CONTACT US

If you're interested in learning more about how GEMKO's expertise can provide value to your organization, contact us!

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21ST CENTURY IBM i DEVELOPER TRAINING

IBM i developer workshops & labs

Learn about our educational offers on **IBM i, RPG, PHP, & DB2:** learn how to combine your current skills with **RPG ILE, SQL, DB2 Triggers,** and cross platform technologies to increase development productivity and performance, resulting in doing more with less through efficiency. Our instructor has over 30 years of experience in "real life" business application development, is a consultant to IBM on Integrative Watson AI into IBM i Applications, and is recognized by IBM as an author of the RPG Certification Exam. Each student is tested and evaluated throughout training to reinforce and assess the education provided.

Combine your current Mid Range skills with other cross platform technologies to increase development productivity and performance, resulting in developer's doing more with less through efficiency. Courses can be delivered private on-site or public at local learning centers or university labs (subject to minimum enrollment).

We understand that education and professional development is an important part of your business strategy, retention, and growth of your IT development staff. Our training curriculum takes advantage of the latest improvements in RPG coding, as well as leverages new cross platform technologies (such as Rational, SQL, PHP, HTML, Triggers, API's, etc.) to build upon the critical core of your businesses IBM i (AS400) applications.

MEET YOUR INSTRUCTOR

Chris Burns is a senior consultant with GEMKO Information Group, LLC. Chris focuses on empowerment solutions fororganizations challenged by aging software applications, obsolete IT procedures,dysfunctional corporate culture, and out of date technical staff skills. He has developed and delivered numerous educational offerings for computer programming professionals, leveraging their past strengths, experiences and passion in order to give them a new perspective on solving business problems in the 21st century, with a more diverse and robust toolkit.

Mr. Burns was chosen by IBM to serve on past certification development teams to help architect IBM certification exams for programming professionals and is currently helping to develop a Watson program for use by smaller businesses. He has been a frequent speaker at computer user groups and conferences across North America, as well as a contributing author of technical articles on various IT industry specific problems.

GEMKO Information Group LLC.
Information Systems Specialists

21ST CENTURY IBM i DEVELOPER TRAINING

Course 0: Introduction to RPG for non-RPG Programmers

This workshop prepares the students having no RPG knowledge or experience, for subsequent courses in the series.

Course 1: Not Your Father's RPG

This is an intense programming hands-on workshop which explores the modern RPG language and problem solving methodology on the IBM System i.

Course 2: Procedures and ILE Programming

This workshop helps transform the RPG programmer's way of thinking from traditional to object oriented. Procedures help make your applications extensible and flexible.

Course 3: RPG and SQL: A "1-2 Punch"

This workshop helps investigate ways to combine the unique powers of these two development environments to provide even more flexibility and functionality.

Course 4: Triggers and API's

This workshop exhibits how to utilize database triggers, built into DB2, in order to better enforce business rules. API's provide access to IBM i resources above and beyond those of traditional RPG and AS/400.

Course 5: Decustomizing Packaged Software

This workshop explores ways to utilize IBM i programming techniques to enhance your 3rd party software applications without making modifications to their code, thus dramatically simplifying the deployment of new software releases.

Course 6: Extending to the Web - A "Primer"

This workshop demonstrates how to utilize IBM supplied tools to bridge the gap between your mission critical RPG business logic and the World Wide Web.

Course 7: Advanced SQL & RPG: The "Knockout Punch"

This workshop takes the SQL/RPG relationship to the next level, such that RPG may become less the application driver and more the application supporter. Since SQL is a cross platform development environment, this will make your applications friendlier to other platforms in your environment.

Course 8: Rational Developer for i Introduction & Primer

This workshop introduces students to IBM's Rational Developer for i software product (RDi) and how it can be used to carry out their daily duties on System i (AS/400).

Jumpstart DB2 Web Query Jumpstart

This workshop includes a knowledge transfer and jump starts your organization into using IBM's DB2 Web Query data analytics tool. DB2 Web Query is a graphical user friendly tool which allows your users to better leverage and extract information from your data.

Jumpstart PHP for IBM i

Position your IBM i (AS400) environment to take advantage of cross platform programming tools to deploy browser based applications as well as integrate your applications/data using best practice methodologies.

COURSE 0

introduction to RPG for non-RPG programmers

This workshop prepares students having no RPG knowledge or experience, for the subsequent courses in this series. You will learn basic concepts and terminology regarding how the RPG language is used to solve business problems on the IBM i (AS/400) platform. This course is designed for programmers with experience in other programming languages and basic knowledge of database concepts.

COURSE DETAILS:

Prerequisites:

None

Delivery Method:

Instructor led, group-paced, classroom delivery learning model

Course Content:

- A brief history of RPG
- Specifications
- Terminology primer
- RPG database processing concepts
- How to get started
- Reference sources

Performance Based Objectives:

- Understand RPG specific terms used in most training courses, including this series
- Recognize the components of an existing RPG program
- Conceptualize the logic flow of new or existing RPG programs
- Formulate a data access plan for new RPG programs
- Execute commands to create and manipulate RPG programs
- Navigate to IBM websites containing reference downloads

COURSE 1

not your fathers RPG

This is an intense RPG programming training workshop which explore the modern RPG language and problem solving methodology on the IBM i (formerly AS/400), up to and including the latest release. You will receive sufficient exposure and hands on experience to become productive writing programs in RPG IV right away. Emphasis is on free form style - no fixed form is taught. This course is designed for either programmers experienced in legacy fixed form versions of RPG, or programmers experienced in other languages without any RPG background.

COURSE DETAILS:

Prerequisites:

- For non-RPG programmers: Course 0
- For established RPG programmers: Measurable experience with RPG II (System/36), RPG III (System/38 or AS/400) or fixed form RPG IV (AS/400)

Delivery Method:

Instructor led, group-paced, classroom delivery learning model with structured hands-on activities

Course Content:

- High level overview of RPG III vs. RPG IV
- Evolution of traditional specification types (H, F, I, O)
- The D specification in detail
- Freeform calculation specs
- "Array" of sunshine
- Some pointers on pointers
- Old faithful op-codes and new friends
- Built-in Functions
- Reference sources
- Comprehensive labs

Performance Based Objectives:

- Reduce or eliminate hard coded data definitions in programs
- Define working storage more strategically to reduce non- productive program tasks
- Streamline cumbersome calculations with efficient new free form functions
- Reduce or eliminate the use of numbered indicators
- Leverage modern data types to perform tasks once relegated to program code
- Integrate new coding techniques within existing legacy code
- Introduce syntax and logic flow more consistent with cross platform modern languages

COURSE 2

procedures & ILE programming

This RPG programming training workshop helps transform the RPG programmer's way of thinking from traditional to more object oriented. Procedures help make your applications extensible and flexible. The Integrated Language Environment (ILE) allows business logic written in different languages to collaborate and co-exist seamlessly to support enterprise-wide applications. You will learn how to leverage the benefits of the ILE architecture by organizing key business logic into tiny granules, such that it is written once and used throughout the application. Students will also learn how to interface with external programs and procedures more reliably.

COURSE DETAILS:

Prerequisites:

- For non-RPG programmers: Course 1
- For established RPG programmers: Comparable experience

Delivery Method:

Instructor led, group-paced, classroom delivery learning model with structured hands-on activities

Course Content:

- Procedures versus subroutines
- Local versus global variables
- Extending the RPG IV function set
- Prototypes made easy
- Reduce, reuse and recycle code with ILE
- Nix the Fix - eliminate the fixed cycle baggage
- Performance considerations
- Comprehensive labs

Performance Based Objectives:

- Create RPG procedures from scratch
- Build prototypes to interface with procedures & external programs
- Add flexibility to parameters and return values specified on prototypes
- Reuse procedures as building blocks for more complex procedures
- Understand program architecture as defined by the ILE model
- Organize procedures into service programs (similar to Windows DLL's)
- Share procedures with new and existing application programs
- Implement changes to critical business rules easily throughout the enterprise
- Further streamline executable code segments
- Utilize variable scoping

COURSE 3

RPG IV & SQL - a "1 - 2 punch"

This RPG programming training workshop investigates ways to combine the unique powers of RPG IV and SQL development environments to provide even more flexibility and functionality. You will learn how to enable SQL and RPG to complement one another in a business application, especially when one is better suited for a particular task than the other. This course is designed for programmers who have become proficient in the RPG IV language and are seeking better ways for their applications to harvest data.

COURSE DETAILS:

Prerequisites:

- For non-RPG programmers: Course 1
- For established RPG programmers: Comparable experience

Delivery Method:

Instructor led, group-paced, classroom delivery learning model with structured hands-on activities

Course Content:

- SQL crash course
- Embedding SQL inside RPG
- Host variables
- The SQL pre-compiler
- Using result sets
- Eliminating "F" specifications
- Building dynamic SQL
- SQL works best when you say UNION yes
- Performance considerations
- Comprehensive labs

Performance Based Objectives:

- Write SQL queries from scratch
- Recognize the advantages of SQL over DDS and Query
- Perform database updates with SQL
- Access SQL function using several different System/i interfaces
- Get SQL and RPG to play nicely in the sandbox
- Make inquiry and report programs more user driven
- Combine data from multiple files for processing
- Make informed decisions whether RPG or SQL is better for a given task

COURSE 4

triggers & API's

This RPG programming training workshop exhibits how to utilize database triggers, built into DB2, in order to better enforce business rules. API's provide access to IBM i resources above and beyond those of RPG IV and i/OS. You will learn how to give your business logic a more "event driven" design, thus making it less defined by software and more defined by the database itself. Also, how to interface with or manipulate various IBM i objects via API's. This course is designed for programmers who have become proficient in the RPG IV and are seeking to improve the integrity of their database, as well as take advantage of more resources available on their IBM i or other platforms on their network.

COURSE DETAILS:

Prerequisites:

- For non-RPG programmers: Courses 1 & 2
- For established RPG programmers: Comparable experience

Delivery Method:

Instructor led, group-paced, classroom delivery learning model with structured hands-on activities

Course Content:

- The concept of work flow
- How triggers work
- RPG trigger programs & gotchas
- SQL triggers
- Referential integrity on IBM i
- Handling rules violations
- Navigating the API library
- Interfacing with API's
- Performance considerations
- Comprehensive labs

Performance Based Objectives:

- Identify opportunities to introduce work flow to their applications
- Write and apply trigger programs to database files safely
- Use the trigger buffer strategically
- Make future trigger programs easier
- Apply referential integrity rules to database files
- Test and attempt to violate these rules
- Interpret documentation in the API Finder
- Construct prototypes for API's
- React to API feedback

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COURSE 4

externalizing modifications

This RPG programming training workshop explores ways to utilize IBM i programming techniques to enhance your 3rd party software without making modifications to their code, thus dramatically simplifying the deployment of new software releases. You will learn how to extend the event driven philosophy from Course 4 to include your modification programming efforts, thus getting mods out of the vendor's code and into external objects under your control. This course is designed for programmers whose work-load includes support of 3rd party software and execution of user requests for modifications to those software applications.

COURSE DETAILS:

Prerequisites:

- For non-RPG programmers: Courses 1, 2, & 4
- For established RPG programmers: Comparable experience

Delivery Method:

Instructor led, group-paced, classroom delivery learning model with structured hands-on activities

Course Content:

- The true cost of modifications
- Timing is everything - identifying impact points
- Using triggers and data queues strategically
- Event driven mods
- User specific mods
- Reformatting spooled files
- Simplifying screen modifications
- Performance considerations
- Comprehensive labs

Performance Based Objectives:

- Recognize the true cost and risk of modifications
- Identify mods that are candidates for externalization
- Identify the principal impact point of a modification
- Leverage triggers to respond to data base activity
- Leverage API's to interrogate the run time environment
- Leverage data queues to respond to spooled file activity
- Approach screen mods from a different point of view
- Eliminate the "one mode fits all" traditional strategy

COURSE 6

extending to the web - a "primer"

This RPG programming training workshop demonstrates how to utilize IBM supplied tools to bridge the gap between your mission critical RPG business logic and the World Wide Web. You will learn how to enable your RPG programs to output to web browsers on a real time basis, and thus generate dynamic web pages with your IBM i business data. This course is designed for programmers who are proficient in RPG IV and are looking to provide browser based access to their IBM i data and legacy RPG business functions.

COURSE DETAILS:

Prerequisites:

- For non-RPG programmers: Courses 1, 2, & 4
- For established RPG programmers: Comparable experience

Delivery Method:

Instructor led, group-paced, classroom delivery learning model with structured hands-on activities

Course Content:

- Configuring the Apache server on IBM i
- HTML crash course
- Common Gateway Interface concepts
- Enabling CGI in RPG IV
- IBM's CGIDEV2 library (and why I hesitate to use it)
- Web enabling spooled files
- Performance considerations
- Comprehensive labs

Performance Based Objectives:

- Create and maintain an Apache server instance capable of running RPG programs
- Writing static HTML pages from scratch
- Build HTML forms to communicate with programs
- Use system API's to interact with the Apache server
- Modify RPG programs to be launched from and output to web pages
- Generate dynamic HTML though use of RPG
- Transform spooled files into browser friendly HTML

COURSE 7

advanced SQL & RPG - the "knockout punch"

This RPG programming training workshop takes the SQL/RPG relationship to the next level, such that RPG may become less the application driver and more the application supporter. Since SQL is a cross platform development environment, this will make your applications friendlier to other platforms in your network. You will learn how to use SQL to extend your core business logic which is securely rooted in RPG. At the same time, you will be exposed to problem solving techniques that are building blocks to low risk modernization strategies. This course is designed for programmers who are proficient in both RPG IV and SQL, and are looking to shift some of the application load off RPG and/or modernize that application from its strategic core outward.

COURSE DETAILS:

Prerequisites:

- For non-RPG programmers: Courses 1, 2, & 3
- For established RPG programmers: Comparable experience

Delivery Method:

Instructor led, group-paced, classroom delivery learning model with structured hands-on activities

Course Content:

- Saying goodbye to DDS
- Creating your own data types
- Building your database the 21st century way
- Triggers and Constraints the SQL way
- User defined functions
- Case study - the standard cross reference
- Stored procedures
- Case study - A global item number change
- Performance considerations
- Comprehensive labs

Performance Based Objectives:

- Architect database objects to be optimally flexible and compatible with most platforms
- Perform all database construction with SQL and its graphical tools
- Apply business rules using SQL
- Leverage RPG programs as SQL stored procedures
- Leverage RPG procedures as SQL functions
- Employ a more object oriented approach to data access in application programs

COURSE 8

rational developer for power introduction
& primer

This workshop introduces students to IBM's Rational Developer for Power software product (RDP) and how it can be used to carry out their daily duties on IBM i (AS/400). You will learn how to get started and be quickly productive with this product. For those who have used IBM's Programming Development Manager (PDM), how to make the transition gracefully. This course is designed both for programmers who are new to IBM i, as well as those who have a wealth of experience with traditional IBM i tools such as PDM, Source Entry Utility (SEU) and Screen Design Aid (SDA).

COURSE DETAILS:

Prerequisites:

- For non-RPG programmers: Courses 1, 2, & 3
- For established RPG programmers: Comparable experience

Delivery Method:

Instructor led, group-paced, classroom delivery learning model

Course Content:

- Why re-invent myself now?
- The Eclipse workbench and RDP
- One time setup tasks
- Navigating Remote Systems Explorer (RSE)
- Source editing
- Compiling and running
- Debugging tools
- Screen Designer
- Reference sources
- Optional follow along if hardware and software prerequisites are met

Performance Based Objectives:

- Understand the strategic advantages of using Eclipse based tools
- Configure and tailor RDP to their specific environment
- Utilize the various views and panes within RDP strategically
- Carry out traditional green screen (PDM) functions in RDP's graphical environment
- Create and maintain source code (CL, RPG, etc.) using the LPEX editor
- Test and debug both batch and interactive programs from within RDP
- Navigate to IBM reference websites
- Continue on the learning path

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JUMP START
DB2 WEB QUERY FOR IBM i

business analytics & report distribution

The GEMKO "Jump-Start" Package includes the installation of the DB2 Web Query Tool on your IBM i, migration of up to 10 existing Query/400 queries, the creation of two New DB2 Web Queries (no more than two file joins), and a Jump-Start DB2 Web Query training session for up to 4 employees on how to create queries (a 1/2 day educational course is included under this offer).

Expected Benefits & Values:

- Legacy reports migrated to Live Browser / PC based reports
    - Improved presentation "look & feel"
    - Extended access for internal employees, external employees, vendors, customer...
    - Report / Information distribution via email, excel, PDF, HTML
- DB2 Web Query technology framework in place to deploy additional browser / PC based reports on your IBM i
- DB2 Web Query skills built and knowledge transferred to your staff to deploy additional browser based reports

Terms & Conditions:

- iSeries must be at V5R4 of OS/400
- Obtaining DB2 Web Query software and licensing is customer responsibility (as an IBM Business Partner, GEMKO can assist with ordering the product)
- GEMKO is not liable for any system degradation resulting from the implementation of DB2 Web Query
- Package fee does not include travel and/or related expenses
- GEMKO Customer Agreement must be on file to perform services

10 JUMP START
PHP FOR IBM i

graphical user interface (GUI) enablement

The GEMKO "Jump-Start" package includes the installation of Zend PHP on your IBM i and the creation of a "Pilot" browser based application integrated with OS/400 DB2 data (application to include up to 2 screens, 20 columns of data from no more than 3 files, column level sorting, and the function to create excel spreadsheet).

Expected Benefits & Values:

- IBM i Information / Application's accessed via a web browser
  - Improved presentation "look & feel"
  - Extended access for internal employees, external employees, vendors, customers...
  - IBM i DB2 data integration with excel
- PHP technology framework in place to deploy additional browser based applications on your IBM i
- IBM i Application Modernization & Extension Path

Terms & Conditions:

- iSeries must be at OS/400 V5R3 or higher
- Obtaining Zend PHP software and licensing is customer responsibility (as an IBM Business Partner, GEMKO can assist with ordering the product)
- Network access (internal or external) is customer responsibility
- Database knowledge required to create the application is customer responsibility
- GEMKO is not liable for any system degradation resulting from the implementation of PHP environment
- GEMKO Customer Agreement must be on file to perform services