Global Technology Solutions Group

How to Train
Your (new) Systems Programmer

Image Credit: CA

The verdict is in. There IS a present day shortage of mainframe skills ready to stand in and take the place of those who are leaving the mainframe workforce. In May 2015, IBM Systems Magazine and SHARE surveyed more than 1,400 IT professionals.

"85% of respondents agreed that a mainframe skills gap exists, and in fact it's growing wider by the day."[i]

According to the same survey, over half of the respondents are worried about systems programmers, leading us to ask:

What is being done about that smaller but critical group of systems programmers whose loss would be felt throughout the entire mainframe enterprise?

With all the discussion about a skills shortage, there has been much less, if any discussion- about the distinction between applications programmers and systems programmers.

We need to be discussing both. Without these two distinctly different skill sets, the mainframe skills issue will persist.

If it's a priority for an enterprise to maintain the core mainframe applications, then it stands to reason that it should be an equal priority to maintain the infrastructure. The issue? Systems programmers require a longer training cycle.

Let's first briefly compare the two distinctly different roles, and then discuss what GTSG is doing to address the Systems Programming aspect.

The Education of a COBOL Programmer

A COBOL programmer can come straight out of school, and within a short period of orientation, become productive for his or her employer. The reasons for this are easy to understand:

1. **Narrower scope:** The responsibility of an applications programmer tends to be concentrated on a particular series of applications within a subset of the overall application portfolio. The impact is naturally fenced- which is not to say it can't be severe, but it is confined.
2. **Ability to Test:** More importantly, the application programmer's work can be subject to functional test before it goes into production. It can be "broken" with intentionally created bad data; with all manner of illogical conditions. You can clone condition handlers (error routines) from operational code; you can create a myriad of situational events to ensure handling and restart capabilities. You can utilize regression testing to identify potential performance issues and impact to other system resources. In short, you can replicate and functionally test nearly every form of error that you can expect to see.

Because of the points above, any negative impacts can be **contained**: although the application may be important, even vital, after all of that testing – even if it crashes – the risk exposure is to that specific application and that associated business function. This outcome, while potentially serious, stands in stark contrast to an inexperienced Systems Programmer making a mistake which takes down a DB2 subsystem, a CICS region, TCPIP/VTAM, or in some cases, an entire LPAR.

The Long Game: Enablement of a Systems Programmer

The right stuff: There's a certain type of individual who is going to enjoy being a Systems Programmer. A Systems Programmer requires a deep facility and

appreciation for logic. He or she wants to be that "go-to" person who'll be handling the problems that no one else wants to handle; the technician of last resort; who'll be there until 3am if necessary in return for the satisfaction of knowing that they accomplished something that very few could manage- frequently for very high stakes.

Crawl/Walk/Run/Fly: At GTSG, we train new Systems Programming talent the same way we become intimate with an environment when we take over responsibility for its support… a transition method (approach) sometimes called "crawl/walk/run/fly." We observe, then we perform together, then we perform under close supervision, and then – and only then – are we on our own.

In the same way, we pair an "apprentice" at this craft with a seasoned Systems Programmer to do actual work, either in a staff augmentation model or in a managed services operation.

No substitute for experience: Based on upwards of 30 years of practitioner experience, we see this process unfolding over a 15-18 month timeframe – at the end of which we have a Junior Systems Programmer that is capable of bringing value to his or her company and continuing along the path of hands-on education and experience development.

To "fly" on their own, Systems Programmers need to know the entire landscape of an environment's operating systems, DB2, CICS, WebSphere, the management tooling, and whatever other environment is installed.

We supplement the on-the-job training with commercially available courses where it makes sense.

Virtually flawless execution: this is the level of service you count on like you count on dial tone.

Once again, at the Systems Programmer level, we're talking about the foundation upon which all work runs. Systems Programmer mistakes can have dire consequences – and in some put entire LPAR(s) at risk. **There is zero tolerance for a mistake that can cause data loss or customer facing downtime.**

Some things just can't- or for practical reasons, won't- be tested. We rely on the common sense, logic, wisdom and experience of trusted peers and then "plan for the worst; hope for the best."

BRIDGING THE GAP BETWEEN EDUCATION AND ENABLEMENT

GTSG is currently exploring an extension of our training program with schools that have an interest in helping to produce Systems Programmers. We'd look for talent that are within two years of entering the workforce, with "the right stuff" described above, perhaps looking for an internship with GTSG.

More importantly and beneficial to the broader mainframe enterprise community, we are happy to work with enterprises who (1) want to develop Systems Programmers to pick up the reins, and, (2) who have project-based systems programming needs, and (3) want to have GTSG train 3-5 recruits while performing actual work. Talk about 'real life' training!

We hope this helps. If any of this has struck a chord and you'd like to talk further, please call us at (877) 467-9885 or email us at mainframe@GTSG.com. Thanks.

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i http://www.ibmsystemsmagmainframedigital.com/nxtbooks/ibmsystemsmag/MFSkills/#/6, downloaded 09.21.15