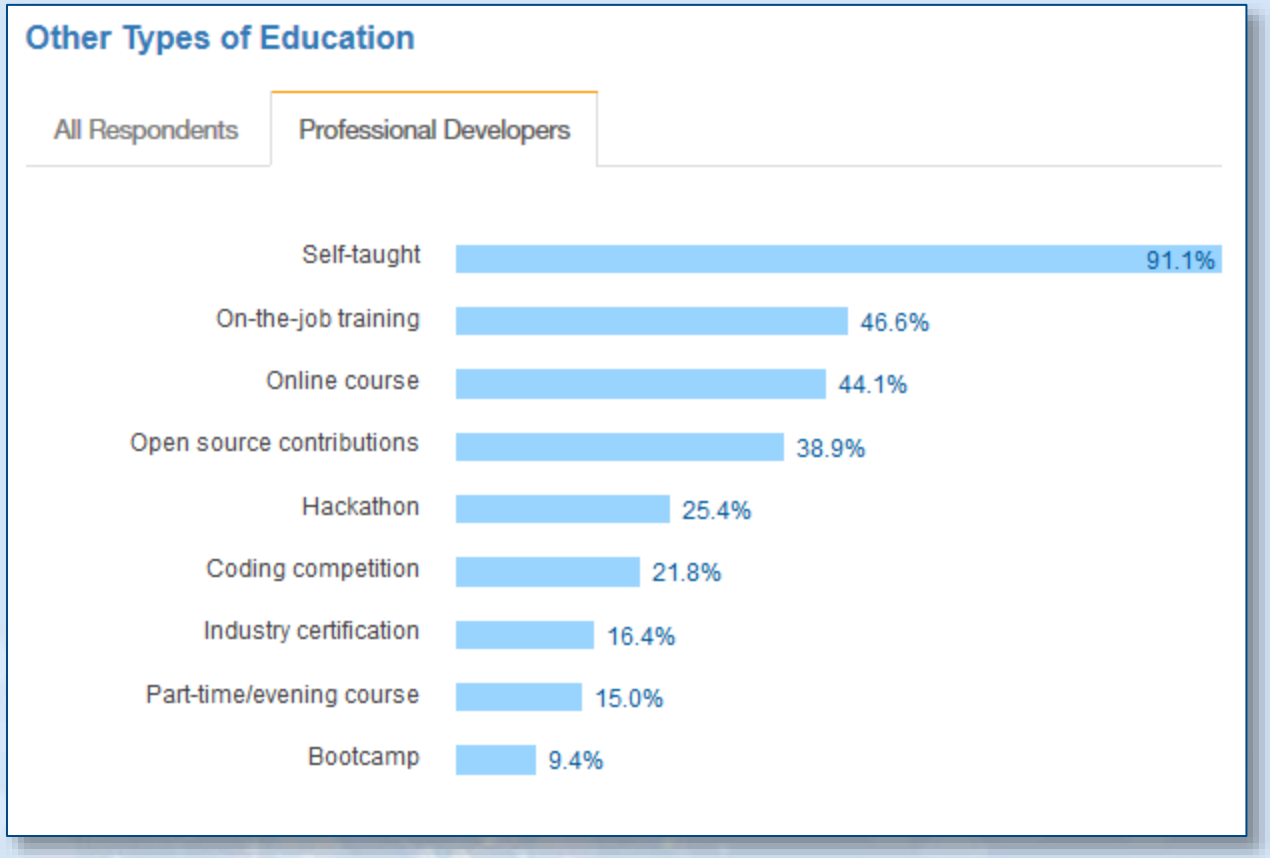
- 2019 Stack Overflow Survey
- Among current students:
- 69.4% said they were majoring in computer science
- 2.4% business discipline (ex. accounting, finance, marketing)

- These people are technologists and usually don't have a great understanding of Business!!!



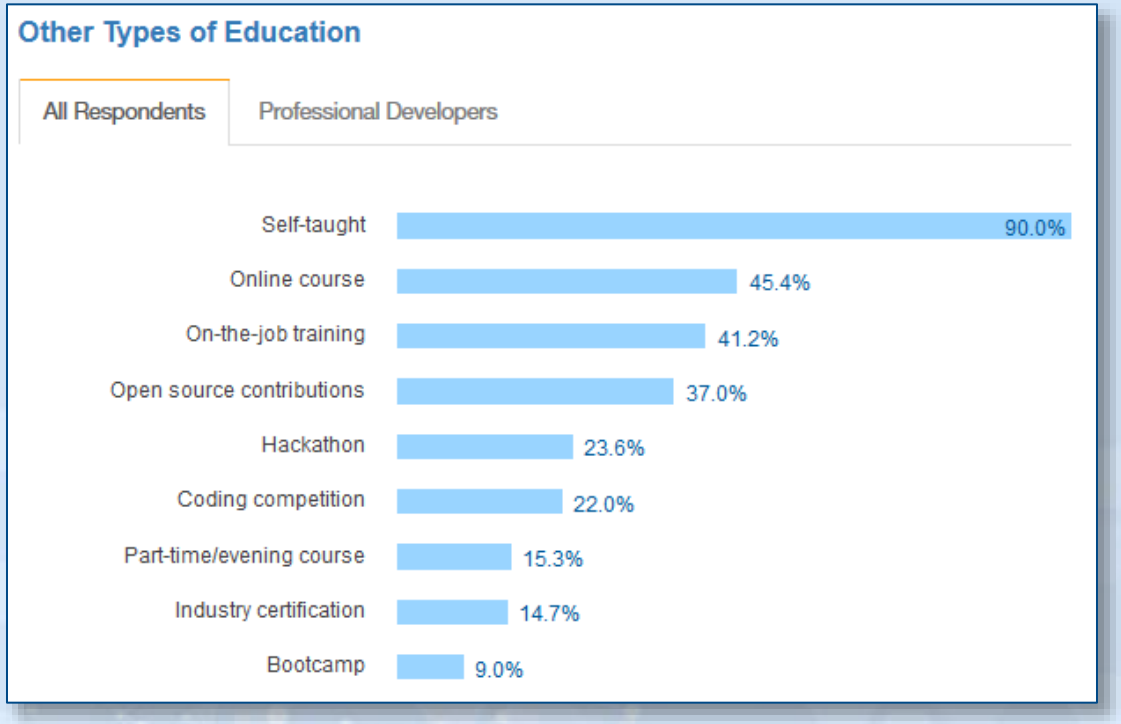
Other Types of Education

- 2017 Stack Overflow Survey
- Developers love to learn:
- 91.1% say they are at least partially self-taught.
- Among current professional developers:
- 44.1% say they've taken an online course, and
- 46.6% say they've received on-the-job training.



Other Types of Education

- 2019 Stack Overflow Survey
- Developers love to learn:
- 90.0% say they are at least partially self-taught
- 45.4% say they've taken an online course
- 41.2% say they've received on-the-job training



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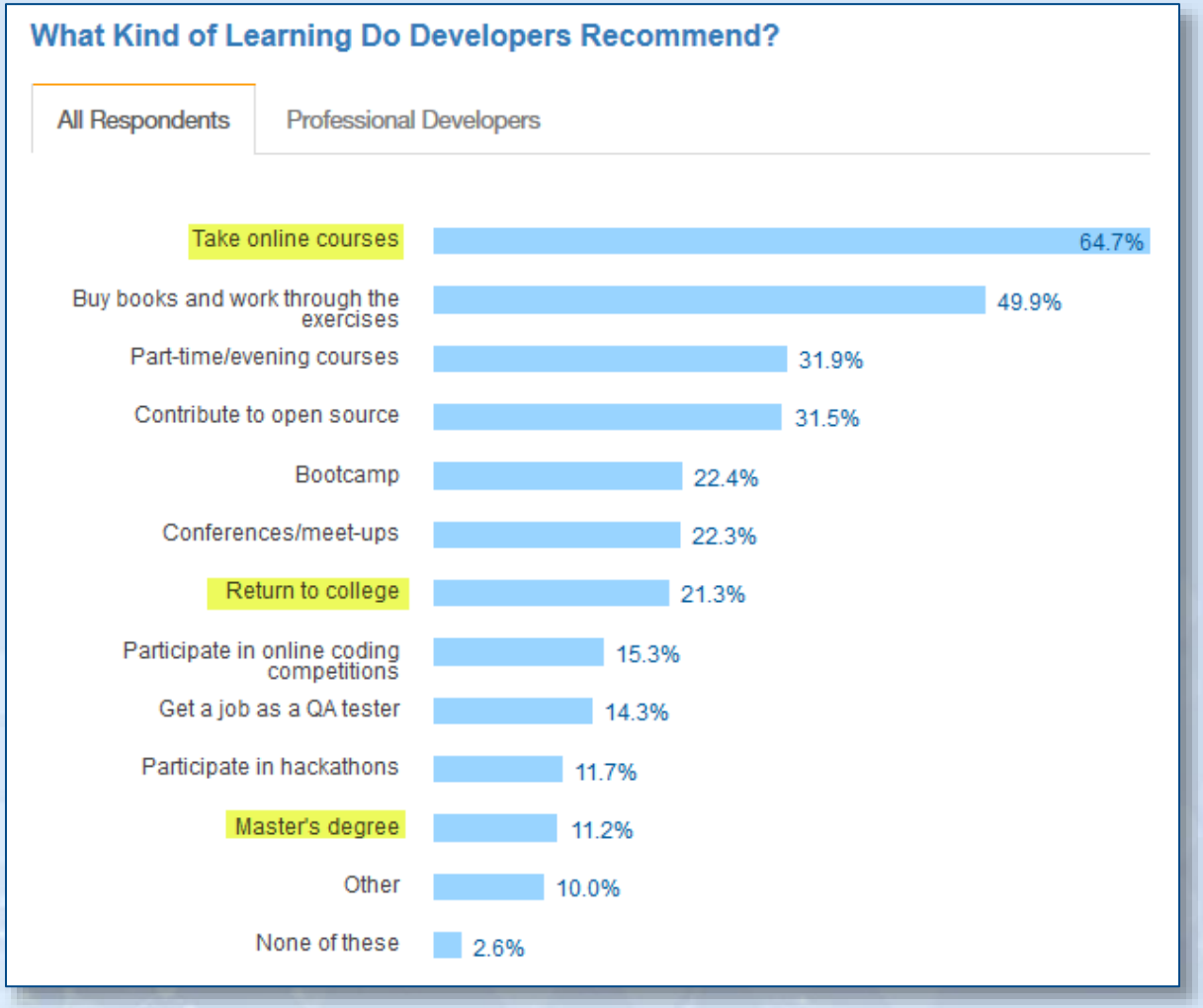


Figure Out What to Learn

Skills needed for the Modern IBM i Developer

Primary Skills – IBM i	Secondary Skills – Web / Open Source
Modern ILE RPG Skills	XML, HTML, HTML5, CSS
DB2 - SQL DML & DDL Skills	MySQL, NoSQL
Web Services	JavaScript, JSON, jQuery, Java, PHP, Python
Rational Developer for I / ACS	Apache, IWS, Zend Server, WebSphere Servers
System Security Basics	.Net, C, C#, Perl or Apple Swift
Major ERP Systems	Vendor Modernization Skills
Traditional RPG Skills	Converting OLD RPG to Free

2017 National Salary Ranges

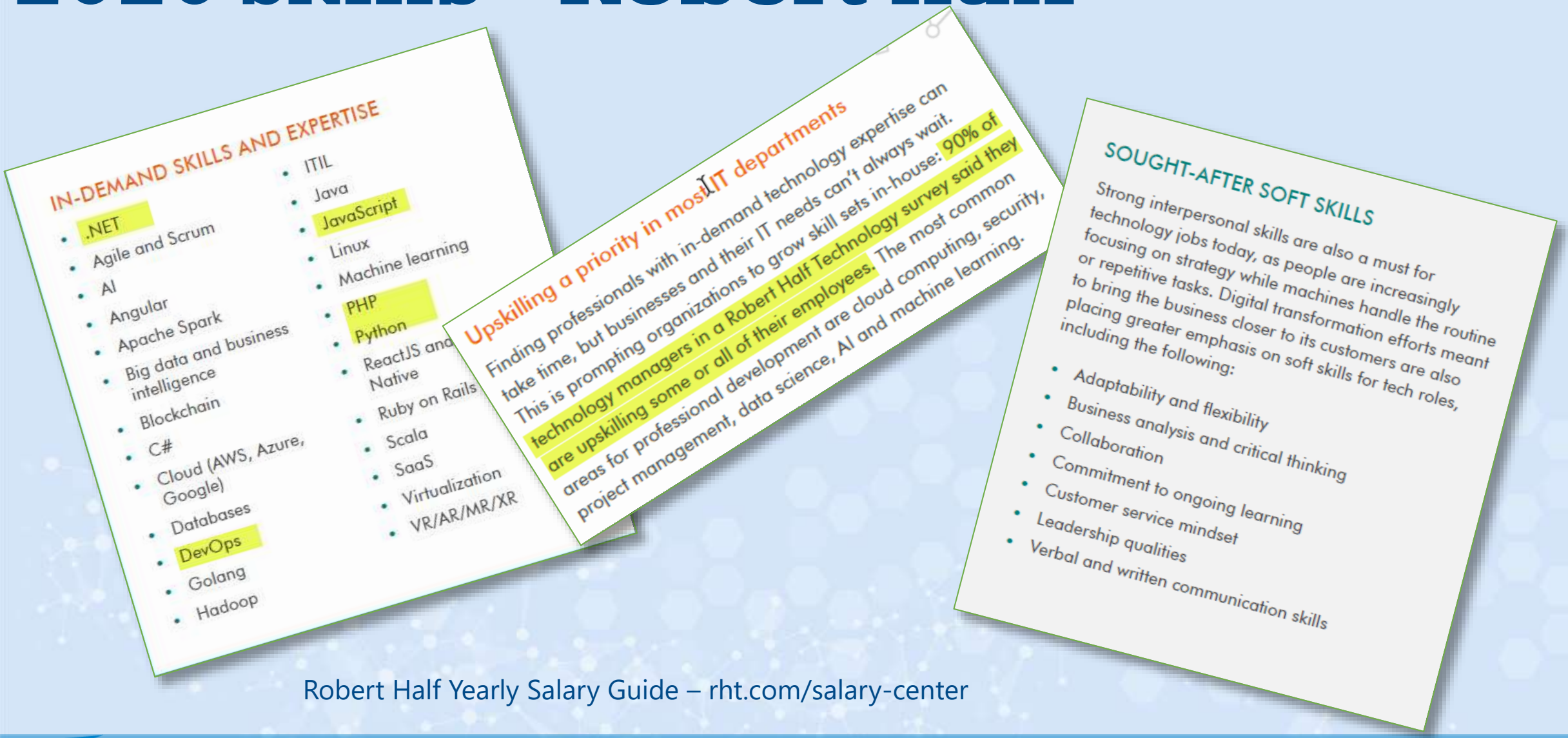
Add the percentage below, based on national averages, to IT salaries for the following skills:

- AJAX (Asynchronous JavaScript and XML) development skills 5%
- Business Objects skills 5%
- C# development skills 7%
- C++ development skills 4%
- Hyperion skills 5%
- Java development skills 8%
- Java EE/J2EE development skills 8%
- LAMP (Linux, Apache, MySQL and Perl/PHP/Python) skills 7%
- .NET development skills 7%
- PHP development skills 7%
- SAP development skills 5%
- SharePoint skills 8%

APPLICATIONS DEVELOPMENT (A)			
Manager	$105,750 - $160,500	$107,750 - $167,250	3.3%
Project Manager	$ 95,250 - $146,500	$ 97,250 - $151,750	3.0%
Systems Analyst	$ 81,750 - $121,000	$ 84,500 - $125,000	3.3%
Applications Architect	$121,250 - $171,750	$124,500 - $178,750	3.5%
Business Systems Analyst	$ 84,000 - $122,000	$ 86,250 - $127,000	3.5%
CRM Business Analyst	$ 87,500 - $126,000	$ 89,500 - $132,250	3.9%
CRM Technical Developer	$ 98,500 - $137,750	$100,000 - $146,000	4.1%
Developer/Programmer Analyst	$ 80,000 - $137,000	$ 83,000 - $143,250	4.3%
ERP Business Analyst	$ 92,500 - $132,000	$ 95,000 - $137,750	3.7%
ERP Technical/Functional Analyst	$ 98,000 - $140,750	$100,000 - $146,250	3.1%
ERP Technical Developer	$100,750 - $148,500	$102,750 - $154,250	3.1%
Lead Applications Developer	$110,750 - $160,750	$115,000 - $167,000	3.9%
Mobile Applications Developer	$115,250 - $175,750	$118,750 - $182,250	3.4%
Technical Writer	$ 55,500 - $ 87,250	$ 56,500 - $ 89,250	2.1%

Robert Half Yearly Salary Guide – rht.com/salary-center

2020 Skills – Robert Half



IN-DEMAND SKILLS AND EXPERTISE

- .NET
- Agile and Scrum
- AI
- Angular
- Apache Spark
- Big data and business intelligence
- Blockchain
- C#
- Cloud (AWS, Azure, Google)
- Databases
- DevOps
- Golang
- Hadoop
- ITIL
- Java
- JavaScript
- Linux
- Machine learning
- PHP
- Python
- ReactJS and Native
- Ruby on Rails
- Scala
- SaaS
- Virtualization
- VR/AR/MR/XR

Upskilling a priority in most IT departments

Finding professionals with in-demand technology expertise can take time, but businesses and their IT needs can't always wait. This is prompting organizations to grow skill sets in-house: 90% of technology managers in a Robert Half Technology survey said they are upskilling some or all of their employees. The most common areas for professional development are cloud computing, security, project management, data science, AI and machine learning.

SOUGHT-AFTER SOFT SKILLS

Strong interpersonal skills are also a must for technology jobs today, as people are increasingly focusing on strategy while machines handle the routine or repetitive tasks. Digital transformation efforts meant to bring the business closer to its customers are also placing greater emphasis on soft skills for tech roles, including the following:

- Adaptability and flexibility
- Business analysis and critical thinking
- Collaboration
- Commitment to ongoing learning
- Customer service mindset
- Leadership qualities
- Verbal and written communication skills

Robert Half Yearly Salary Guide – rht.com/salary-center

2020 National Salary Ranges

TITLE		25TH	50TH	75TH	95TH
Executive Leadership	Chief Information Officer (CIO)	174,750	208,750	252,000	298,750
	Chief Technology Officer (CTO)	152,250	186,250	226,750	266,000
	Chief Security Officer (CSO)	155,250	187,250	228,750	278,000
	Vice President of Information Technology	143,750	172,750	206,500	239,250
	Director of Technology	123,750	147,750	176,750	205,500
Software & Applications Development	Manager	110,500	135,750	162,250	188,750
	Product Manager	102,750	125,500	149,500	175,000
	Project Manager	94,500	113,000	135,750	159,000
	Scrum Master	76,500	97,750	114,500	135,000
	Mobile Applications Developer	121,750	146,500	175,750	206,500
	Applications Architect	117,500	141,750	170,750	197,250
	Lead Applications Developer	107,000	128,750	154,500	183,250
	Software Engineer	105,750	125,750	150,250	178,000
	Software Developer	99,250	120,750	143,000	171,000
	DevOps Engineer	93,000	115,750	138,750	179,250
	CRM Technical Developer	92,500	110,500	132,250	154,500
	CRM Business Analyst	82,250	99,500	119,250	138,250
	ERP Technical Developer	98,500	118,000	141,000	164,750

Robert Half Yearly Salary Guide – rht.com/salary-center

How to Learn Today

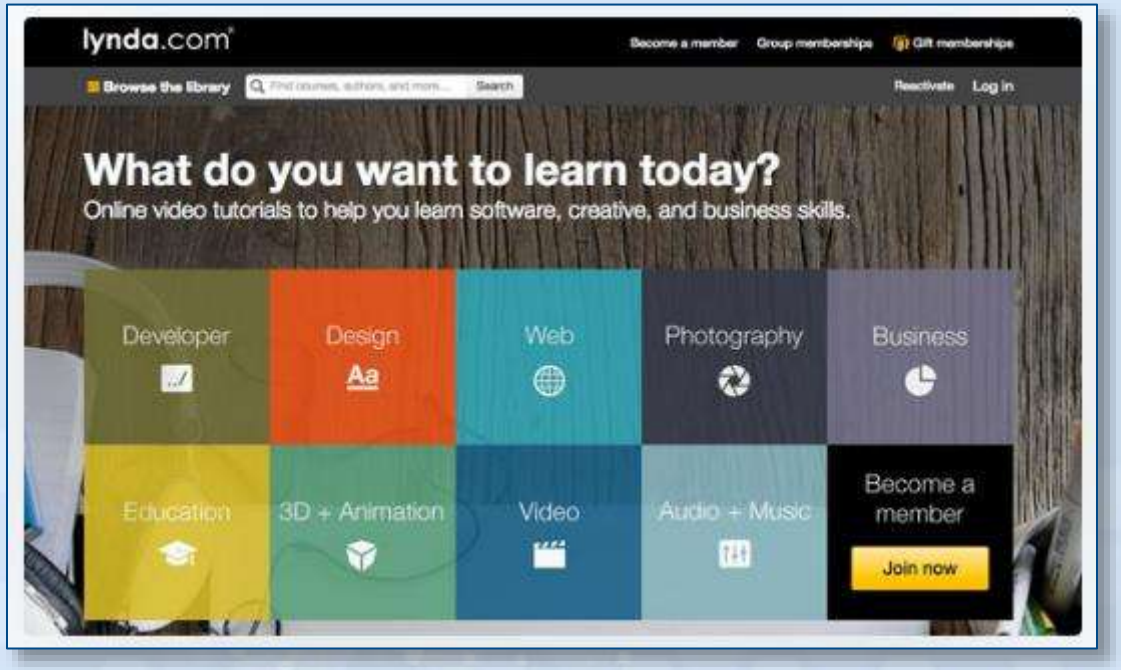
Classroom	Take a class at a local college…
Online Resources	Many options available…
Self-taught	Treat the technology/language as a toy!

Treehouse

- Premium site:
- $25.00 monthly Fee
- Organized into tracks to teach a specific skill
- Closest to a college structure
- Includes quizzes and sample code

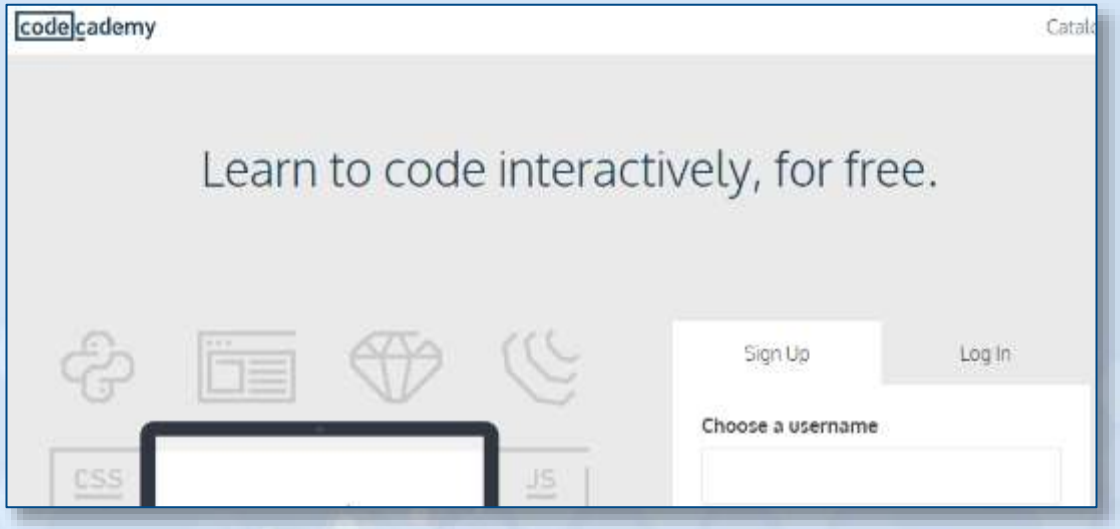
Lynda

- Premium site:
- $29.99 monthly Fee (Premium)
- No tracks… access to 1000's of courses
- Not just programming - animation, photography, film, and music
- If you like to jump and learn by example… this is for you!



CodeAcademy

- Free site:
- Course based
- Rather than a set of videos, you are walked through code examples
- Without the videos, you might miss some theory

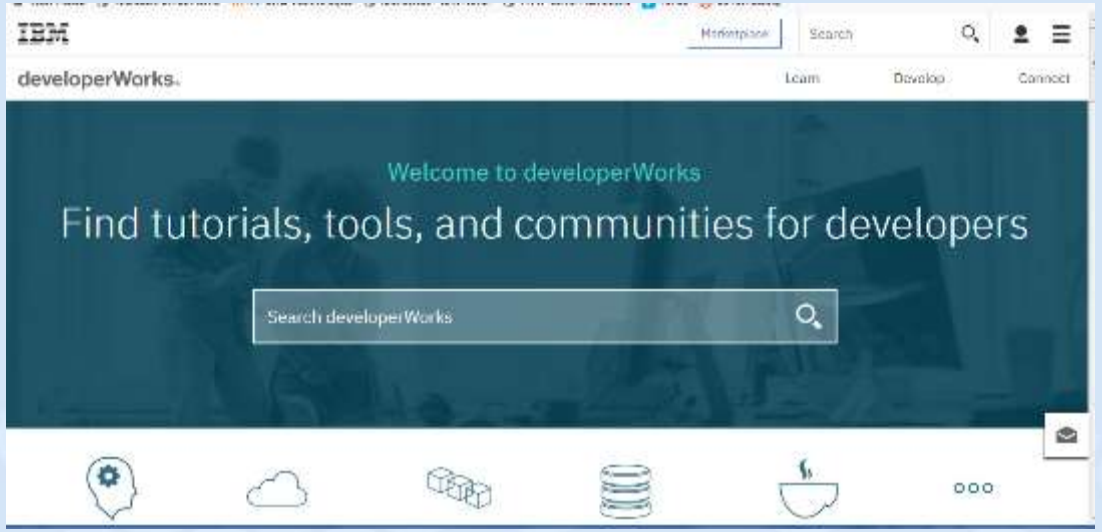


w3schools.com

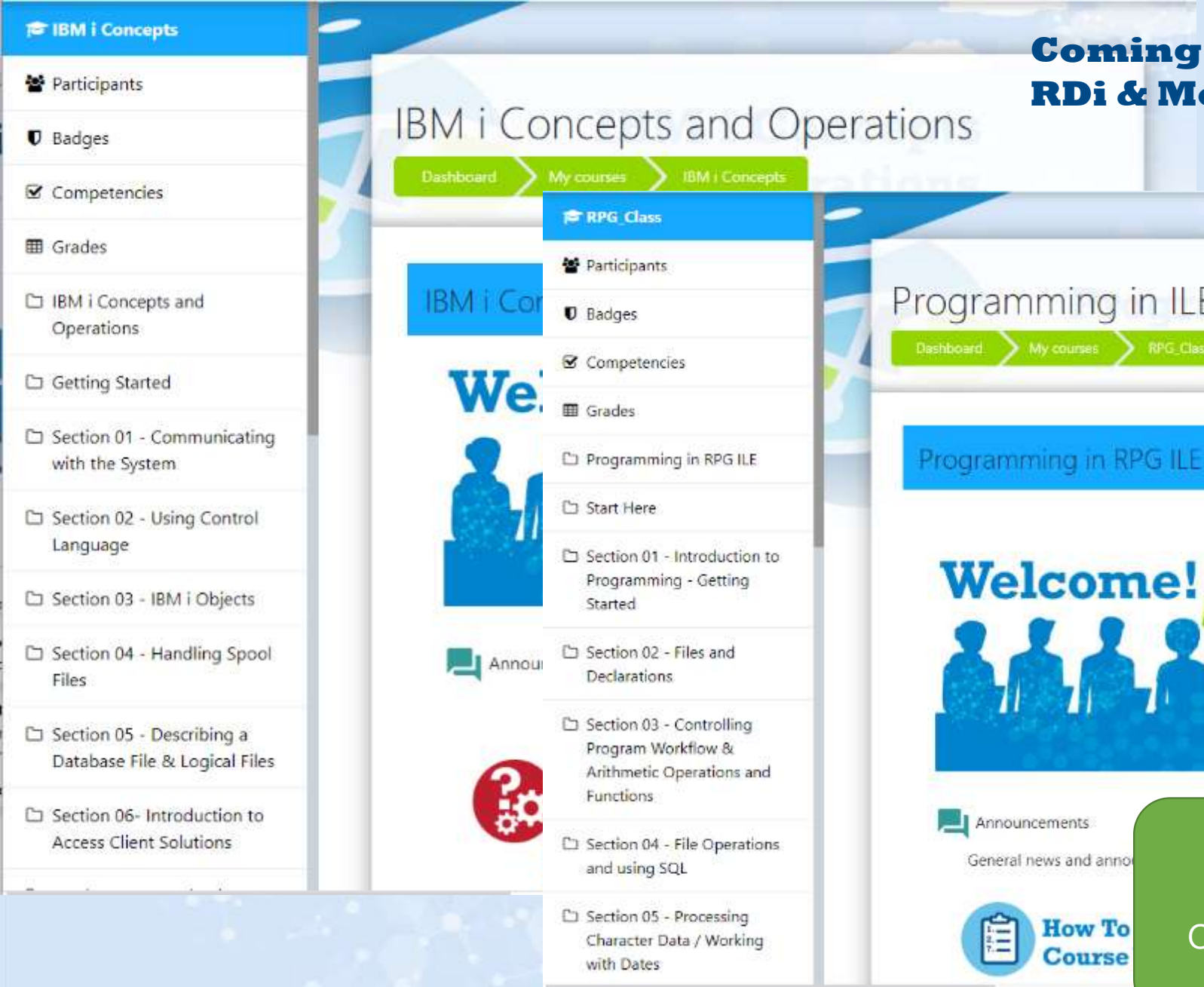
- Free site:
- Covers most of the Web technologies
- Primarily example based
- Without the videos, you might miss some theory

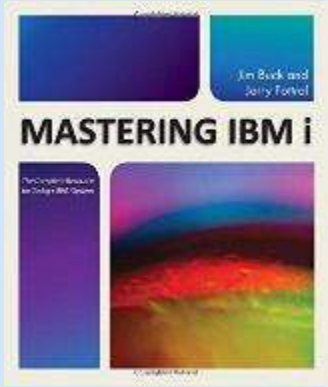
IBM DeveloperWorks

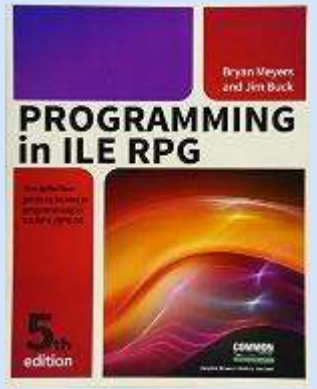
- Free site:
- Covers IT technologies
- Primarily example based
- Without the videos, you might miss some theory



Coming Soon!
RDi & Modular Programming







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Any Questions or Comments?

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