TUG MoM REVIEW

A Zero-defect Evening Coding in RPG!!!

By Aziz Saleh

On Wednesday May 28, the 2007/2008 seasons' last Meeting of Members (MoM) for TUG was held at Sheraton Parkway. This MoM (like many others) had two sessions, both on RPG were presented by a sausage producer from Wisconsin, **Scott Klement**! **Lindsay Sutherland** took over from **Wende Boddy** at this MoM and welcomed all the guests eager to hear Scott's presentation. A heartfelt thanks goes out to both Wende and Lindsay for ensuring the success of all TUG events!

The first session, which started just after 5:00 p.m., was kicked-off by Léo introducing Scott, a very unassuming gentleman from Wisconsin, "America's Dairyland" — running a successful family sausage business. **Léo Lefebvre** highlighted the many accomplishments of Scott at COMMON and elsewhere, including his contributions to the iSeriesNetwork. Scott took over from Léo and spoke briefly about his son. It was a thriller from here onwards with everyone glued to their chairs soaking in everything Scott had to say!

The first session, "Accessing the Integrated File System (IFS) from RPG IV", began with an overview of the IFS, for members in the audience not familiar with it. From

Vaughn Dragland

his initial slides to his final ones, there was no shortage of visual examples, using screen captures and code snippets. Being a true developer he dove straight into an RPG example interacting with the IFS. The example, an extremely simple one, was intended to ease the audience into IFS programming using RPG. The commands **wrklnk** and **mkdir** may come in handy if you need to explore and work with the IFS on your Power System.

Code snippets were scattered throughout the presentation and the audience was encouraged to jump in with questions or clarifications. Scott went through several examples explaining the subtleties in RPG IFS programming as opposed to the typical RPG programming most developers do. He pointed out throughout his presentation that the code which he was sharing with us was available online and the details for it could be found by visiting www.scottklement.com. Some interesting facts that Scott pointed out were that the IFS was introduced with release v3r1 and support for RPG programming using the IFS was made available in release v3r2. Since RPG programming for the IFS has been around for quite some time now, many enhancements have occurred; one of them being the OPTIONS(*STRING), which now automatically adds the end of string character, x'00'.

The flexibility to mount network shares on the IFS means that an RPG program now has the flexibility (without any code changes ➡

Léo Lefebvre

TUG MoM Speaker Scott Klement

Election: Stephen Quan

Golf: Kumar Rajendra

or recompiles) to access data from different sources. In one instance the program could be accessing data from the optical drive using the /QOPT and in another instance the same program could be accessing a file from a server on the network, using the similar constructs.

Flags, based on bit manipulation, is quite an important concept when working with objects on the IFS, since they dictate if the file is to be opened for reading, writing or updating. They also dictate if a file needs to be cleared before or created. Finally the

flags set permissions for the object, when the object is being created. A binary value of 1000 (4 in decimal) would imply that the file is being open for Read and Write, while 0001 (1 in decimal) would only allow Read access. Use of the O_TRUNC constant as defined in the include (_H) files provided on Scott's website would mimic the CLRPFM operation. When opening files the developer can either provide a cryptic decimal value such as 74 or make it more meaningful by replacing it with the constants O_CREAT + O_TRUNC + O_WRONLY.

As with the command GRTOBJAUT, the permission "granted" during the file creation and file opening process is done at three levels, the Owner Level, the Group Level and the Public Level. The permission to "delete" a file is obtained from the directory or folder permissions. Since it is possible to be dealing with more than one system the need for translation (CCSID related) could arise and to cope with this one of the predefined constants in Scott's files is O_TEXT_CREAT. It will allow the developer to open the file as well as specify the translation mode to be used while processing the opened file. Using "unlink" will avoid CCSID conflicts by deleting the original file before it is recreated with the correct CCSID.

While general development in RPG does not necessitate the use of pointers, many of the functions available for interfacing with the IFS do require it, using the BIF %addr() this issue can be easily overcome. He also drew parallels to the concepts of passing parameters by reference and passing parameters by value, and related the use of pointers with using variables by "reference". The audience was cautioned that *InLr use would not close any open files. These would need to closed explicitly, or would be closed when the process is ended or the reclaim storage command is issued.

The Dinner and Networking break forced Scott to bring his first session to a close. The members were treated to the complementary spread of different pastas, salads and desserts. The break also offered the attendees another opportunity to engage Scott in discussions surrounding his presentation as well as his sausage business. Dinner was followed with giveaways. Some members walked away with copies of **Trevor Perry's** book: "Never Iron When You Are Naked" while others won shirts gifted by **Susan Gantner**.

The second session, "Excel Spreadsheets from RPG with POI", which started at around 7:15pm continued to have the audience glued to their chairs. It leveraged on the first session and set the stage for developing RPG applications to interact with Excel spreadsheets. Scott started by explaining what the TLAs, POI and HSF referred to.

The 5th Wave   By Rich Tennant

"Why, of course! I'd be very interested in seeing this new milestone in the project."

Working with the IFS, especially in the context of interfacing with Excel files, needs a good grasp of classes, states and its behaviour. The audience was also advised that while the techniques he was sharing did not require us to be JAVA developers, a working knowledge of classes would be valuable. To help the audience understand these concepts, an unusual but rather humorous metaphor of a dog was used. The examples became quite animated and those in attendance had quite a bit of fun with it, an added incentive for those not present, to plan for attending our next MoM in September.

While files in regular RPG development are referred to and used by their native file names, when working with the IFS using JAVA, the file handles, which are numbers, are used to interact with files. To execute JAVA components embedded in RPG, an instance of the Java Virtual Machine, commonly known as the JVM is started when the first JAVA instruction is encountered. There can only be one JVM linked to an active job, and when the job ends the JVM instance ceases to exist. It must be noted that all environment variables that are required for the JVM need to be established prior to the JVM instance starting.

It was pointed out that every time a JAVA method is invoked, the first parameter is always the object itself. For instance, when the "create" method in the "book" class is called, the call would appear as *book_create(book : name)*. Scott reviewed the various methods defined in his copybook HSSF_H which is available to all to download and use on the SystemiNetwork website, in his article, "POI Updated to Version 3.0.1". These include creating new files, modifying content and much much more... Another

Vaughn Dragland

Scott Klement with Léo Lefebvre

subtle fact pointed out that when *new_HSSFWorkbook* is used to create a New Excel file it is only created in memory and written to disk later.

One of limitations of CSV (Comma-Separated-Value) type files is that it lacks any formatting of the values contained in them, particularly with regards to fonts. Publishing information in Excel files from RPG helps to overcome this issue by defining fonts for cells as well as providing other format definitions. Another enhancement over the traditional CSV files is the ability to insert formulas into the Excel files allowing totals to be dynamic—which aids in any analytical work being done on the data.

When reading Excel spreadsheets one has the choice of using either Event API or the

User Model API. Scott's presentation was based on the methods and examples using the User Model API. Links for both these presentations can be found on the TUG website (www.tug.ca) by clicking on the "Articles & Downloads" button found on the left of the screen.

The meeting ended with Léo thanking, on TUG's behalf, Scott for coming out to the MoM and for providing the members present with such a comprehensive and captivating presentation. As a token of appreciation, Scott was presented with a framed cover of the TUG's May 2008 magazine featuring his picture. **TUG**

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Léo Lefebvre