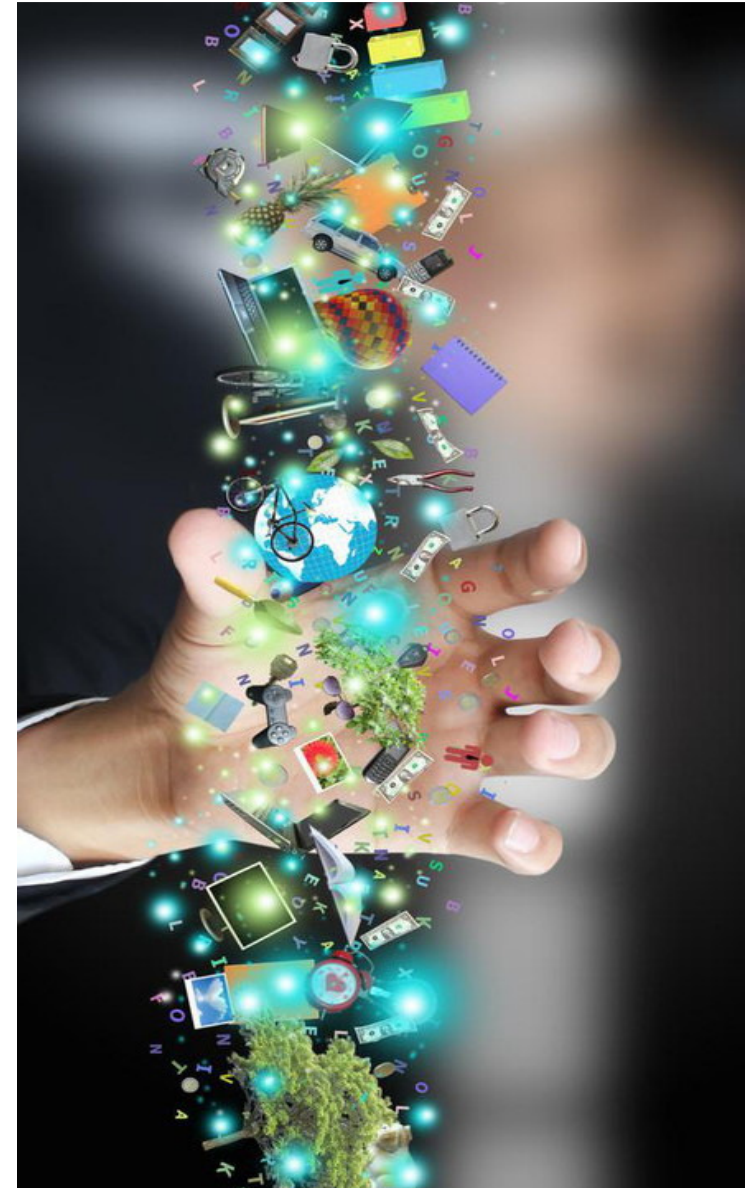# "State of the IT Job Market 2018 – a Career Roadmap to Success"

Information Technology: It's all about change

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Key Lessons – Be Aware – Be Prepared

- **The Economy**

- **Technology Trends**

- **Modernize Your Skills and add value and career security**

- **The Reality of Your Professional Worth**

- **Embrace Change – New skills, new environments**

- **Getting More out of Your Resume and Interviews**

The Economy

Key signals you should be aware of:

- **Unemployment numbers and news – 4.4%**

  - ➤ **4.4% Aug. 2017 (4.5% - 5% is good, > 7% is bad) LA/OC at about 4.3% July 2017**

- **Monthly Number of Jobs Created - August 156,000 – Average 176,000 YTD 2017**

- **GDP – Gross Domestic Product of all Goods and Services: Goal >3% Actual 3%**

- **Stock Market reflects near term economic – Recession or Expansion**

  - ➤ **currently about 22,331* (Dow >20,000 is good in 2017-2018) * Sept 18, 2017 Dow posts 5th straight record close**

- **Federal Reserve raising interest rates = confidence in economy**

- **Business News – Companies expanding, contracting, innovations, failures**

Changes that have impacted our world

- The iPhone is now 10 years old – a computer in our hand.

- Electronic banking has changed how we bank, save, pay bills

- Text messaging, email, social media has changed how we communicate

- Medical information is on-line and accessible to you and doctors

- Newspapers are vanishing – 24/7 cable news, mobile news feeds

- Malls are disappearing because of on-line shopping – the Amazon model

- Self Driving cars and next cargo trucking

- Job search has changed in many ways: Dice; LinkedIn; Skype video;

- The Cloud – where is your data hosted?

- Cyber Attacks – Data theft / hostage. Need for security

- There is an App !

What new changes could affect your career?

- **RPG being replaced** by a new **Open** language

- **Automation tools** that migrate your legacy data and business logic faster, cheaper and easier to maintain and update.

- **Artificial Intelligence / robotics** writing and fixing software – **"Robots Replacing Developers? This Startup Uses Automation To Build Smart Software"** – Forbes article Jul 11, 2016 – by Julian Mitchell. Dev9 uses Java and JavaScript to build best in class software.

- **Mergers & Acquisition, Company relocation**

- A **new paradigm** for how your company uses and manages software

- **New Virtual Hardware or Software** environment – new OS that just antiquates today's computers

- Today, technologies change in about 5 years. In the 1960's COBOL Programming alone could get you through a 40 year career.

Technology Trends

- **Technology jobs** continue to be a best area for growth – but not so great for RPG which is in severe decline – Java, C, C++, C#, Ruby, Python, PHP, Linux, "Open" tools are the hotter tickets to success

- **Best job prospects in IT are:** Java, C, Open Tools, Mobile, Cloud Computing, Analytics, Project Management, Security, Big Data, etc.

- **Companies that are hiring,** are seeking the needle in a haystack – or multiple skills with new technologies. They want A, B, C, D, E, candidates have A, B

- **RPG Developers are retiring.** There is a need to cross train interns or use other Open technologies to access legacy RPG systems.

- **More Part-Time RPG Developers needs** – is there a P/T career for you?

- **Off-Shore - On-Shore: H1B visa workers quotas 2018:** 85,000 visas filled in 5 days. 199,000 applied http://redbus2us.com/h1b-visa-2018/   Dice story claimed 800,000 H1 workers through 2011

Computerworld 10 hottest tech skills for 2017

What IT Managers want to hire in the big picture of IT:

- Programming/application development - 35%
- Help desk/technical support - 35%
- Security/compliance/governance - 26%
- Cloud/SaaS - 26%
- Business intelligence/analytics - 26%
- Web development - 26%
- Database administration - 25%
- Project management - 25%
- Big data - 25%
- Mobile applications and device management - 21%

Source: https://www.computerworld.com/resources/122905/tech-forecast-2017-complete-survey-results

IBM Systems Magazine Reader Survey

Figure 4: Which programming languages does your company use?
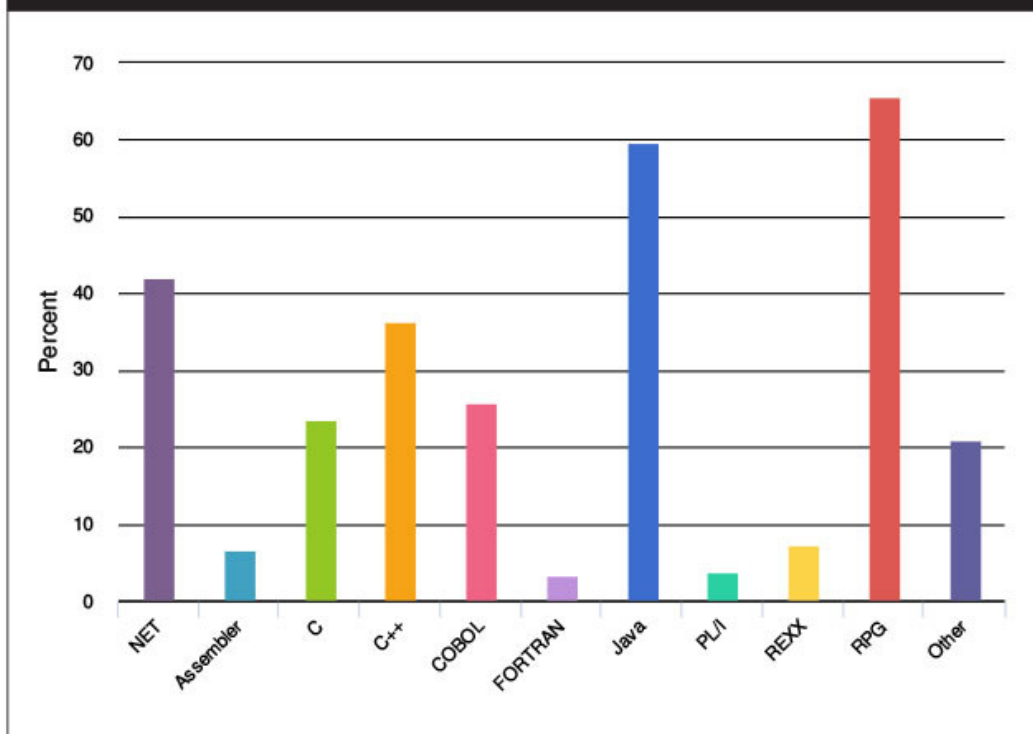
A survey response of 323 readers of IBM Systems Mag reflects some insight on what other languages companies are using in addition to RPG.

Source IBM Systems Magazine September 2017:

http://ibmsystemsmag.com/power/trends/whatsnew/survey-says/

Programming Language Popularity –
based on Tiobe's Search Parameters

Programming Language	2017	2016	2012	2007	2002	1997
Java	1	1	1	1	1	12
C	2	2	2	2	2	1
C++	3	3	3	3	3	2
C#	4	4	4	7	17	-
Python	5	5	7	6	11	27
Visual Basic .NET	6	8	19	-	-	-
JavaScript	7	9	9	8	8	19
PHP	8	6	6	4	5	-
Perl	9	8	8	5	4	4
Assembly language	10	12	-	-	-	-
COBOL	25	-	28	17	9	3
RPG OS400	48	36	26	13	10	10

Update: RPG has moved from 36th place to currently 48th place.

The reality – there are lots of new tools for it to compete with yet it will still be used for the next 15-20 years.

Source: http://www.tiobe.com/tiobe_index

Where the Jobs are

Dice.com Job Category/Keywords	07/03/2017	09/14/2016	09/11/2015	09/04/2014	9/10/2013
Total Dice listings	77,749	80882	81741	80,909	81,976
Developer or Programmer	29,022	21896	35398	24782	30415
Java (keyword) / *Java – J2EE	33,010/ *14,295	16488	*3054	*5353	*5678
Project Manager	3,795	585	*7283	*3103	2951
MS .NET Developer	30,572	1697 / *7686	*7316	*3081	*3475
SAP	3,393	4505	4966	*2913	*3414
Business Analyst	2,615	1977	4985	*2444	*2578
Oracle	8,326	10440	*6507	*1964	*2870
Web Developer	1,244	1037	1911	*1337	*1472
Mobile Developer	198	779 / *157	4986	1413 / *41	1149 / *36
C# Developer	30,032	7278	6664	*1253	*1374
C Developer	31,156	N/A	5425	16734 / * 361	17630 / *382
DBA	2,070	1928	2280	*917	*1193
Python	32,128	6984	5981	*594	*427
Ruby	29,898	2709	2834	*504	*445
RPG (ranked 41)	159	123	168	*60	* 50
All IBM i, iSeries, AS/400 30+% agencies	322	316	215	242 / *31	567 / *117

Dice.com constantly changes how they use keywords and search parameters. Still there is a picture of what disciplines or languages produce the most jobs.

Search firms post > 30-40% of all job postings.

In year 2000 there were about 500 postings for RPG.

*language was part of the title: example: "C Developer" or ".Net Developer"

Sept. 7, 2017 Dice had 279 IBM I listings, 77 were agencies.

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Talent Pool: resumes on Dice 09/17/2017

Developer Resources: Resumes on Dice by Language
09/17/2017
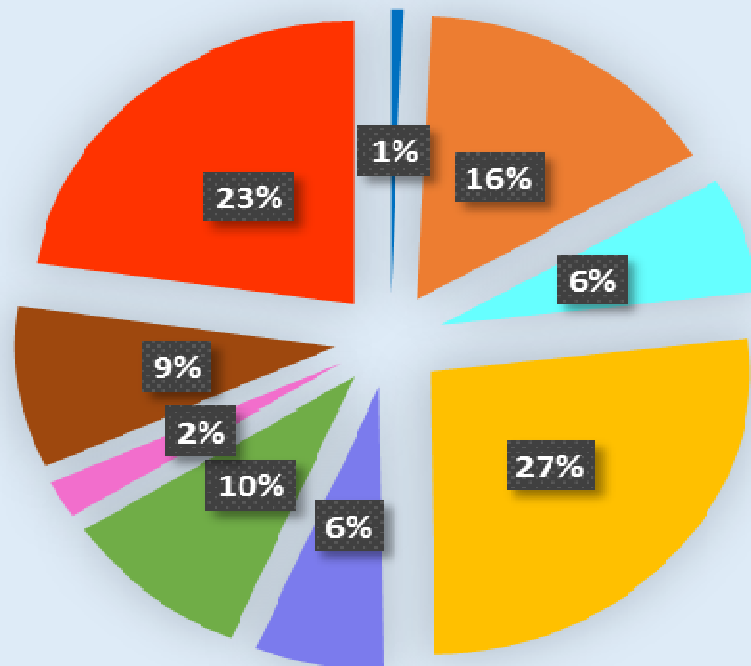
- RPG - 3,199
- Java - 73,000
- .Net - 30,500
- C, C++, C# - 123,000
- PHP - 30,060
- Python - 44,433
- Ruby - 10,015
- SAP - 42,699
- Oracle - 104,631

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Reality Bites – Point, Counterpoint

- **IBM i Support or RPG Developer jobs are only .05% of all jobs listed on Dice.**
  - For every IBM i or RPG job, there are 100 jobs for Java, 100 for C, 100 for C# or 100 for .Net each! If there are 150,000 IBM i installs in the USA, then there are about 15,000,000 non IBM I shops. **IBM i** is but a speck in the universe of IT although some major enterprises bet their fortunes on the **IBM i**.

- **Some of the biggest companies in the USA are committed to the IBM i.**
  - B of A; Wells Fargo; JPMorgan; Bank of NY-Mellon; Costco; Starbucks; Amazon; Disney; Target; Walmart; Best Buy; Staples; Big 5; Dicks Sporting Goods; Cabela's; Toys R Us; Lamps Plus; Polo; Pierre Cardin; Michael Kors; Sephora; Ikea; TJMax; Caterpillar; Johnson & Johnson; AT&T; Enterprise Rent-a-Car; FedEx; UPS; Harley Davidson; Casinos nationwide; Carnival Cruise Lines, not to mention the 100,000+ small & medium size businesses.

- **Every year some companies leave the IBM i – some regrets follow**

- **Where will the future RPG programmers come from? Java, C, PHP, not from RPG classes.**

You Are An IT Professional - Adapt

Today, RPG is Not Enough

- You know how to write business applications

- You understand and know how provide users with the data they need

- Today, hardware or software does not have to limit you. Apply the best tool for the job.

- Add New Skills – Extend your Career – **Increase your Value $ = Earn More $**

Skills for Todays RPG Developer

Primary Skills	Secondary	Plus
• ILE RPG, Free Form RPG	• XML, JSON, Web Services	• Python, Ruby, Git
• SQL, Embedded SQL	• RPG Open Access	• C
• SQL's Data Definition Language (DDL)	• RPG Open Access Handlers	• JQuery
• JavaScript	• HTML5, node.js, angular.js	• NoSQL
• Procedures & Service Programs	• .NET (VB.NET, Visual Studio, ASP .NET), C#, Sequel Server	• Wordpress
• RDi – Rational Developer for IBM i	• PHP & MySQL	• Crystal Reports
• Major ERP Systems – JDE, Infor, PKMS, WMS, etc.	• Security Basics	• Perl (any other "open tools"), Linux, Go, Apple Swift

Is RPG Dead?

- No, but RPG is no longer the "hot-ticket" it was in the 80's and 90's. RPG Legacy code will continue in the background for another 20 + years, but new tools/skills will be used to access the data in these systems.

- As the current generation of RPG Developers retire, replacements are coming from the Java and newer language curriculums. It is difficult to find RPG classes in colleges. See learning Resources!

- New IBM i/RPG installations are hard to find as most "new" Power System installs are going to AIX or Linux. IBM is betting Big on Linux. Reality only about 150,000 to 175,000 IBM i & iSeries installations.

- Many IBM i / RPG shops are still not modernizing and this hesitation can eventually undermine the future of the IBM i and RPG and your job.

- Updating and Modernizing your RPG to RPG Free/RPG Open Access will enable your legacy code to work with the new generation of tools and hire young talent that can work with the new RPG Free.

- There are nightmare stories of IBM i shops moving to Oracle or MS based ERP yet there is very little vocalization to promote RPG

Salary Trends – IBM i vs. Non-IBM i

Position/Title	IBM i environments 2017	Non IBM i – Windows-Unix-Linux 2017
Systems Administrator	$85,000 - $105,000	88,320 - $143,360
Operations Supervisor	$90,000 - $115,000	$87,040 - $126,720
Windows Network Administrator	$85,000 - $98,000	$99,840 - $150,720
Sr. Network Engineer / Administrator	$90,000 - $135,000	$126,720 - $187,200
Security Analyst 6+ yrs.	$110,000 - $140,000	$141,440 - $201,600
Sr. Programmer Analyst – 8+ yrs.	$95,000 - $116,000	$106,240 - $183,360
Sr. Programmer Analyst w/Open tools/multi-platform exp. RPG Free + SQL, PHP, .Net, Java, HTML, Apache, Other	$110,000 - $125,000	$147,200 - $213,760 *Lead App. Developer
Sr. Java/SQL/WebSphere Developers/Software Engineer	$110,000 - $120,000	$115,000 - $130,000
Sr. PHP Developers w/other skills	$115,000 - $140,000	$115,000 - $130,000
Project Manager	$115,000 - $135,000	$97,250 – $151,750
Application Development Manager / Application Architect	$120,000 - $145,000	$124,500 - $178,750
IT Manager/Director – staff of 6 – 12	$135,000 - $150,000+	$124,500 - $164,750
VP Information Technology	$140,000 - $200,000	$143,250 - $234,250
	Excel Technical IBM i Specialist Salary Guide	*Robert Half Salary Calculator

Salary ranges for Southern California IBMi market from www.excelsearch.com Based on active candidate salaries and recent job searches.
* Non-IBM Environment taken from Robert Half * Salary Survey 2017 http://www.roberthalf.com

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IBM i Developer Survival Guide

Keep up to date on the IBM i features and trends   - Use Them !

- Writing RPG IV Free Form using all of its intended features, not RPG III style
- Learn and embrace SQL, writing business logic as subprocedures.
- Write code that allows multiple user interfaces: Mobile, rich web UI's, Excel and PDF documents
- Learn how to build your own RPG-OA handlers to extend your existing applications and build modern IBM i applications from scratch.
- Learn HTML5 and Web Services
- Learn and use JavaScript, XML, JSON, jQuery, AngularJS
- Learn and use PHP, Python, Ruby on Rails, .NET, SQL Server, NoSQL, MySQL, Mongo
- Learn and use Crystal Reports, MS-Visio report writers
- Attend COMMON, Local User Group meetings, iPro Developer & other blogs, YouTube
- Listen to user needs and translate problems to solutions with IBM i and **convince Management & C-level execs on what your IT tools can do!**

Be Open to Change

- **Your company could move to another platform** – an opportunity to learn something new.

- Instead of retiring, **contract back to your employer** – They need your knowledge!

- **Be open to contract programming**

- **Recruiting contractors (not just IT) has become a popular way to hire:** 20% to 30% of the workforce in the US and the EU-15 are independent workers, according to the McKinsey Global Institute, 42% of U.S. executives plan on hiring more of them in the coming years, and some experts are estimating they will make up fully half of it a decade from now.

- **Capitalize on your unique skill(s)** – find other companies using that tool

- **Be open to travel** to out of town projects

- Be open to **part-time support**

What does your resume say about you?

Who are you and why should I want to interview you?

- It's an advertisement about your skills, accomplishments, experiences
- You must create interest in the first, top-half page
- Include a summary of technical skills that address the job opening
- Include your accomplishments: saved money; saved production time; improved user experiences; championed and implemented new technology that did something better
- Your job history: did you advance your skills or responsibilities with each move?
- Your education, motivation for continued learning, certifications, etc.
- Can you write/communicate, know how to use spell-check, too wordy, too brief?

Resume – Bad First Impressions

- No email address – no phone – no address – no interview

- Obnoxious email address: jabbermouth@; partygirl123@; screwball@; catlover43@

- Spelling errors/typos like: systms; analist; Mpics; busness, achievment for achievement, etc.

- Formatting: ¼" margins; not readable because of small fonts or no white space, sidebar text boxes, too many pages, too few pages – Make it easy to read

- Getting too fancy just because Word has lot's of publishing features

- No mention of hardware/software, utilities that could match the technical requirements

- Hard returns on sentences

- Two or more different font styles (adding to an old resume)

- Four or more pages

- We work on IBM i, not AS400 – RPG/LE or Free, not RPG III. Show me you are current!

Resume Do's

- **Have a header that includes:** name; address; phone; email

- Have a **summary of skills**, hardware, software, ERP, etc. (Use IBM i, not AS400, RGP Free)

- **List bullet points of key accomplishments**. Objective is "old School"

- **Job history** with name of company, city, dates (mm/yyyy), position. Write more about current/recent jobs and less about older jobs. I recommend going back 15 years and then add a statement: Prior experience includes working with RPG/ILE in manufacturing, retail and distribution applications. Details upon request.

- **Last: Education**, certifications, classes, professional affiliations (OCEAN, COMMON)

- **Keep resume to 2 – 3 pages,** No side-bars or fancy graphics or formatting

- **Use fonts between 10 -12** (Arial, Calibri, Times New Roman)

- **Margins of ¾" to 1"** with ample white space to be readable

Job Search Today

- **Always have your resume up-to-date**

- The newspaper Job Ads have been replaced by Dice, Monster, LinkedIn, Indeed, search firms

- Search on your own or through a recruiter?

- Work with a recruiter you trust and understands your skills and goals (they should be your **career coach and advocate**)

- **Know where your resume is going** – keep track of where and when sent

- If you have sent your resume, there is not much a recruiter can do for you

- **Companies only respond if interested** in your resume or a recruiters input about You!

- Companies tend to look for **reasons to screen you out**

- Some companies start with a **phone interview** or even a **Skype interview**

- More companies are doing a **group** or **team interview** – embrace it, don't fight it

Circulate to Percolate

- **Use LinkedIn to build your reputation** – It's your billboard in the cloud
- Join and participate in **LinkedIn Groups** that are in your expertise
- **Comment on topics** and also start new conversations
- Unless you are unemployed, don't put your resume out there
- Remember that **employers will look you up** on LinkedIn, etc.
- Be involved with your IBM i user group, keep in touch with old friends, make new acquaintances, volunteer, participate!
- Take a class in a new technology or join a meetup group
- **Keep in touch with former co-workers, mentors, references**

Interview Tips

- **Research the company** thoroughly before an interview
- Practice your 30 second introduction or **"elevator pitch"**
- Be prepared to be asked unusual questions **– don't be stumped**
- **Good Grooming:** Dress in business attire, suit & tie for men; women: a suit with a jacket and skirt or slacks; no dresses..
- **Arrive early**, bring 2 copies of your resume
- **Turn off your phone!**
- **Your first face-to-face impression is important** with everyone you meet
- Make the interview a **50/50 effort** – neither party should do all the talking
- **Prepare some written questions to ask** – write some brief notes
- Ask the interviewer **what they feel are the most important skills for the role**
- **Address how your experience meets those skills**
- Ask if there is any area of concern where you can **provide more detail**

The Interview

Be Prepared for Tough Interview questions like these:

- Tell me about yourself?
- What did you like the most and least about your last job?
- What are your strengths and weaknesses?
- What do you like least about yourself and how would you change it?
- What was the most difficult decision you had to make in the last 12 months?
- Which of your achievements has given you the most satisfaction and why?
- How do you improve yourself professionally?
- Describe your worst day on the job and how you dealt with it?
- What types of people do you have the most difficulty dealing with?
- How do you react when you realize you have made a mistake?
- How would you respond if I told you your performance today was not very good?

Tip: Always turn the response into a positive

"IT" - is all about change

- Evolving Technology will force you to adapt or get out of the way.

- To sustain your IT Career, you must add a new skill every 1 – 2 years.

- While you can't be an expert in all things, you must learn enough about other evolving technologies that are relevant to you expertise.

- Develop your people skills – be a good listener. Be a hero to your users! Be a mentor!

- Advocate benefits of Modernization at your company – be a champion of change!

- It is possible to stay at a job too long and doing the same old routine.

- Take a class, attend user group meetings, "Meet-up Groups" http://www.meetup.com

ADAPT - Become What You Need to Be!

What Employers Need to Attract & Retain Talent

- Hire people who have aptitude and attitude to learn **instead of the needle in the haystack**

- If your position is vacant for more than 30 days, **are you being realistic** with what you need?

- **Modernize Your Systems and Protect Your Investment – attracts the best people.**

- **Hire an intern or Jr. Developer** with Java, C, or PHP or other Open skills

- **Have adequate Staff** so your people do have the time to learn and implement new systems

- **Allow staff flexibility** to work remotely one or more days per week

- **Golden Handcuffs** – excellent pay – rewarding work – recognition

- A true manager is always training their replacement – **teach - delegate – listen - develop a team**

- **Get C-level management backing** for improving all IT services, investments and goals

- **Support education** like COMMON, OCEAN, on-line education, get the whole team involved

Learning Resources:

- **RPG & DB2 Summit – Jon Paris, Susan Gantner, Paul Tuohy** – Training events: http://systemideveloper.com/Summit/conferences.html   October 17-19 in Minneapolis, MN.

- **COMMON a Users Group:** Common offers free webinars/archives for members. Another reason to join OCEAN because OCEAN Membership also gives you free COMMON membership. **http://www.common.org/events/**

- **The Code School:** On-line courses for HTML/CSS; JavaScript; Ruby; Python; iOS; Git; Database (SQL-No-SQL) **https://www.codeschool.com/;   Another similar school is Treehouse at www.teamtreehouse.com/**

- **Udemy:**   Inexpensive on-line classes from IT to Italian – Classes include: AWS Certified Solutions Architect; Linux; AngularJS; JavaScript and JQuery Basics for Beginners $12; Python; SalesForce; MySQL, etc. **https://www.udemy.com/courses/**

- **You Tube Video training - Many are available: example Charles Guarino - Introduction to free form RPG using RDi**

- **IBM – Developerworks: https://www.ibm.com/developerworks/learn/ibmi/index.html**

- **Code Project:** Offers quick answers to code issues, explanations, sample code, tips, links to further explain details. They also post discussions and offer newsletters and archives on subjects. **http://www.codeproject.com**

- **Guru99:**   Here you learn by practice. Have others review your code for suggestions, corrections, etc. Inside, you will find tons of video tutorials.   All provided FREE!!! **http://guru99.com/**

- **Alison:** Free on-line courses include C language and PHP/MySQL not just IT. **https://alison.com/**

Career Resources

- **The Most Popular Programming Languages (updated August 2017) - New Relic – www.blog.newrelic.com**

- **GitHub.com -** use GitHub to build personal projects, support their businesses, and work together on open source technologies.

- **OpenStack.org -** OpenStack software controls large pools of compute, storage, and networking resources throughout a datacenter, managed through a dashboard or via the OpenStack API. OpenStack works with popular enterprise and open source technologies making it ideal for heterogeneous infrastructure.

- **LinkedIn.com** - your profile, connect with others, technical discussions, career advice, etc.

- **http://www.mckinsey.com** – Search "20 – 30 % of workforce" plus other economic trends

- **HelpSystems.com - 2017 IBM i Marketplace Survey Results**

- **101 Great Answers to the Toughest Interview Questions – Ron Fry; 101 Toughest Interview Questions – Daniel Porot; Best Answers to 202 Job Interview Questions – Daniel Porot;**

- **Dice.com, Linkedin.com** are two examples of great resources for a number of topics on career, resume, interviewing, hiring trends, etc.

Have some favorite resources you would like to share? Let me know and I will add them.

Send to Bob Langieri: bob@excelsearch.com

Build Your Skills and You Build Your Career

Questions?

Have a question about Career Trends?
Join the conversation on the LinkedIn
Group:

"IBM i Career Trends"

https://www.linkedin.com/groups/3779728

For further questions, contact:
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