

Welcome to PUB400!



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Document information

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- 2016-06-14 initial release
- 2016-09-07 added section about compile defaults at page 6...

Introduction

Welcome to PUB400.COM – your public IBM i Server on the internet! This server is provided for all people who want to start exploring the exciting world of IBM i (former known as "AS/400"). Feel free to explore the environment, start programming and learn a different way of computing. Well, not different in all ways, but sometimes other than Windows, Mac or Linux thinking.

IBM i is made for business processing, so you will not have a native graphical interface. The systems root were settled back in the 1970s with the IBM S/3x series. But do not think about IBM i as an "old" system. It is one of the most modern computing system in the world, with full 64bit processing (and prepared for 128Bit hardware), object based security as well as rock solid stability. You just should forget what you learned about personal computers and be open for a different world... IBM i is not made to provide a platform to run complex graphic software like shoot-em-up games, but for processing terabytes of database environments.

For those guys who are familiar with Unix-like operating systems: don't get too frustrated that you will not be able to use your shell knowledge; at least not at the first steps. The text oriented interface of IBM i is totally different, although it is telnet based. Later, when exploring the open source world for IBM i, you can use some shell knowledge for a process called QSH which enables you to use unix-based programs and scripts. But for the beginning, get used to work with a menu and command driven shell which makes heavy use of the function keys F1 (context sensitive online help) and F4 (prompt the current field for possible values). If you work with these, you will see it is much more user-friendly than a "normal" shell with commands and lots of parameters noone can keep in mind...

What is PUB400.COM?

PUB400 is a partition on one of our hosting machines free for the public. It allows everyone to explore the system and is the successor of PUB1 – our old public server with an old system software. PUB400 runs IBM i 7.2, a rather new version of this IBM operating system created for business data processing. The resources for PUB400 are flexible within our IBM i cloud architecture where we can add CPU or disk on the fly. If you believe, "virtualization" was created by Intel, VMWare on the PC world, then you are wrong. IBM started with virtual and hardware independent technologies back in the 1960s...

You will get a free user profile with 150MB disk storage and programmer access. Even if this does not sound much to you, this amount of storage is enough for start learning programming and database processing – you just should not use your account as an FTP backup for your movie collection :) Depending on the usage of the system we even may start increasing the storage. Let's see how big PUB400 gets; the old PUB1 ended up with more than 40.000 user profiles...

Your access level is "Programmer" (in IBM i terms "*PGMR") which enables you to work with objects, databases, files and create programs. You will not be able to fiddle around with system environmental settings as this for sure will disturb other users – and this is not the way to go. If you progress in learning IBM i and want to dive deeper, you might want to consider one of our developer hosting options where you can get an own IBM i environment with all security rights you need. Check out www.rzkh.de for more information.

Welcome to PUB400!



What is PUB400.COM *not*?

PUB400.COM is a playground for everyone, but it is not intended as a system to be hacked or to be bratty damaged by people who just want to crack up everything! You should not try to disturb other users, access their objects, or overload the system resources by running looping jobs. We will monitor the system and act accordingly. Please be polite to other users!

You also will not get much support for IBM i in general or for using PUB400.COM – there will be some information on <http://www.pub400.com> (which is the same server), but please understand we cannot spend hours a day to answer all the same questions or to help the beginners. Please check out google or other search engines to find IBM i resources on the net.

You also will not be granted higher access level! This is a *PGMR box – if you want to play around and learn system administration please contact us for cheap dedicated hosting. Please understand that we cannot provide all of these resources for free. We are a small hosting company dedicated to IBM i and also need to pay our invoices :-)

Last but not least – do not play around with your own user profile settings. Do NOT change the name of your libraries or your start menu / program. If you really do so, please use your second session to test! We will not help (or at least not with high priority) if you lock your self out by that means! And we are serious about this. On PUB1, we have at least 3-5 users a day running into trouble by fiddling with their settings, even if they have been warned. So you are warned now again ;-)

How to start?

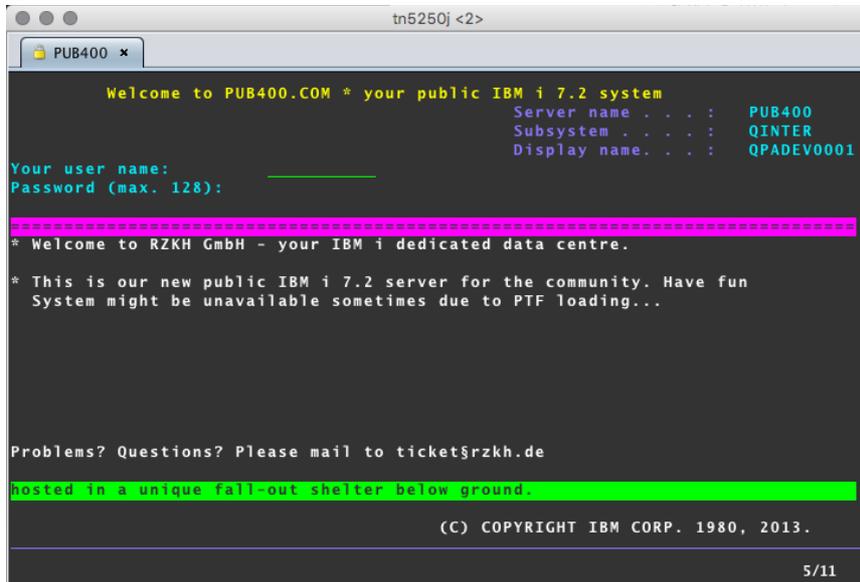
You selected your user name, and you have received an email with a password. So what is the next step? As IBM i has no native web based user interface, you simply cannot point your browser to a given address and start your work. You need to have a client software which enables you to start a remote session on PUB400 – called telnet. Usually, every PC or Mac or Linux has a telnet client installed, so you might try to simple execute "telnet pub400.com". You will receive a sign on screen, but it is not perfectly shaped nor giving colours. The reason is that "telnet" is not always "telnet". IBM i uses an extended protocol "telnet 5250" (based on the old 1980s twinax workstation) which supports colours, data fields and advanced characters. So you also need a telnet5250 software for your PC. Simply search the net for it, our recommendations are:

- tn5250 or tn5250j on sourceforge – free based java clients, working good
- a commercial client is available at www.mochasoft.dk – we are not affiliated with that company at all, but their client is working great and costs only some bucks
- IBM has their software "Client Access" or "IBM Access connections" where we are not allowed to share a direct download link. Contact us!

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Start the setup of your telnet5250 client. The client will ask for a server to connect to, simply enter "pub400.com" here (without quotes). If the client asks for a device or session name to use, leave this empty. If the client supports SSL, be sure to use SSLv3 and Port 992 to connect to.

After successful connection, you should see a signon screen like this:



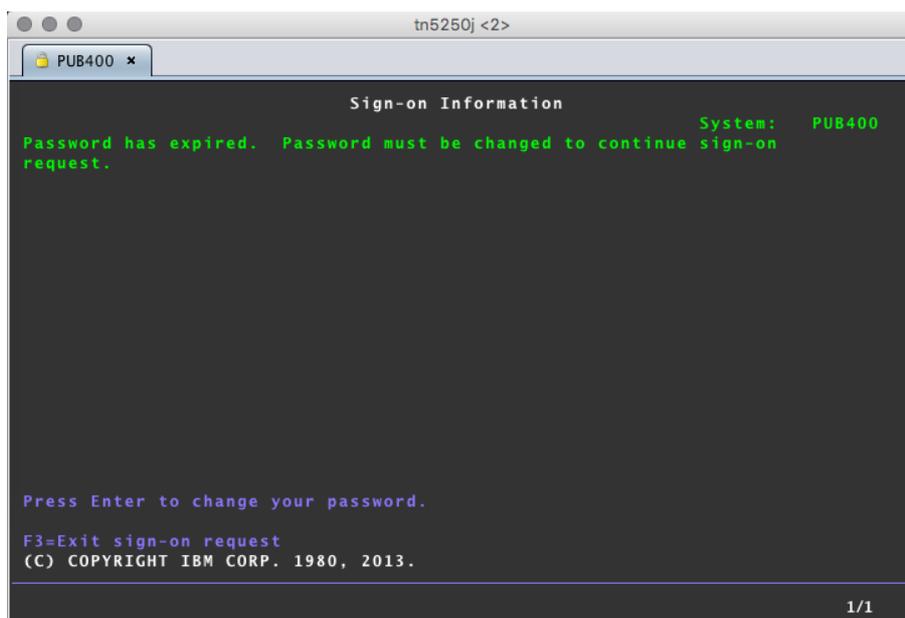
```
tn5250j <2>
PUB400 x
Welcome to PUB400.COM * your public IBM i 7.2 system
Server name . . . : PUB400
Subsystem . . . : QINTER
Display name . . . : QPADEV0001
Your user name: _____
Password (max. 128): _____
*****
* Welcome to RZKH GmbH - your IBM i dedicated data centre.
* This is our new public IBM i 7.2 server for the community. Have fun
  System might be unavailable sometimes due to PTF loading...

Problems? Questions? Please mail to ticket@rzkh.de
hosted in a unique fall-out shelter below ground.
(C) COPYRIGHT IBM CORP. 1980, 2013.
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```

Besides the server information on the top right, and the news text lines in the middle of the screen, you have two fields to enter data: "Your user name:" where you enter the user name you've chosen on the signup web page, and the password which you have been sent by mail.

Enter this data into the fields and press "Enter". Your entry in the password field is not visible, so pay attention! Oh – "Enter" on IBM i means a special key to send the data you typed to the server. Depending on the setup of your 5250 client, this is the return key right of the character block, or maybe the right Ctrl key...

The next display you will see is an informational screen to change your password:



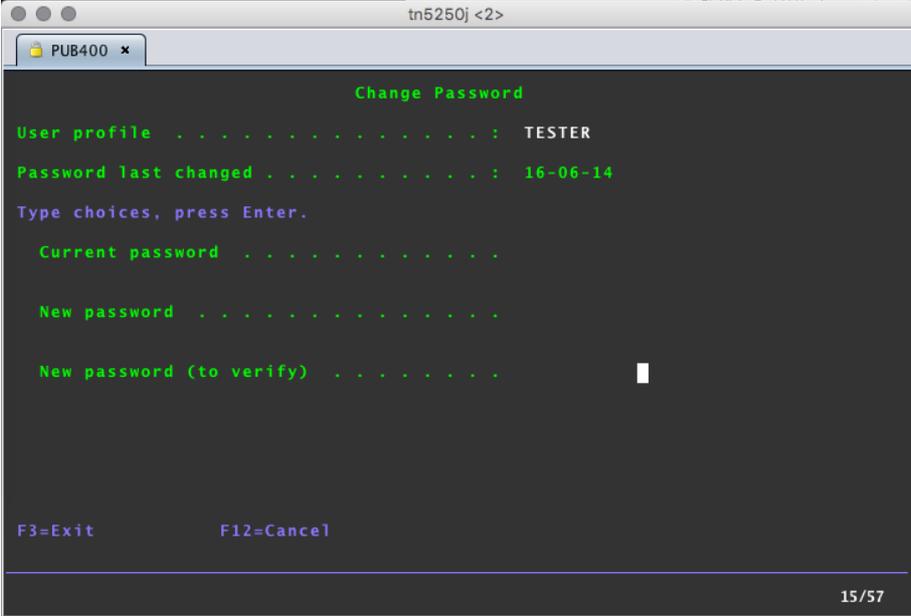
```
tn5250j <2>
PUB400 x
Sign-on Information
Password has expired. Password must be changed to continue sign-on
request.
System: PUB400

Press Enter to change your password.
F3=Exit sign-on request
(C) COPYRIGHT IBM CORP. 1980, 2013.
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```

Press enter again to change your initial password.

Welcome to PUB400!

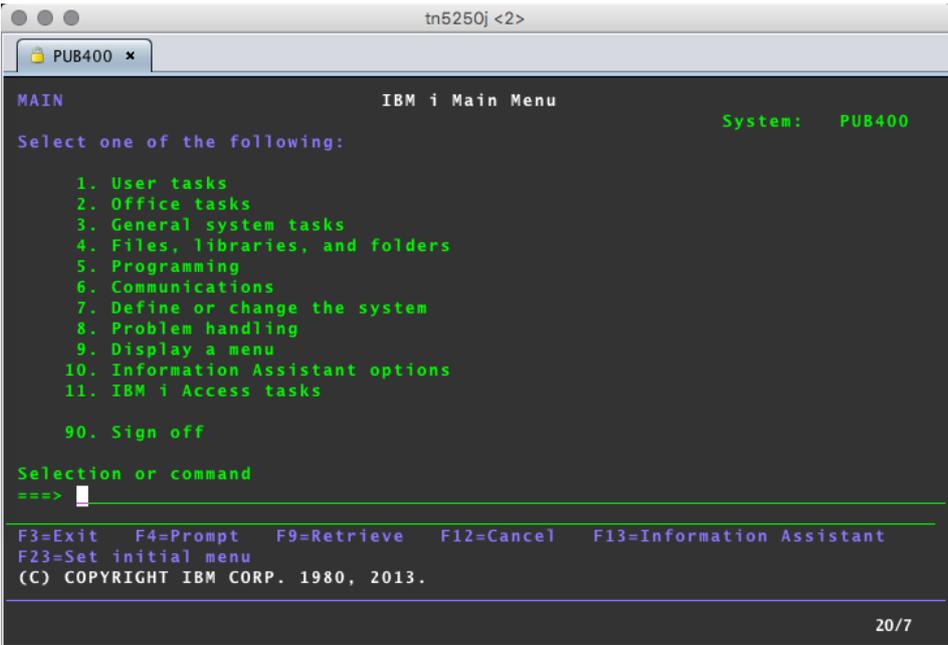
The third screen is the "Change password" screen as your initial password is not secure. Think about a good password – it should contain lower and upper characters as well as at least one digit – and be sure you will be able to remember that password. The maximum password length is 128 characters, so you can be creative... Also pay attention that the password fields are longer than one line on the screen. Watch your fingers typing – if you're new to IBM i, start with an easy password first so you can go on. Later you will see how to change your password again!



```
tn5250j <2>
PUB400 x
Change Password
User profile . . . . . : TESTER
Password last changed . . . . . : 16-06-14
Type choices, press Enter.
Current password . . . . .
New password . . . . .
New password (to verify) . . . . .
F3=Exit      F12=Cancel
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```

At "Current password" enter the initial password you received in the second email, the new password (and the verification) should contain a new password. Hint: do not use the same password for multiple services, for example for Facebook, LinkedIn and PUB400 ;-)

After you successfully changed your password, you will see the IBM i MAIN menu:



```
tn5250j <2>
PUB400 x
MAIN                      IBM i Main Menu                      System:  PUB400
Select one of the following:
1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. IBM i Access tasks
90. Sign off
Selection or command
===>
F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=Information Assistant
F23=Set initial menu
(C) COPYRIGHT IBM CORP. 1980, 2013.
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```

Welcome – you're in :-)

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Important settings about compiling

As PUB400.COM is a shared machine, there are some individual settings you must change after your first logon. Sorry – this cannot be done automatically at the moment.

Please conduct the following steps after your logon:

- enter STRPDM – press Enter
- you see screen "Programming development manager (PDM)"
- select option 2 – work with objects – press Enter
- you see screen "Specify objects to work with"
- in Field "Library" please enter *CURLIB if not already stated there – press Enter

```
Specify Objects to Work With
Type choices, press Enter.
Library . . . . . *CURLIB      *CURLIB, name
Object:
  Name . . . . . *ALL          *ALL, name, *generic*
  Type . . . . . *ALL          *ALL, *type
  Attribute . . . . . *ALL      *ALL, attribute, *generic*,
                                     *BLANK
F3=Exit      F5=Refresh      F12=Cancel
```

- you will now see "Work with Objects using PDM" and some objects in your library. Now you must change the default settings for your PDM environment (see next page):

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- Press F18 key (that is Shift + F6) – you see a screen "change defaults"
- change "compile in batch" to N (see note "BATCH" below)
- change Job description to *USRPRF, and the library field must be blank

```
Change Defaults

Type choices, press Enter.

Object library . . . . . *SRCLIB      Name, *CURLIB, *SRCLIB
Replace object . . . . . N            Y=Yes, N=No
Compile in batch . . . . . N          Y=Yes, N=No
Run in batch . . . . . N             Y=Yes, N=No
Save session defaults . . . Y        Y=Yes, N=No
Save/Restore option . . . 1         1=Single, 2=All
Job description . . . . . *USRPRF     Name, *USRPRF, F4 for list
Library . . . . .                Name, *CURLIB, *LIBL
Change type and text . . . Y        Y=Yes, N=No
Option file . . . . . QAUOOPT       Name
Library . . . . . QGPL             Name, *CURLIB, *LIBL
Member . . . . . QAUOOPT          Name
Full screen mode . . . . . N        Y=Yes, N=No
```

- Now you should be able to compile

"Compile in Batch" = "N"

To compile a program source, use option 14 in "work with members using PDM" and Enter to start the compilation. If "compile in batch" is set to "N" (no), the compile will run in your interactive session and you will see the compile success in a white notification line at the bottom of the screen – the following example says "all ok!"

```
Work with Members Using PDM                                PUB400

File . . . . . QCLSRC
Library . . . . . HOLGER1      Position to . . . . .

Type options, press Enter.
2=Edit      3=Copy  4=Delete 5=Display      6=Print      7=Rename
8=Display description 9=Save 13=Change text 14=Compile 15=Create module...

Opt Member      Type      Text
 1 TEST        CLP

Bottom

Parameters or command
===>
F3=Exit      F4=Prompt      F5=Refresh      F6=Create
F9=Retrieve   F10=Command entry  F23=More options  F24=More keys
Program TEST created in library HOLGER1.
```

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Fine – you can call your program using:

CALL HOLGER1/TEST (this is an example, you cannot access my library ;-)

If your program contains some error, you will receive a message like this:

```
Work with Members Using PDM

File . . . . . QCLSRC
Library . . . . . HOLGER1          Position to .

Type options, press Enter.
 2=Edit          3=Copy  4=Delete 5=Display  6=Print
 8=Display description 9=Save 13=Change text 14=Compile

Opt  Member      Type      Text
 14  TEST        CLP

Parameters or command
===>

F3=Exit          F4=Prompt      F5=Refresh
F9=Retrieve      F10=Command entry  F23=More options
Program TEST not created.
```

The compiler just says: "no, there is an issue". To find out about the reason why the source could not be compiled, you need to review the compiler output. The compiler creates a spool file about his work and the result. To review the spool file:

- remove the option entry "14" in front of your source member. The system leaves this entry for you to notice there was an issue.
- enter WRKSPLF in the command line ("===>") and press Enter
- maybe you have a lot of old spool files, delete them with option 4 + Enter
- usually the spool files are ordered by creation time, so your newest spool file is at the bottom of this list. Review the contents with option 5 and page down to find out about the reason for the compiler not finishing its job...

Compile in Batch = Y

When you select "compile in batch" = "Y" (yes) in screen "Change defaults", the compile job will be submitted as a background job and you will not see a result message. You then must:

- use DSPMSG to show messages for your user profile about the background job being finished or not.
- then use WRKSPLF to review the compiler output.

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What's next?

At the moment, this documentation is rather short – it will be improved in the next time, and you will find a download link at <http://www.pub400.com> where you always can get the most current version. I hope you understand we cannot write a complete book about how to start with IBM i, but there is a lot of good resources on the net, for example:

www.code400.com – international forum with lots of tips

www.midrange.com – online discussion forums and newsgroups

<http://www.ibm.com/developerworks/ibmi/> - IBM developer works starting page

<http://www.fieldexit.com/> - another nice page with much information

[http://forums.zend.com/viewforum.php?f=77](http://forums zend.com/viewforum.php?f=77) – about Zend PHP on i

Also, review social media for IBM i groups on Facebook, LinkedIn etc.

(If you have a good link to be listed here, or if you host a good page for beginners, drop me a note!)

What about my environment?

Your user profile has 150MB of disk storage for your objects. IBM i organizes objects in two ways:

- object based in so called "libraries". They contain objects with certain types, and each object type has it's own methods. For example you can CALL a program but not a database file, and you can update records in a database file but not change a program etc. You have three libraries based on your user name. If your user name is TESTER, then your libraries are called TESTER1, TESTER2 and TESTERB (the latter one should be used for backup purposes by yourself!)
- raw stream files (like on Windows, Unix, Mac etc) reside in a special file system called IFS (integrated file system) which IBM i provides for compatibility with other systems and software. You have a home directory in /home/(username) – for example /home/TESTER if your user name is TESTER.

The following documentation is based on the user name "TESTER" – adjust all parameters to reflect your own user name!

There are some commands you may want to start with (and never forget to use keys F1 and F4):

- WRKLIB – work with libraries (general). If you want to work with your own libraries, enter the command "WRKLIB TESTER*" and press enter
- WRKOBJ – to work with objects in general. If you want to work with all objects in your library TESTER2, enter "WRKOBJ TESTER2/*ALL"
- STRPDM – start the program development manager. This is the "old" green screen based environment which is being called "old and outdated" but works for the first steps. Maybe you want to use an eclipse based environment later... If you enter "STRPDM" you get a menu to work with libraries, objects etc. Select 1 to work with libraries, press Enter, and on the Screen "Specify Libraries to work with" enter TESTER* as a generic library name so you see all of your three libraries. Hint – the following PDM screens show a lot of options to be entered in front of a list entry. There are more options than fit on the screen. Press F23 (Shift-F11) to see more options.
- SIGNOFF – ends your session :-)

I already have IBM i objects – how to transfer?

If you want to transfer stream files, you can use FTP to transfer them to your home directory /home/TESTER (replace with your user name). Please note – if you want to transfer objects which are saved in a save file, your save file must not put into the home directory but into one of your libraries. We assume you will put the save file in your third library TESTERB.

On your PC, open your FTP client program, or use the DOS command prompt FTP client. Then you first should use the CD command to change current directory to the place where your save file is stored on the PC. Let's assume your save file on the PC is named MYFILE.SAVF (we highly recommend using this extension .SAVF)

- FTP pub400.com
- (sign on)
- cd /QSYS.LIB/TESTERB.LIB
- bin
- put myfile.savf myfile.savf (good idea to repeat the name)
- quit

the cd command tells you to enter library TESTERB – and all libraries on an IBM i reside in the main library QSYS. The extension .LIB tells the system about the object type "Library". The put command has the save file name repeated. This is to be sure the target name on the IBM i also has the extension .SAVF – else the target file might not be a save file object.

Now enter the following command to verify transfer:

- DSPLIB TESTERB

you should see an object named MYFILE of type *FILE and attribute "SAVF" – if the attribute is PF please delete that object and retry the transfer – remember to state the file name twice in the put command!

You also can use DSPSAVF TESTERB/MYFILE to see if the system can read the save file. If you get an error message, check:

- did you use binary transfer?
- is the save file readable on IBM i 7.2? If it has been created on a newer release, the SAV* command there must state to save to an older release.
- did the transfer finish successfully?

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How to restore

Now you have a save file with your objects on PUB400.COM – if you are used to the SAV* and RST* commands, please note the following:

Objects in a save file contain information about the creating user profile. If this user profile on the source machine is different than on PUB400.COM, the restore will fail. It will also fail if your objects have special security attributes which are not supported on PUB400 – for understandable reasons you are not allowed to use programs which try to increase your security level. So we provide special command replacements for RSTLIB and RSTOBJ:

RSTLIB

This command is locked on PUB400 and you must use the replacement RESTLIB (note the additional letter "e"). For restoring, you first need to know the name of the library which has been saved. Use the command DSPSAVF TESTERB/MYFILE so you see "library saved".

Now enter RESTLIB and press F4. The system asks for the saved library (enter the information you just retrieved), and also the name of the save file (MYFILE) and the library the save file is to be found in (TESTERB).

RSTOBJ

This command is also locked on PUB400 and replaced by RESTOBJ – the difference is: use this command if the save file has been filled using the command SAVOBJ on the source system.

Questions?

Please send email to ticket@rzkh.de if you have problems or questions. Please understand that we cannot always react quickly – we have a lot of customers :-)

There still are some tools missing (password or user profile reset) on <http://pub400.com> – please be patient.

Have fun!

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