MULTIPLATFORM SOFTWARE FOR DATA BACKUP ON FTP SERVER

Jiri Sobek, Petr Vychodil

Doctoral Degree Programme (1, 4), FEEC BUT

E-mail: {xsobek03, xvycho08}@stud.feect.vutbr.cz

Supervised by: Vladislav Skorpil

E-mail: skorpil@feec.vutbr.cz

Abstract: This article focus on a presentation of multiplatform backup software, which assists with data backup on FTP server or local/network data storage. Importance also lays on possibility of manual or automatic backup options. Platitude is of course a possibility to restore backup data. Programming language was chosen Java language due to capability of multiplatform use. The programming itself was made in Netbeans IDE.

Keywords: Automatic backups, backup software, FTP, Java, program

1. INTRODUCTION

The main purpose of this software is the possibility to backup data on FTP server or local/network data center. The reason is to save these data before unwanted loss. The backup process can be made manually or automatically. This program set contains two programs. First one works as a main program for data backup settings, second takes care about the backup itself.

2. THE MAIN BACKUP PROGRAM

Connection to the FTP server is designed via FTP client that is implemented in the software. Reference to these problems can be found in [4] and in [5].User can log in to FTP server with username and password and store his created backup there. User can also choose between direct backup or backup with data compression. First thing to do to create a backup is creating a list of files and folders, which are chosen for backup. Program will create a temporary copy of the data in program folder, where will the possible compression take place, and then send them FTP server or NAS. At the end will be the temporary folder deleted. In case of error during the data backup process, the program would not delete the temporary folder and keep it on place untouched.

Created folder is named in time format "yyMMddHHmmss" (year, month, day, hour, minute, second). The main program calls "Backup" and its file type is executive jar file. Program creates only full backups.

After the program initialization user has to decide whether to save the files on the FTP server or local/network disk. If the FTP server will be chosen, user has to connect to this server first with his credentials. Reference can be found in [2]. Then user must have made a decision between manual and automatic backups. Eventually, the desired backup will be created. The data backup diagram is shown in the figure 1.
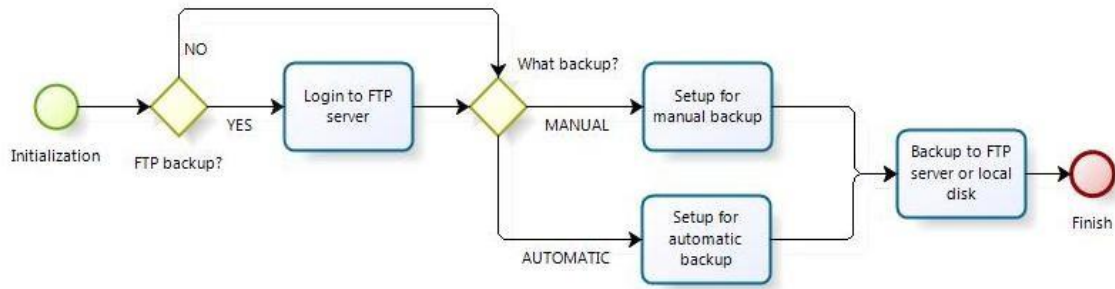
Figure 1: The data backup diagram.

2.1. MANUAL DATA BACKUP

First possibility to create a backup is via manual backup process. It is used, when there is a need of one time data backup creation. There is still the possibility to save the backup to FTP server or NAS.

The clicking on "Manual backup" in program menu will let user create backup conditions (folders and files can be added). Chosen data will appear in the table list. Only checked files and folder will backup. If user wants to take some files/folders away from a backup, he can just uncheck them.

The next settings option is a compression of chosen data. This is possible thanks to ZIP technology supported by Java language. ZIP compression type is mainly suitable for text files, where can be achieved a data size save around 20%.

At the end user has to choose between backup to NAS or FTP server. If the NAS will be the destination, target folder must be chosen. The backup itself will be done after clicking on "Backup on NAS" or "Backup on FTP". Information about manual or automatic backups can be found in [1] or in [3].

2.2. AUTOMATIC DATA BACKUP

The main goal of this program is not only a manual backup but the automatic one. Automatic backups can be periodical, all depends on the user's choice.

Automatic backups can be run from main menu under the tab "Backup" and then "Automatic backup settings". There will again appear a table, where can be added files and folders chosen for backup. Also here can user remove file/folder by unchecking the item. There is a ZIP compression option, as well.

Against the manual backup user can additionally choose from very detailed time settings, which are hours, days, weeks and months backups.

In case of hour backup, user will choose this option. After the choice, there will show up a minute bar. Here can user set a current minute from range 0–59, where these numbers represent actual minute within an hour. To save the backup settings user has to click on "Save settings" button. Hour backup is usually used, when there are often changes in files and when is important to keep the files updated.

In daily backup must be chosen an hour from range 0–23. Also here represent the numbers actual hour within a day. Day backups are suitable for saving the work after every day. Day backup can contain only some files, which are used daily and global backup can be done at the end of every week or month. Weekly backups are again set with hours and minutes, which are necessary to choose the concrete time within a day. Then there is also a possibility to choose a day within a

week range from Sunday to Saturday. As was said before, the weekly backups are mainly used for saving every week work. All depends on demands of the author. Monthly backups are set with a help of days, hours and minutes. Days are chosen from range of 1 to 31 as they go in the calendar.

User can add a ZIP compression to every type of backup. To save the settings, user has to press the button "Save settings".
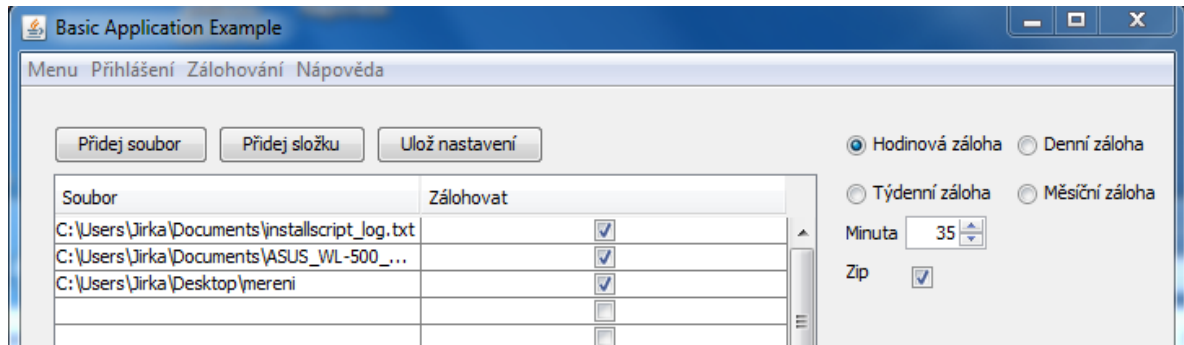

Figure 2: The automatic data backup.

This software was made to be as much flexible as possible. This means that user can create several backups and everyone can save different files in different time. The goal is to allow creating systems of backups. All can be done thanks to javajob files, which contains necessary information about the backups. Javajob file is configuration file that keeps information not only about automatic backups but also holds information necessary for the FTP connection. Content of a javajob file created in the figure 2 can be seen below.

Extract of a code: Content of a javajob file

h 35 0 monday 0 true 192.168.10.10 User2 21

D:\FtpServer\User2

C:\Users\Jirka\Documents\installscript_log.txt

C:\Users\Jirka\Documents\ASUS_WL-500_manual_cz.pdf

C:\Users\Jirka\Desktop\mereni

Program that processes automatic backups is called "BackupTray". This program is run automatically with a start of a system and its purpose is to check the javajob files for the potential backups.

2.3.   DATA RESTORE

Another function is restoring the saved data from FTP server. Necessary information about data restore can be found in [6].This ability is essential for the backup software. To restore a backup user has to choose "Backup" option from menu tab and then "Data restore". The process of restoring is done from FTP server, so user has to first log in to FTP and then restore his backup.

First must be restored the data from server. This can be done by clicking on the button "Upload data from FTP". The list of backups will upload to the table. User will choose the correct backup by highlighting the line (attention: whole line must be highlighted) or writing the name of the file to a space below. At the very end user will choose the destination folder and click on the "Restore

backup" button. The backup will restore to the destination folder, where it will be decompressed if possible.

The restoration process is very similar to a backup process, but it works backwards. First thing to do after program initialization is choice from the backup location (FTP/disk). For FTP server data restoration user has to login first. Then the file list must be loaded. If there are compressed files, program will automatically decompress them. The data restore diagram is shown in the figure 3.
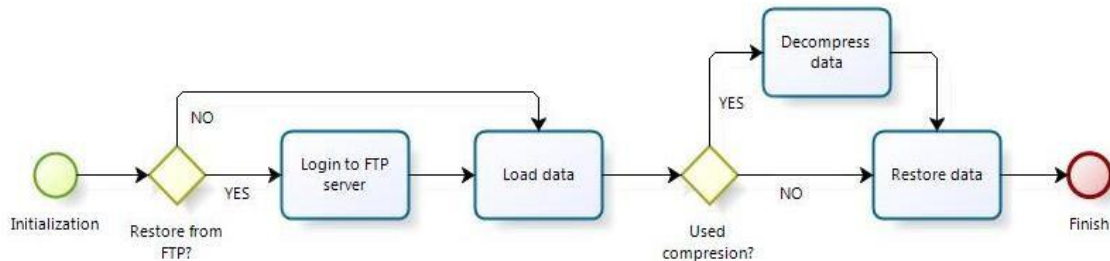
Figure 3: The data backup diagram.

3. BACKUP EXECUTING PROGRAM

Or „BackupTray" is program which starts up with system and then runs in a background. Purpose of this program is checking javajob files and searching for the potential automatic backups.

Every 60s program will check the javajob files and if he will find a backup, which must be done, it will start the backup process. Settings will be used from javajob file.

If an error occurs during the automatic backup process (e.g. FTP connection fails, folder error appears and so on) each of these errors will be saved in the Log file, which part of the program. Error log can be showed by right click on running process "BackupTray" and then on tab "Errors".

The possibility how to run this program automatically with start of a system is in Windows e.g. creating a ".bat" file or putting the program to the Startup folder or creating a scheduled task. In Linux OS must be added an attribute to the program. Both programs were created in the Java programing language [7].

As was written before the program will check every 60s the content of javajob files for a potential backup. If there is a match, the backup process will be started. Otherwise the program would come back to javajob files sequence check. The diagram for backup execution is shown in the figure 4.
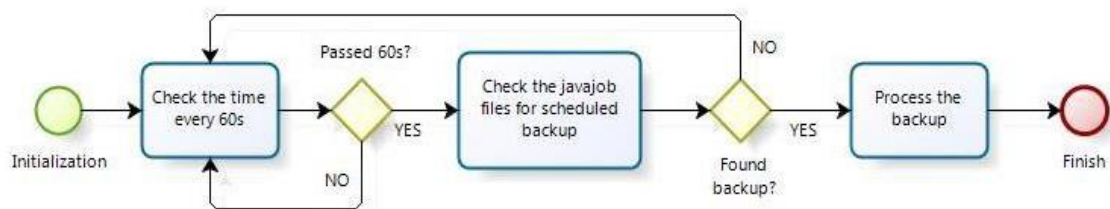
Figure 4: Diagram of program for automatic backup execution.

4. CONCLUSION

This application is significant thanks to its multiplatform use. It can be run on various operation systems with minimum requirements. Another specialty of this application is performing very detailed automatic backups with many possible options, e.g. multiple backups. At the end is very important the FTP backup, which protect data from local disasters and also allows to save and send data as easily as possible.

ACKNOWLEDGEMENT

REFERENCE

[1] Leixner, M.: PC-zálohování a archivace, Grada 1993, ISBN 80-85424-73-8

[2] Novotný, V.: Vzdálená obsluha FTP serveru přes mobilní síť [online], Brno: VUT 2011, available from: <http://www.vutbr.cz>

[3] Preston, W., C.: Backup and Recovery, O'Reilly Media 2009, ISBN 978-0-596-15904-7

[4] Postel, J.: RFC 791 – Bibliografická citace, Internet Protocol, 1981, available from: <http://www.ietf.org/rfc/rfc791.txt>

[5] Postel J., Reynolds, J.: RFC 959 – Bibliografická citace, File Transfer Protocol, 1985, available from: <http://www.ietf.org/rfc/rfc959.txt>

[6] Ševeček, O.: Zálohování a obnova(přednáška) [online], Trenčín 2010, available from: <http://wug.cz/zaznamy/22-Zalohovani-a-obnova-s-pomoci-Windows-Server-Backup>

[7] Darwin, F. Java kuchařka programátora, Praha, Computer Press 2006, ISBN 80-251-0944-5