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# **Software Requirements Specification**

for

# **PeaZip**

**Requirements for version 2.7.1**

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# **1. Introduction**

## **1.1 Purpose**

The present document is a software requirements specification document for PeaZip , version 2.7.1. PeaZip is a general purpose file and archive manager application for a computer system, aiming to provide a cross-platform graphical interface for many Open Source archiving and compression utilities, so that its user would be able to handle most of the available archiving formats(indicatively: 7z,RAR,ZIP. Full list of the supported formats is provided in following chapters).

This document follows “Software Requirements Specification” template for software requirements specification documents, by Karl E. Wiegers, with a few declensions.

## **1.2 Document Conventions**

The present document concerns software engineers that would work on further development of this piece of software, as well as clients/users of PeaZip.

This is the only document so far describing PeaZip’s software requirements. It should be used by software engineers who will develop this piece of software and it should be used for formalization of the software that is going to be delivered to clients/users. Every future change in the requirements of this software should be made through a typical procedure of change and final acceptance of this document.

Software engineers should ask for further explanation or clarification, if and wherever they decide this is necessary and should not proceed to modifications without the approval of the final client/user.

## **1.3 Intended Audience and Reading Suggestions**

This document applies to programmers of this project, to software engineers that weal work on its further development and, finally, to the end users of this application and it aims at displaying the features of PeaZip version 2.7.1, as well as at providing information about the goals and the proper use of the software.

Chapters that would interest users are: 3, 4 and 6, whereas the whole document would be of interest for software engineers and programmers.

## **1.4 Project Scope**

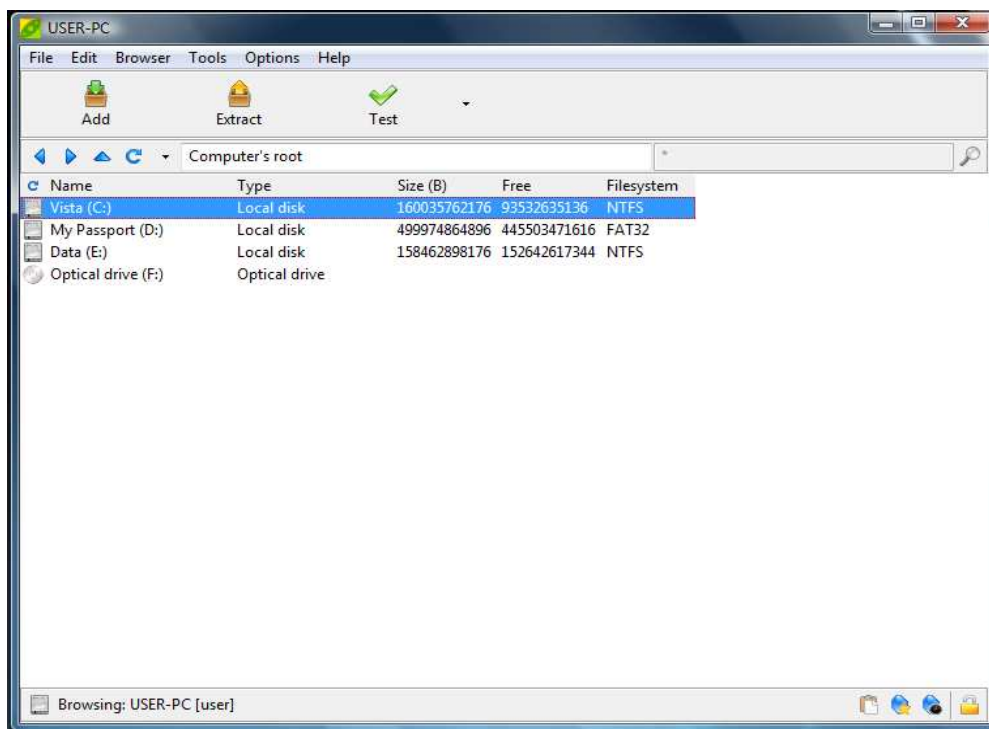
The piece of software to which the present document refers, is a file and archive manager application for a computer system, that offers user the capability of archiving,compressing and extracting (decompressing) files and archives.

In brief, the basic functions that PeaZip features are:

Creating compressed archives, updating compressed archives, extracting content of compressed archives, file and archive management tools(robust copy, split and join, fast or secure deletion, byte to byte comparison, calculation of a wide set of checksums and hashes over selected files), append timestamp to archive name(useful for archiving and backup purpose) and two factor authentication(password and keyfile) for the managed archives. All pre-mentioned functions' parameters can be modified and adapted to user's needs and preferences from a settings' menu.

The initial goal of this application was creating a frontend for Pea archiving utility. However, after completing PeaZip's GUI, support to many mainstream archiving and compression formats was added to PeaZip. In this way, PeaZip became an aggregate frontend GUI for a set of Open Source archiving and compression utilities(full list of which is provided in following chapters). The fact that this application is Open Source software, gives its users the chance to directly take part in its development, as well as notice possible bugs or mistakes and make their suggestions on it.

This is a picture of PeaZip:



1. Starting window of the application(file manager interface).

## 1.5 References

Information about PeaZip can be found in the following Internet addresses:

- <http://sourceforge.net/projects/peazip/>
- <http://peazip.sourceforge.net/>
- <http://peazip.sourceforge.net/peazip-help.html>
- <http://en.wikipedia.org/wiki/PeaZip>

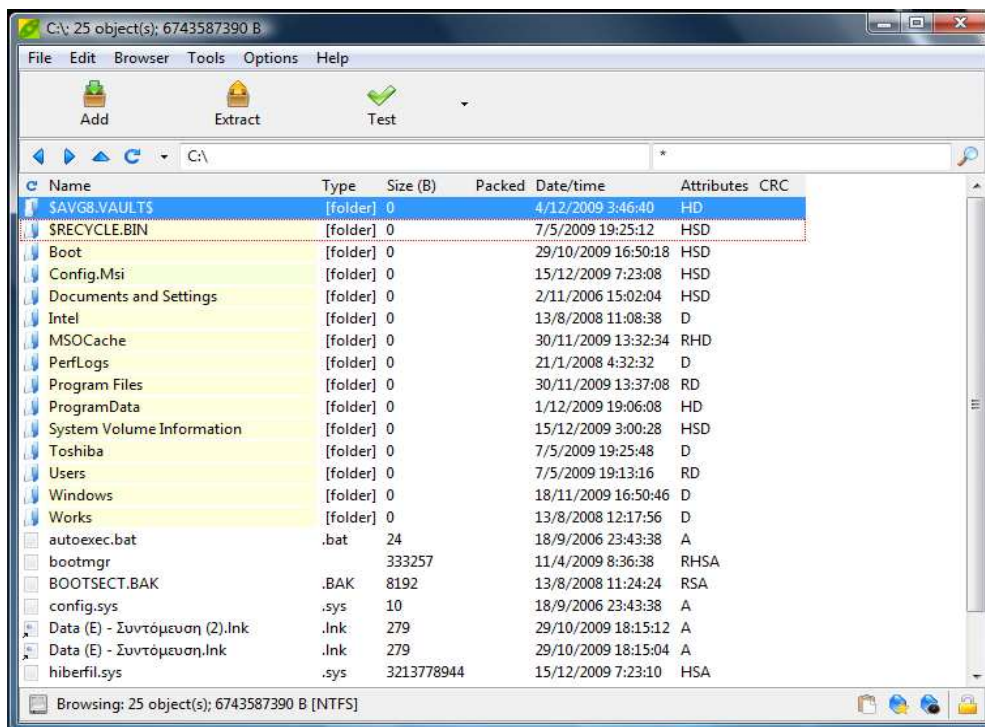
## 2. Overall Description

### 2.1 Product Perspective

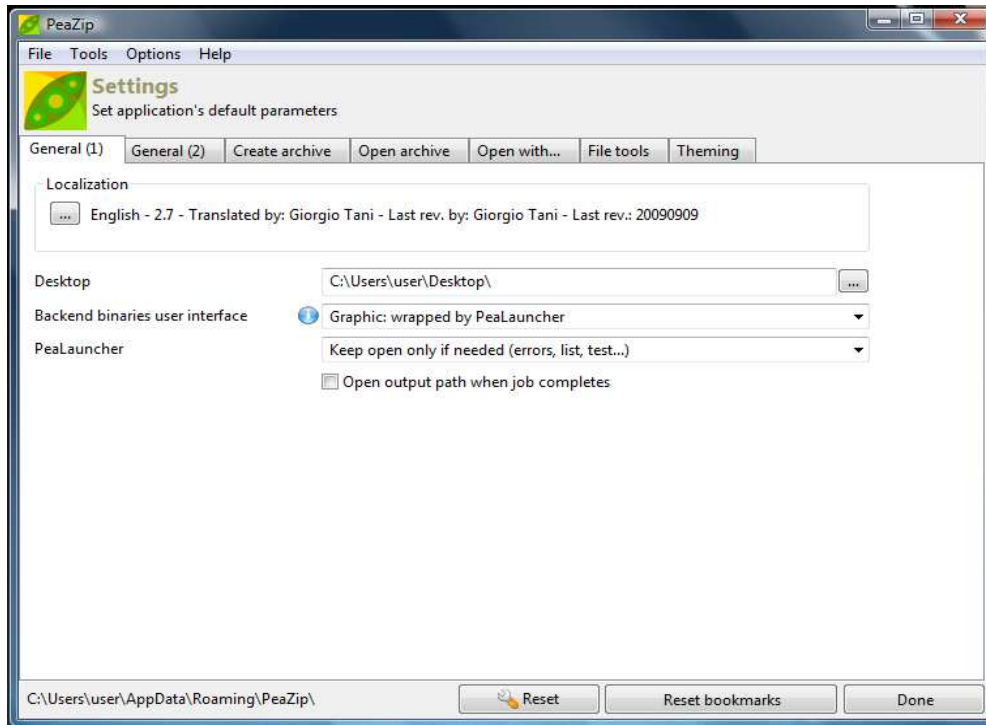
PeaZip was created for file and archive management in a computer system. The initial goal of the application was to function as frontend for Pea archiving utility(which was also developed by PeaZip's creator, Giorgio Tani). However, after completing the development of PeaZip UI, support to more archiving and compression formats (full list of which is provided in following chapters) was added to PeaZip, allowing it to function as a single, consistent frontend GUI, which exposes a list of options of the underlying applications.

PeaZip works similarly to a large group of well-known applications, like WinRAR and WinZip. PeaZip features, to a large degree, the same features with the applications of this group and in addition, it supports a wide range of archiving and compression formats(superset of the supported by each application of the pre-mentioned group set)as well as some file and archive management tools(which are mentioned explicitly in following chapters), while at the same time it offers its users the capability of executing its functions as command prompt commands(resulting commands can be extracted and saved in a text file), allowing them to monitor any running activity in real-time.

An important attribute of PeaZip is its self-standingness and its independency from the kind of the Operating System of the computer system on which it runs. In no case is the installation of any other program required for PeaZip to work, while for cases that no system integration is preferred, PeaZip Portable is available as standalone application, not needing installation and not modifying the host system.



2. Basic application interface(file manager interface).



3. Settings window (Settings interface).

## 2.2 Product Features

PeaZip is a general purpose file and archive manager application for a computer system, aiming to provide a cross-platform graphical interface for many Open Source archiving and compression utilities. The most important features that are offered by those utilities, through PeaZip, are the following:

- Creating archives in any of the supported archiving and compression formats (full list of which is provided in following chapters)
- Updating an already existing archive
- Appending timestamp with date and time on the managed archive name for archiving and backup purpose
- Two factor (password and keyfile) authentication for the managed files and archives
- Extracting contents of any compressed in any of the supported archiving and compression formats (full list of which is provided in following chapters) archive
- Secure file and archive deletion from any storing unit of the computer system on which PeaZip runs
- Byte to byte comparison between two files
- Check files in order to find duplicate files and to check files for corruption
- Splitting files and merging split volumes back to original file
- Information list, which lists content of selected files/archives. In info mode, it shows number of files and archives, newer and older object's date/time of last modification, total space occupation and larger and smaller object's size
- View content of a file or archive represented as hexadecimal values
- Graphical monitoring of all executed functions

All functions above can be modified and adapted to users' preferences through a settings menu. Moreover, any of those features can be executed as command prompt command. Finally, more than one of those features can be applied to a single archive or file.

## 2.3 User Classes and Characteristics

This software applies to any user of any computer system. There is no limitation on who would be able to or allowed to use PeaZip, as PeaZip is an application that could be used by any user of a computer system who would like to manage (archiving and compression) files and archives of the system.

PeaZip users can be divided into two main categories: to the ones that have already used an archiving and compression application and to all the rest. Even though PeaZip functions are relatively simple and PeaZip's interface is pleasant and user friendly, users included in both categories, should read the tutorials and help documents that have been written about the particular application (and are either available in sites that are mentioned in following chapter or inside the application), so as to inform themselves on the application scope and needs that it covers, as well as to be able to use in full extend all, featured by the application, functions..

Another distinction of PeaZip users in categories, could be made according to user's experience and knowledge on using computer systems. In this case, however, the distinction into a discrete number of categories is not easy, because it is not possible to put unambiguous borders between categories according to users' experience and knowledge level on using computer systems, as it is a non-countable amount. Still, in general, it could be claimed that users with larger experience and knowledge on using computer systems, could use more easily some advanced features offered by PeaZip, such as executing its function in command prompt.

## 2.4 Operating Environment

As far as operating systems are concerned PeaZip is compatible with:

- All 64-bit versions of Microsoft Windows
- All 32-bit Microsoft Windows(95/98/NT/2000/XP/Vista)
- All POSIX(all versions of Linux/all versions of BSD/all UNIX-like operating systems)

Moreover, PeaZip is available as source code that is compatible with almost any operating system. It is obvious, that PeaZip is independent from the operating system of the computer system on which it runs.

As far as hardware is concerned, PeaZip requires an x-86 compatible CPU, due to some performance critical sections written in ASM. In general, CPU and RAM requisites of PeaZip, are bound to the chosen algorithm and compression level, ranging from a few KB for simpler algorithms (like when storing files in tar/gz/zip formats) to above than a GB for more complex algorithms and higher compression level (like LZMA, PPMd and PAQ). Needless to say, it is the choice of the compression algorithm that is the most important factor that determines the job's speed, even if usually more advanced algorithms are the ones that scale better in performances in multi-core environments.

To conclude, as far as software is concerned, all needed software invoked by the frontend is included in PeaZip packages (available under suitable licenses, as open source or royalty free) so no custom package is needed to be installed to make PeaZip work (with the possible exception

of some standard gtk/gdk related libraries needed to run PeaZip, Gwrap and Pea binaries, which may be missing in some computer systems, but are well known, trustable and widely available).

## **2.5 Design and Implementation Constraints**

Should anyone wish to work on further development of PeaZip knowledge in any of the following programming languages is required:

- Delphi/Kylix
- Object Pascal
- Pascal

This software's license is LGPL, which mean that PeaZip is 100% Open Source and 100% free and it can be used be linked to any other software regardless of whether it is free software or proprietary software. Everyone that does or is going to develop or use PeaZip, should agree and fully accept the terms of this kind of license.

Moreover, PeaZip is developed under the development environment Lazarus IDE(<http://sourceforge.net/projects/lazarus/>).

## **2.6 User Documentation**

Users can find help relevant to installing and using PeaZip in the Help Document (PeaZip Help – Revision: 14/10/2009) and in Mini Tutorial that are both included in the application, as well as in the following Internet addresses:

- <http://peazip.sourceforge.net/index.html>
- <http://peazip.sourceforge.net/peazip-help.html>

## **2.7 Assumptions and Dependencies**

Do not exist.

# **3. System Features**

In this chapter, functional requirements of the application and the features it provides are presented. PeaZip is a file and archive manager application for a computer system that allows users to compress/decompress, authenticate and archive them. All PeaZip's features are explicated in the following units.

## **3.1 System Feature 1**

Browsing areas and objects of the computer system.

### **3.1.1 Description and Priority**



PeaZip's users can browse and gain access, in various ways, to every area (e.g. storing units, desktop, users documents etc) of the computer system on which PeaZip runs, as well as to included objects (archives and files).

### 3.1.2 Stimulus/Response Sequences

In the initial window of the application (which is also going to be mentioned as file manager interface) there is a button writing "File" on it. By pressing this particular button, opens a submenu with choices that have to do with browsing and access to areas and objects of the computer systems



#### 4. Browsing submenu

More specifically:

By choosing "Filesystem", users can get access to an object from an object list of objects that is organized according to a functional hierarchy..

By choosing "Bookmarks", users can get access to an object from a list of objects that have been rated by them as favorites.

By choosing "Recent archives", users can get access to an object from a list of objects that have been recently browsed in PeaZip.

Finally, through "Open path" and "Open archive", users can get direct access to a path of an object or a file/archive.

Moreover, browsing and access to computer system's objects is provided by navigation bar of the file manager interface, with navigation buttons (back, forward, up) and refresh button.

By this feature, users are allowed to search and gain access to objects they would like to manage.

### 3.1.3 Functional Requirements

Installation of no other application is required, for PeaZip to manage this function. The only functional requirement is:

REQ-1: Operating system on the computer system.

## 3.2 System Feature 2

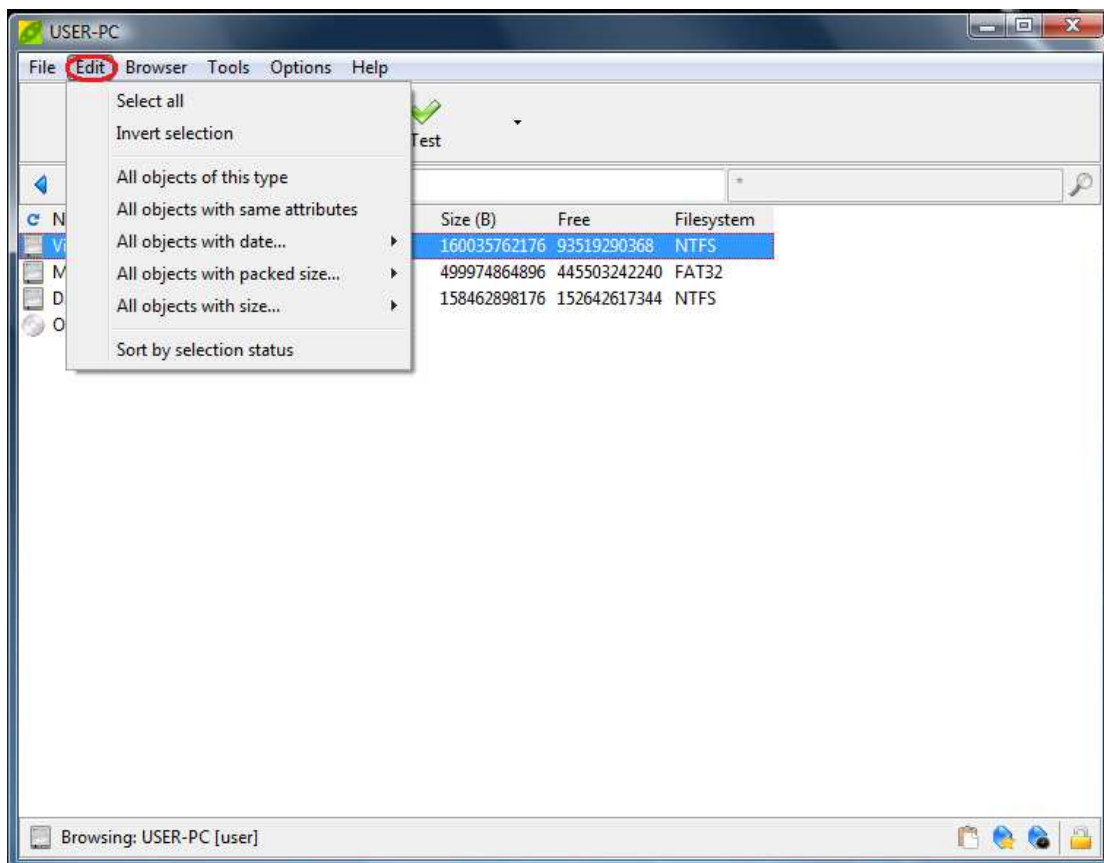
Variety of ways of selection of displayed in file manager interface objects.

### 3.2.1 Description and priority

Users are allowed to manage the way of selection of the displayed in file manager interface objects(files and archives).

### 3.2.2 Stimulus/Response Sequences

In the initial window of the application(file manager interface), there is a button writing "Edit" on it. By pressing this particular button, opens a submenu with choices that have to do with altering ways of selection of files displayed currently at file manager interface.



5. Selection submenu.

More specifically:

“Select all”, selects all objects that are currently displayed at file manager interface.

“Invert selection”, allows inverted selection of objects (this means that all non-selected before the beginning of the function objects are selected and all selected before the beginning of the function objects are deselected).

“All objects...” set of commands, allows selection from the objects displayed on file manager interface, according to: extension, attributes, size and date..

Finally, “Sort by selection status”, sorts all objects on file manager interface according to whether they are selected or not.

With this feature users are allowed to flexibly alternate the way of selection of currently displayed objects on file manager interface. This feature is particularly useful for object selection for mass management, especially when the number of currently displayed objects on file manager interface is large (thus manual selection object-by-object could lead to errors).

### 3.2.3 Functional Requirements

Functional requirements of this feature are exactly the same as the ones of System Feature 1.

## 3.3 System Feature 3

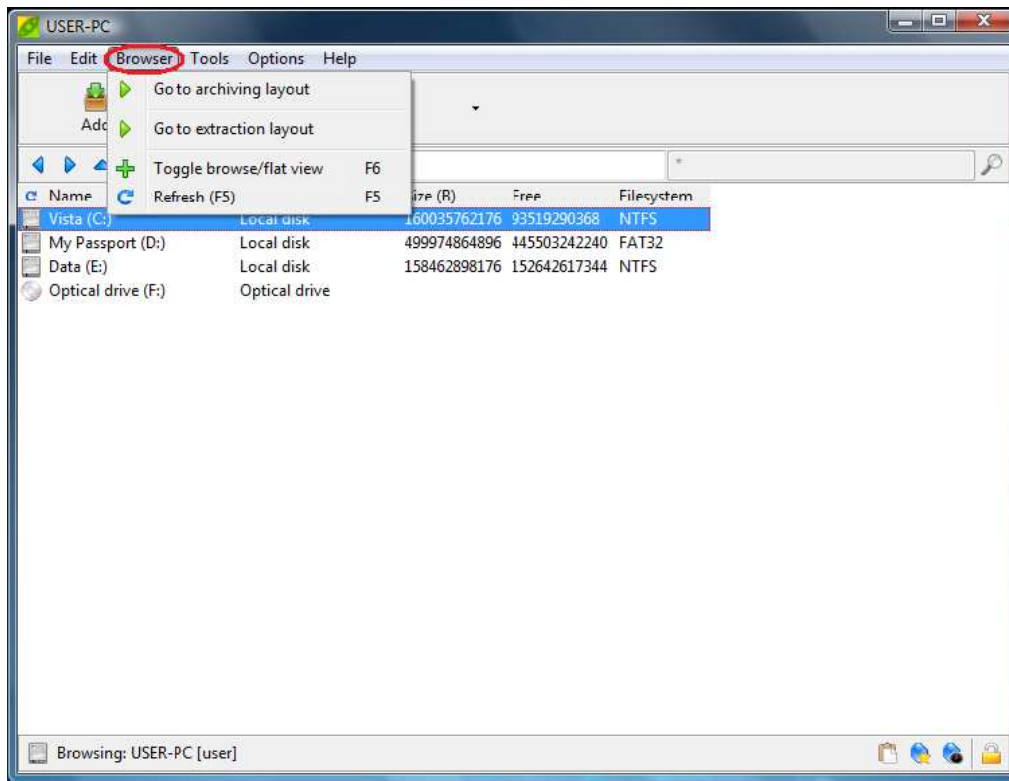
Accessibility to main application interfaces (other than file manager interface) and modification of view mode for objects in file manager interface.

### 3.3.1 Description and Priority

Users are allowed to instantly access other main application interfaces (specifically create archive interface and extraction interface—these features are described in following chapters), as well as changing view mode for objects (archives and files) displayed in file manager interface.

### 3.3.2 Stimulus/Response Sequences

In the initial window of the application (file manager interface), there is a button writing “Browser” on it. By pressing this particular button, opens a submenu with choices that have to do with transferring to main interfaces of PeaZip and selecting view mode for objects (archives and files) displayed in file manager interface.



6. Transfer and view mode selection submenu.

More specifically:

“Go to archiving layout”, leads directly to create archive interface.

“Go to extraction layout”, leads directly to extraction interface.

(Note: the previous two functions are described in detail in following chapters, whereas the sequence of actions that was described is not the only way of approaching those two interfaces).

“Toggle browse/flat view”, displays all together the objects contained in the current path or in the archive.

Finally, “Refresh”, refresh/update of currently displayed content

This particular feature allows users to gain direct access to other main interfaces of PeaZip than file manager interface. In addition, it offers an overview of the objects that are displayed in file manager interface, which helps users to handle them better.

### 3.3.3 Functional Requirements

Functional requirements of this feature are exactly the same as the ones of System Feature 1.

## 3.4 System Feature 4

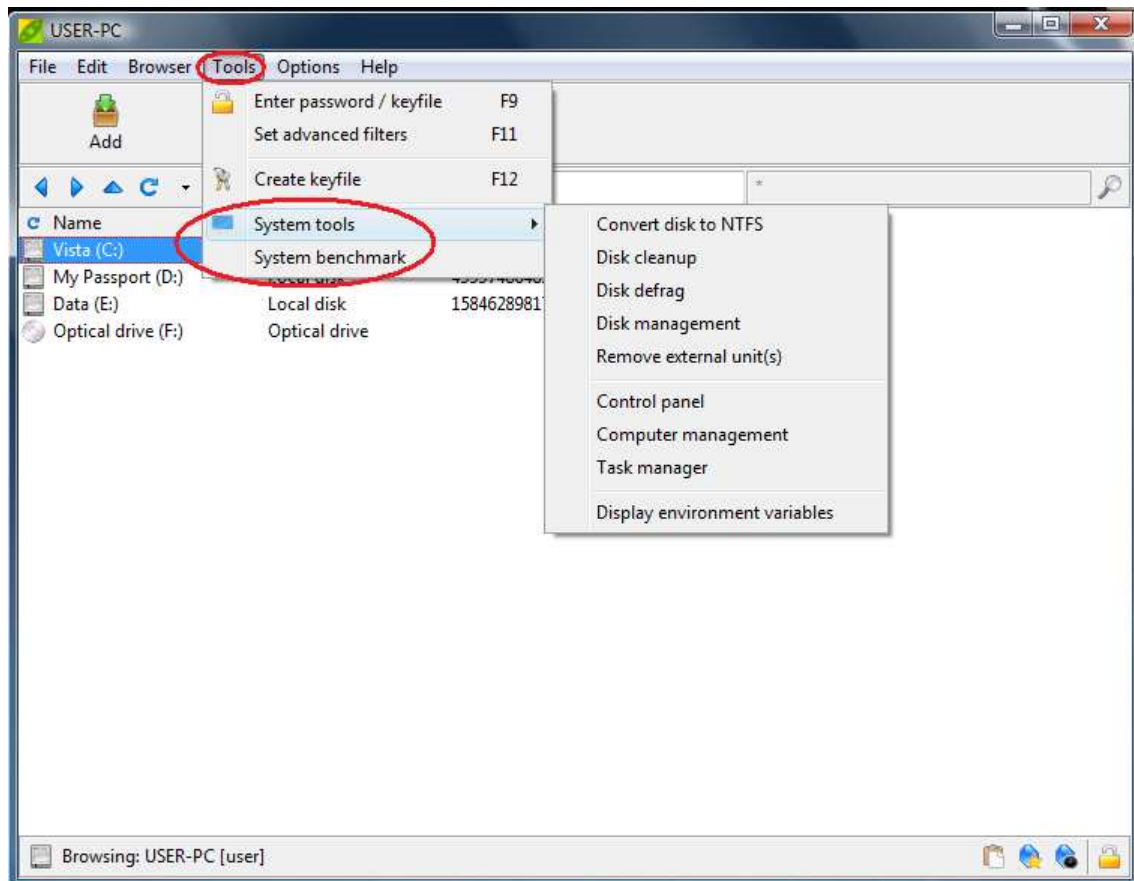
Computer system management utilities.

### 3.4.1 Description and Priority

Users can use, through PeaZip, multiple computer system (both for storage units and the system itself) management tools.

### 3.4.2 Stimulus/Response Sequences

In the initial window of the application(file manager interface), there is a button writing “Tools” on it. By pressing this particular button, opens a submenu with choices that have to do, among others, with gaining access to tool and utilities for computer system management.



7. Computer system management tools and utilities.

More specifically:

“System tools”, collects system’s disk utilities (clean, defrag, manage, remove), system management tools (control panel, computer management, task manager) and displays environment variables (both for Linux and Windows).

“System benchmark” utility, rates the host system in terms of MIPS (millions of integer instructions per second)and Core 2 Duo equivalent speed in MHz.

Through this feature, users can have quick and easy access to basic tools and utilities of computer system management, through PeaZip application. In this way,

users can fine tune every possible procedure that takes place in the computer system.

### 3.4.3 Functional Requirements

Functional requirements of this feature are exactly the same as the ones of System Feature 1.

## 3.5 System Feature 5

File management utilities that are not strictly archiving-related.

### 3.5.1 Description and Priority

Users can access a group of file management tools, that are not strictly archiving-related. Users can choose from a set of utilities, like: secure file deletion, byte to byte comparison between two files, file checking, file split/join, file information display and hexadecimal preview of the content of a file.

### 3.5.2 Stimulus/Response Sequences

PeaZip, offers access to a series of file management tools, from the initial window of the application (file manager interface), as well as from create archive window(create archive interface) and extraction window(extraction interface).

More specifically, functions that are features by the tools mentioned above are:

- Secure file deletion, intended for securely remove files and folders from disk, avoiding possible data recovery. This is implemented by multiple successive passes of the deletion procedure over the storage area of the selected for deletion file.
- Byte to byte file comparison, which spots exactly what the different bytes are and is not susceptible to collisions under any circumstance, even if conditions are highly improbable and very difficult or not practically possible to trigger if a proper hash function is chosen.
- Check files, which is useful for finding duplicate files and checking files for corruption when an original checksum or hash value is known.
- Split file and merge split volumes back to the original file.
- Information display for selected (by users) files. Number of files, older and newer object's date/time, total space occupation, and larger and smaller object's sizes are presented.
- Hexadecimal preview, which allows view of the content of a file represented as hexadecimal values.

Through this set of features, users are allowed to handle files easier and more adequately.

### 3.5.3 Functional Requirements

Functional requirements of this feature are exactly the same as the ones of System Feature 1.

## 3.6 System Feature 6

Archive extraction.

### 3.6.1 Description and Priority

Users can use PeaZip for decompressing the contents of a selected (by them) compressed archive and extract them in a folder. Name and storage space of the folder in the computer system, are up to users to decide. The archive, whose contents are extracted, is neither destroyed, nor deleted and it is not left empty. On the contrary, it retains its content and name and remains saved at the same place of the computer system that was initially stored.

For the procedure of decompression and extraction to be completed, it is necessary that the selected archive is of one of the supported for extraction by PeaZip formats. In case the selected archive is encrypted, user must know and insert password and (if there is one) keyfile in order to have access to the archives contents (for browsing or extracting them).

Read-only (browsing and extraction) formats supported by PeaZip:  
7z, 7z-sfx, ARC/WRC, BZ2/TBZ2, custom, GZ/TGZ, PAQ/LPAQ, PEA, QUAD/BALZ, split, TAR, UPX, ZIP, ACE, ARJ, CAB, CHM, COMPOUND(MSI, DOC, XLS, PPT), CPIO, ISO, Java(JAR, EAR, WAR), Linux(DEB, PET/PUP, RPM, SLP), LHA/LZH, LZMA, Mac(DMG/HFS), NSIS, Open Office files, PAK/PK3/PK4, RAR, SMZIP, U3P, UDF, VHD, WIM, XAR, XPI, XZ, Z/TZ

### 3.6.2 Stimulus/Response Sequences

Decompression/Extraction function is set off and defined in extraction window (which is also going to be referred as extraction interface). Users can get access to this window in one of the following ways:

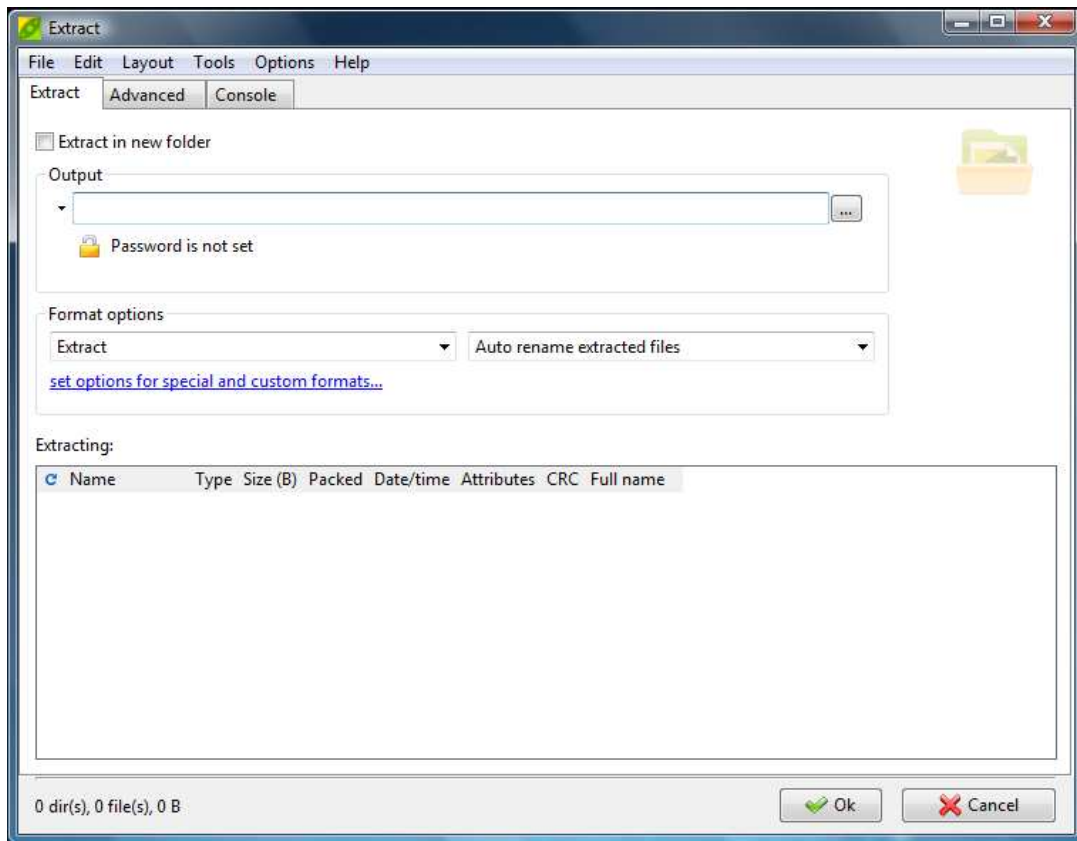
1) By selecting one or more archives that have suitable format for decompression and extraction of their content from file manager interface and then pressing the button writing "Extract" on it, from the toolbar. This is the icon of the button:



2) By pressing the button writing "Browser" on it, in file manager interface and then selecting "Go to extraction layout" from the submenu that appears.

3) By selecting one or more archives that have suitable format for decompression and extraction of their content from file manager interface, clicking the right button of the mouse of the computer system (or the equivalent button of the equivalent input device that the computer system may have) and then choosing "Extract" or "Extract (in new folder)".

4) By selecting one or more archives that have suitable format for decompression and extraction of their content from some area of the computer system (outside of the applications graphical environment), clicking the right button of the mouse of the computer system (or the equivalent button of the equivalent input device that the computer system may have) and then choosing "Extract", "Extract here" or "Extract here (in new folder)" from "Send to" menu.



8. Extraction window (Extraction Interface).

In Extraction window (Extraction Interface), users are given the ability of choosing the storage space in the computer system in which the file that will contain the extracted from the compressed archive objects will be saved, of choosing name for this file (as well as defining what should happen in case of existence of a homonym file or archive in the selected storage space) and of inserting password and (if needed) keyfile, in case the archive is encrypted (locked).

This feature is one of the most important for users, because not only does it offer access to the contents of a compressed, in one of the supported by PeaZip formats, archive, but it allows extraction of those contents in non-compressed format too, in order to be used according to users' desires.

### 3.6.3 Functional Requirements

Functional requirements of this feature are exactly the same as the ones of System Feature 1.

## 3.7 System Feature 7

Archive creation and update.

### 3.7.1 Description and Priority



Users are allowed to compress one or more objects (files or archives) in one or more compressed archive volumes (sizing less or equally to the original ones) in one of the offered for compression by PeaZip formats. Furthermore, users are allowed to update an archive (by adding extra objects-files or archives-to an already existing archive), as well as choose objects that are to be included in an archive.

Name and storage space (in the computer system) for the created archives are defined by users. In cases of updating (adding objects) the name of the compressed file which is updated and its storage space remain the same as they were before the update. The objects that are contained in the created archive are not destroyed, are not deleted and are not left empty. On the contrary, they retain their content and name and remain saved at the same space of the computer system where they were initially stored. Furthermore, encryption ("lock") can be used for the created archives by setting password and (optionally) keyfile. Compression to read-only supported formats is not possible.

Fully supported by PeaZip archiving and compression formats:

7z, 7z-sfx, ARC/WRC, BZ2/TBZ2, custom, GZ/TGZ, PAQ/LPAQ, PEA, QUAD/BALZ, split, TAR, UPX, ZIP

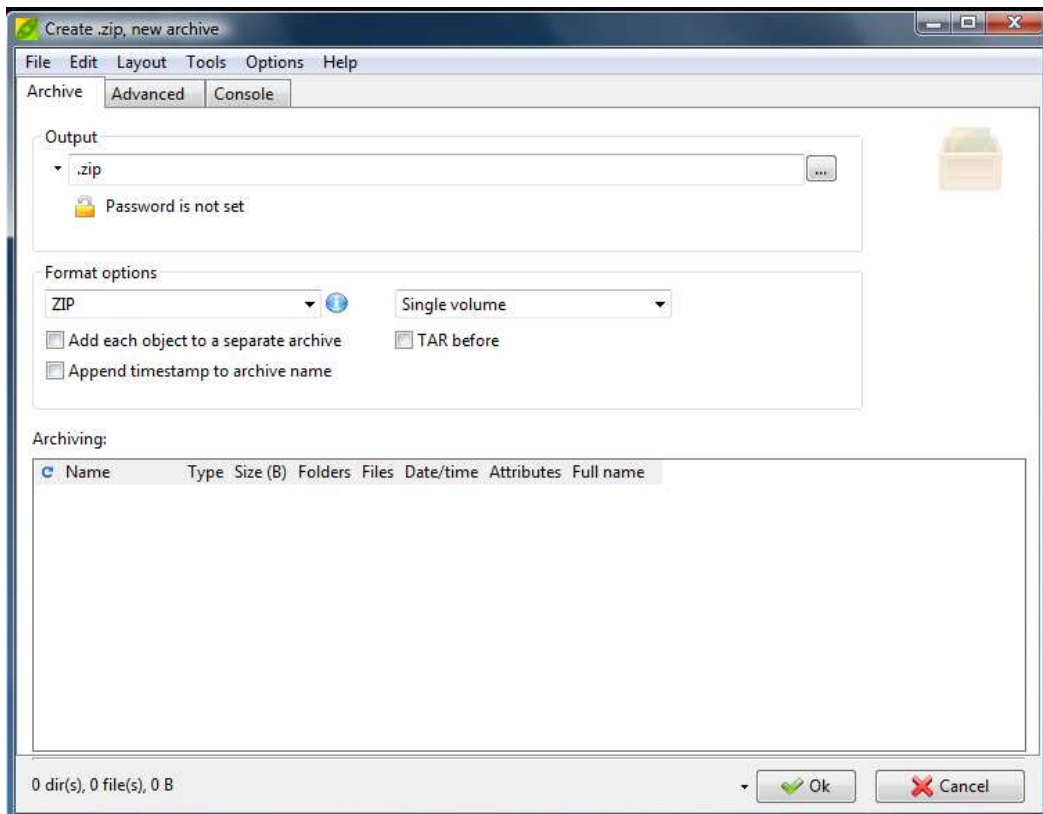
### 3.7.2 Stimulus/Response Sequences

Creating and Updating archives feature is set off and defined in Create archive window (which is also going to be referred as Create archive Interface). Users can approach this window in one of the following ways:

- 1) By pressing the button writing "File" on it in file manager interface and then selecting "Create archive" from the submenu that appears.
- 2) By pressing the button writing "Browser" on it in file manager interface and then selecting "Go to archiving layout" from the submenu that appears.
- 3) By selecting one or more objects to be added to an archive from file manager interface and then pressing the button writing "Add" on it from the toolbar. This is the icon of the button:



- 4) By selecting one or more objects to be added to an archive from file manager interface, clicking the right button of the mouse of the computer system (or the equivalent button of the equivalent input device that the computer system may have) and then selecting "Add" from the submenu.
- 5) By selecting one or more objects to be added to an archive from some area of the computer system (outside of the applications graphical environment), clicking the right button of the mouse of the computer system (or the equivalent button of the equivalent input device that the computer system may have) and then selecting "Add to separate archives" from "Send to" menu.



#### 9. Create archive window(Create archive Interface).

In Create archive window(Create archive Interface), users are given the ability to select compression format (from a list of the supported by PeaZip formats for archiving and compression) for the created archive, choose storage space (in the computer system) where the archive is going to be saved and set archive's name (as well as define what should happen in case of existence of a homonym file or archive in the selected storage space). Moreover, selected objects' data content can be split and be compressed into more than one archive volumes (size of each of them is defined by user). Furthermore, timestamp can be appended to the created archive's name for archiving and backup purpose. Finally, encryption("locking")of created archives is available, by setting password and (optionally) keyfile to them..

Archive creation and update feature is a basic PeaZip feature, as it essentially allows users to save storage space on their computer systems by offering high compression formats, as well as including multiple objects' content (which can be extracted in their initial, non-compressed format) in one single compressed archive. This makes handling and managing multiple objects as a single unit possible. Hence, the double advantage that this feature offers is obvious.

The additional utility of spitting compressed archives in volumes that is offered to users in terms of this feature, allows size adjustment of the created file, while the utility of joining them, brings contended data to their initial state, so that decompression and extraction is possible. In this way, users are able to flexibly manage archives and adapt application's use to their needs, since a wide range of choices is offered by PeaZip.

### 3.7.3 Functional Requirements

Functional requirements of this feature are exactly the same as the ones of System Feature 1.

## 3.8 System Feature 8

Support of drag and drop between system and application.

### 3.8.1 Description and Priority

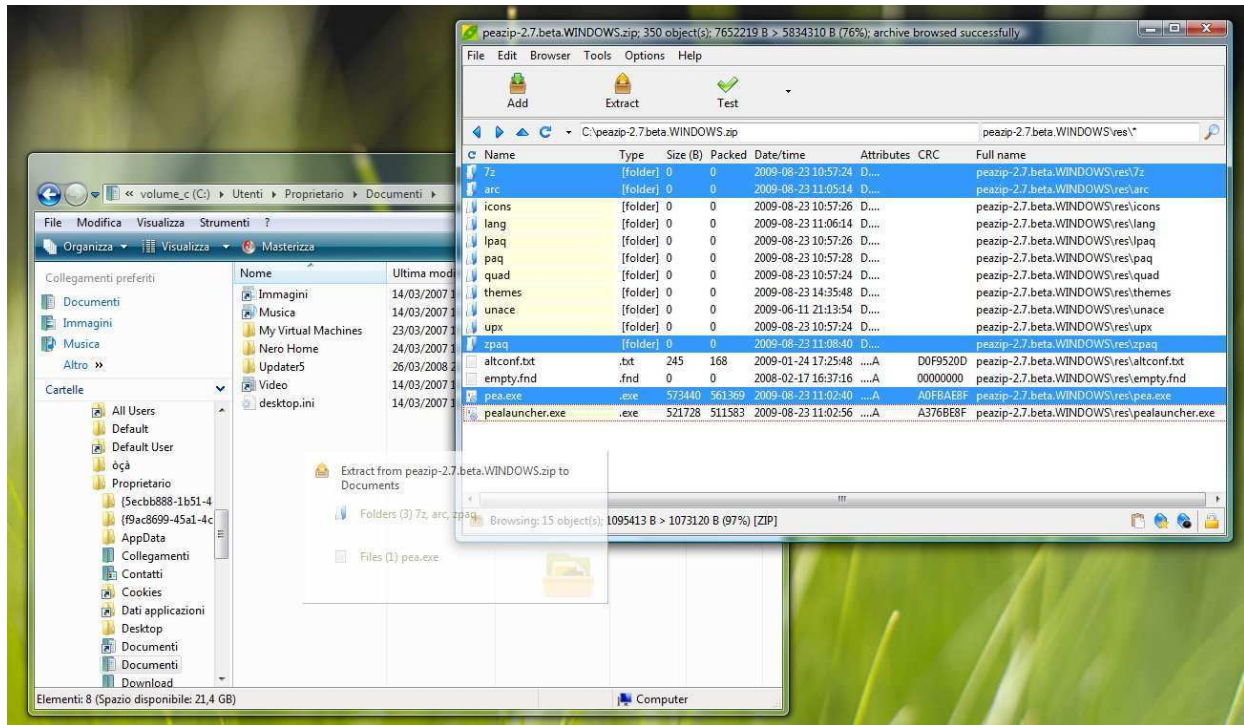
Users can drag and drop objects (files or archives) between any computer system space and the application. Application's interfaces that support drag and drop, are file manager interface, create archive interface and extraction interface.

### 3.8.2 Stimulus/Response Sequences

PeaZip supports drag and drop for object transfer between computer system and the interfaces of the application. Application's interfaces that support this feature, are file manager interface, create archive interface and extraction interface.

Specifically:

- When files and folders are dragged and dropped to the file manager, they get listed in the archive creation interface (as if they were selected and added with "Add" button, as it was described in previous chapters), allowing fine tuning of the function before confirming or canceling it. In the same way, objects that are dragged and dropped to file manager interface while browsing an archive, will be added to the current archive, if the archive format allows modifications (e.g. adding objects to an archive format that is supported for reading only will not be possible).
- Dragging an archived object (file or archive) from PeaZip to the system, will extract it to the location (of the computer system) where it is dropped. If dragged objects are contained in a compressed archive, then they are automatically decompressed before being extracted to the location where they are dropped. If the dragged objects are not contained in a compressed archive, they are just copied to the location where they are dropped.



10. Support of drag and drop (here from application to system).

This feature allows users to fast and directly set off basic PeaZip's functions, making PeaZip even handier.

### 3.8.3 Functional Requirements

Installation of no other application is required, for PeaZip to manage this function. The only functional requirements are:

- REQ-1: Operating system on the computer system, for dragging and dropping objects from computer system to the application.
- REQ-2: MS Windows (any version) operating system on the computer system for dragging and dropping objects from the application to the computer system. Other operating systems (with which PeaZip is compatible), do not support this function of this feature.

## 3.9 System Feature 9

Two factor authentication (password and optionally keyfile).

### 3.9.1 Description and Priority

PeaZip allows users to encrypt ("lock") archives during creation or updating, by using password which is demanded by PeaZip (or other applications of the same use) and should be inserted, in case some user wants to gain access to an encrypted ("locked") archive in order to manage it (e.g. browse it, update it, extract its content). For higher security reasons, PeaZip offers users the ability to use keyfile for archives encryption, in addition to the password. Finally, PeaZip can generate a random

password and create a random keyfile. Obviously, apart from encryption, PeaZip supports decryption (“unlock”) of encrypted files.

### 3.9.2 Stimulus/Response Sequence

In case a user wishes to “lock” an archive (during creation or update process) by setting password and (optionally) keyfile to it, that can be achieved in one of the following ways:

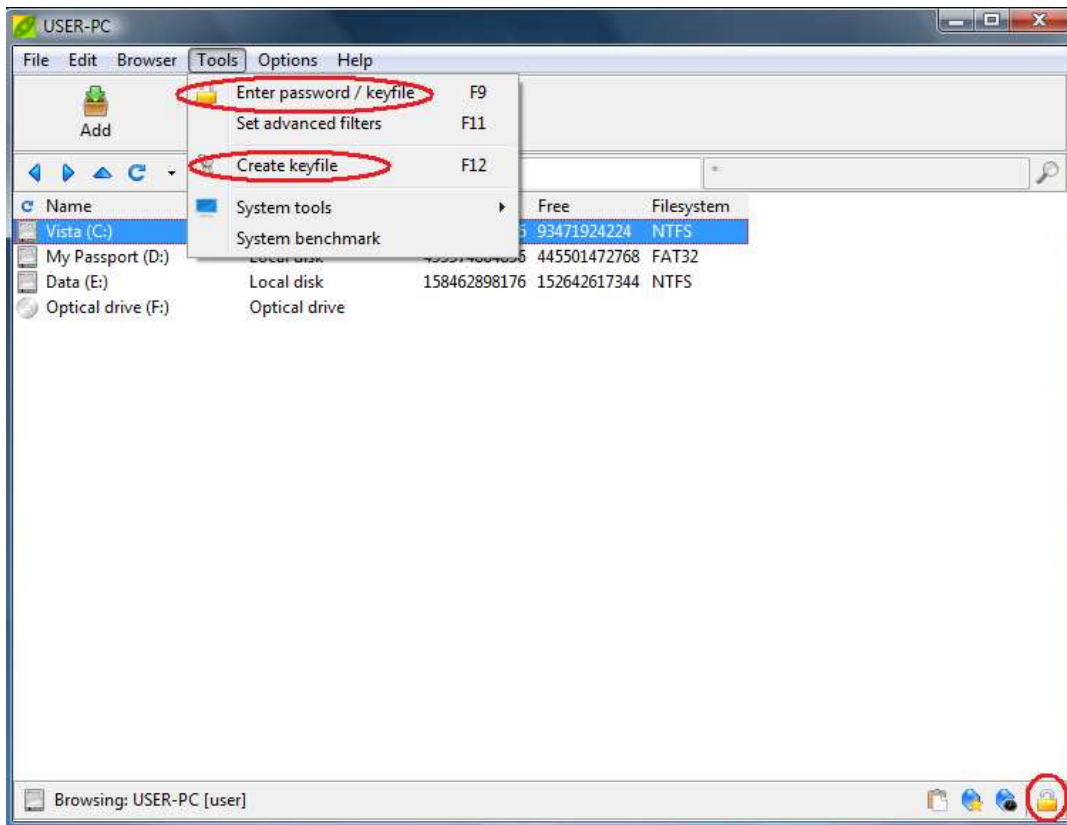
-by pressing, during the archive creation process, the icon with the lock on it and set password and (optionally) keyfile, according to user’s preference.

-by selecting, the archive to be updated, that needs to be “locked” from file manager interface, pressing the button writing “Tools” on it and selecting “Enter password/keyfile” from the submenu. Password and (optionally) keyfile may then be set in the window that appears.

-by selecting the archive to be updated, that needs to be “locked” from file manager interface and pressing the icon with the lock on it, which appears on the status-bar (bottom right corner). Password and (optionally) keyfile may then be set in the window that appears.

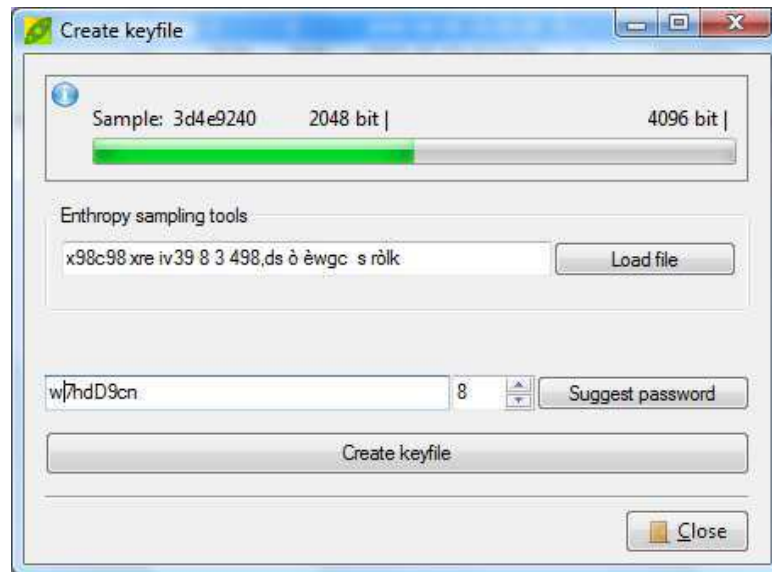


11. Set password and keyfile.



12. Buttons for accessing encryption feature.

-in cases that users wish to use password and/or keyfile that the application has created, they have to select the archive they wish to “lock” from file manager interface, press the button writing “Tools” on it and then select “Create keyfile” on the appearing submenu. The only thing left is setting the suggested password and (optionally) keyfile to the (created or updated) archive in one of the ways mentioned above.



13. Password and Keyfile generation utility.

This feature is really important for the security of the managed archives and their content data. It allows users to set protection over managed archives and ensure in a way, that no unauthorized user will have access to them.

### 3.9.3 Functional Requirements

Functional requirements of this feature are exactly the same as the ones of System Feature 1.

## 3.10 System Feature 10

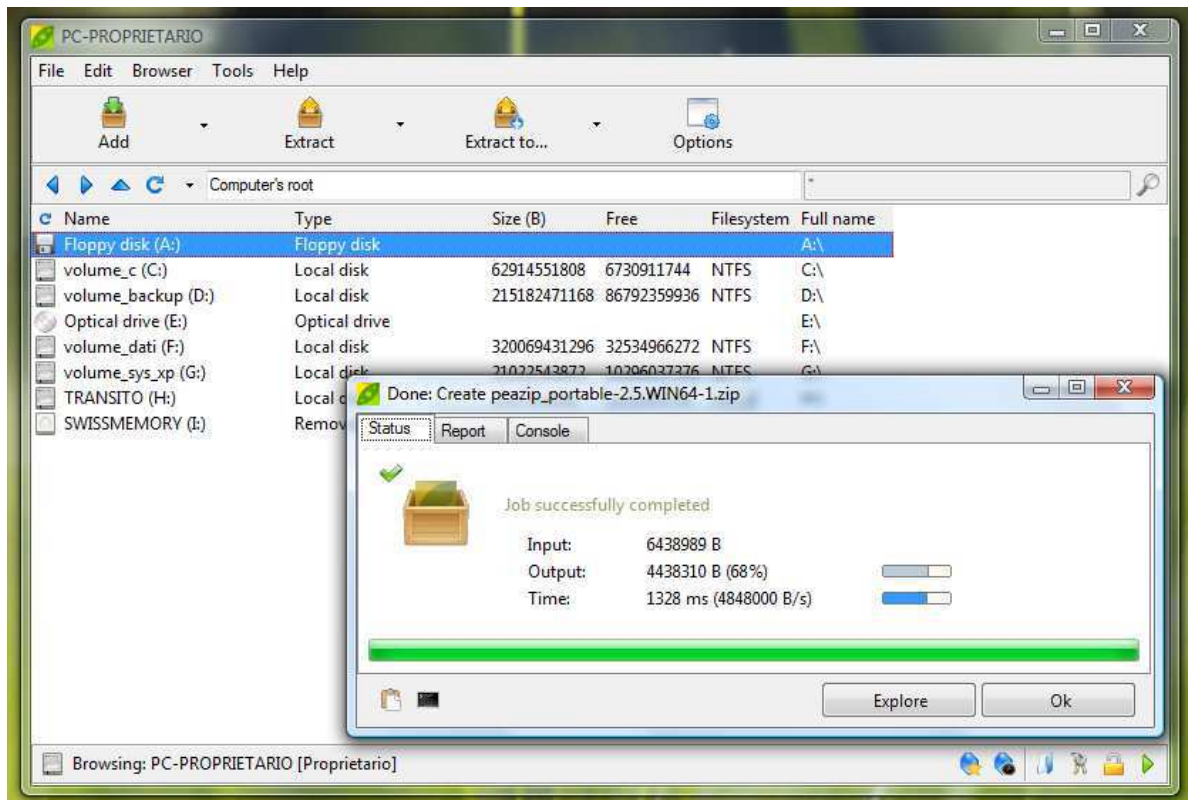
Graphic display of currently executed functions.

### 3.10.1 Description and Priority

PeaZip offers graphic display of the progress of any currently executed through/by it function, through its graphic wrapper, named PeaLauncher. In PeaLauncher's window, information about the progress of any currently executed function as well as information about its overall results (after the end of it) is displayed.

### 3.10.2 Stimulus/Response Sequences

PeaZip allows users to monitor at any time the progress and the status of any of its functions that is being executed, as well as displaying information about the results of those functions on the archive or file for which they were executed, information about the contents of those archives or files and information that have to do with the execution itself (like running time).



#### 14. PeaLauncher, graphic wrapper.

Information about an object (file or archive) are displayed on PeaLauncher's window, in case of selection (by users) of the Test/Check feature (as described in previous chapters) for this object.

This feature allows users to have direct and inspectional knowledge of the progress of any ongoing functions of PeaZip at any time, as well as their results on computer system's objects.

### 3.10.3 Functional Requirements

Functional requirements of this feature are exactly the same as the ones of System Feature 1.

## 3.11 System Feature 11

Feature Settings.

### 3.11.1 Description and Priority

Users are allowed to make modifications over offered by PeaZip functions, so as to adapt them to their preference and cover their needs more adequately. In general, available settings pertain to: application language, way of execution of the offered by the application utilities, PeaLauncher, character encoding, supported archiving and compression formats, file and computer system management tools and graphical layout of the application.



### 3.11.2 Stimulus/Response Sequences

In the initial window of the application (file manager interface), there is a button writing "Options" on it. By pressing this particular button, appears a submenu with choices that have to do with settings of parameters of PeaZip's features, according to users' preferences.

Specifically:

"Run as different user", closes current PeaZip instance and opens a new one under alternative user profile.

"Localization", quickly changes application's language (the new selection can be made from a list of supported by PeaZip languages).

"Settings", lead to Settings window (Settings Interface). In Settings Interface, users are able to:

- change application's language, choosing from a list of supported by PeaZip languages.

- define the path for the location of the computer system that is going to be considered by PeaZip as user's Desktop.

- choose the way backend command-line applications (featured by PeaZip) will run: console interface, graphical interface or combination of both.

- set policy about PeaLauncher window's behavior after some function's termination.

- have access to options related to character encoding.

- have choices on recently managed archives history utility.

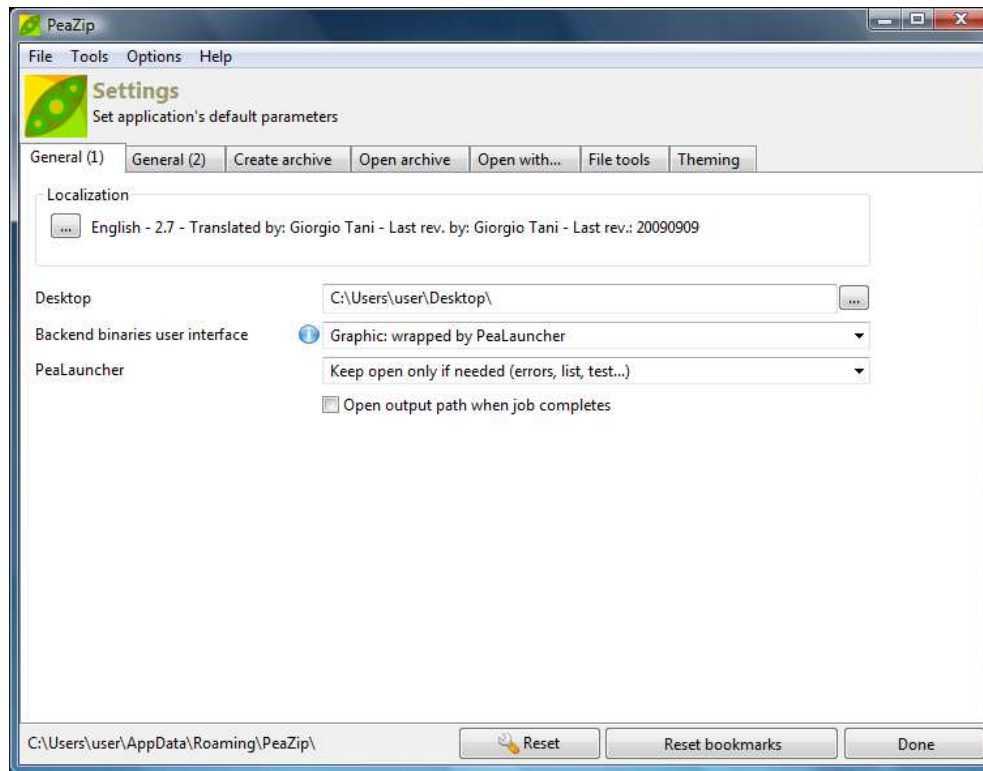
- choose a selection of users' favorite archiving and compression formats to be offered for quick selection and which format should be used as default in create archive interface.

- configure parameters of the features of archive creation and archive content extraction.

- choose applications for opening/previewing contents of managed by PeaZip archives.

- configure parameters of computer system's files and archives management tools.

- adapt the application's graphical interface to their needs, modifying color, icons, fonts, window opacity and size for GUI, and toolbar buttons (buttons that will be in the toolbar).



15. Settings window (Settings Interface).

With this feature, users can adapt PeaZip's features to their needs and preferences, achieving a more pleasant and efficient use.

### 3.11.3 Functional Requirements

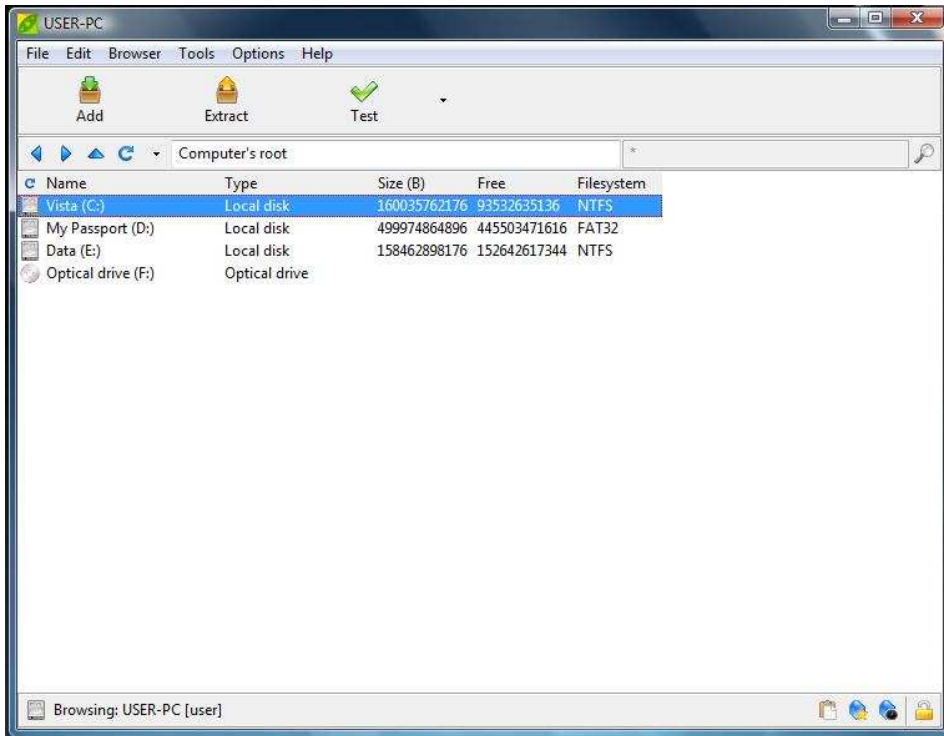
Functional requirements of this feature are exactly the same as the ones of System Feature 1.

## 4. External Interface Requirements

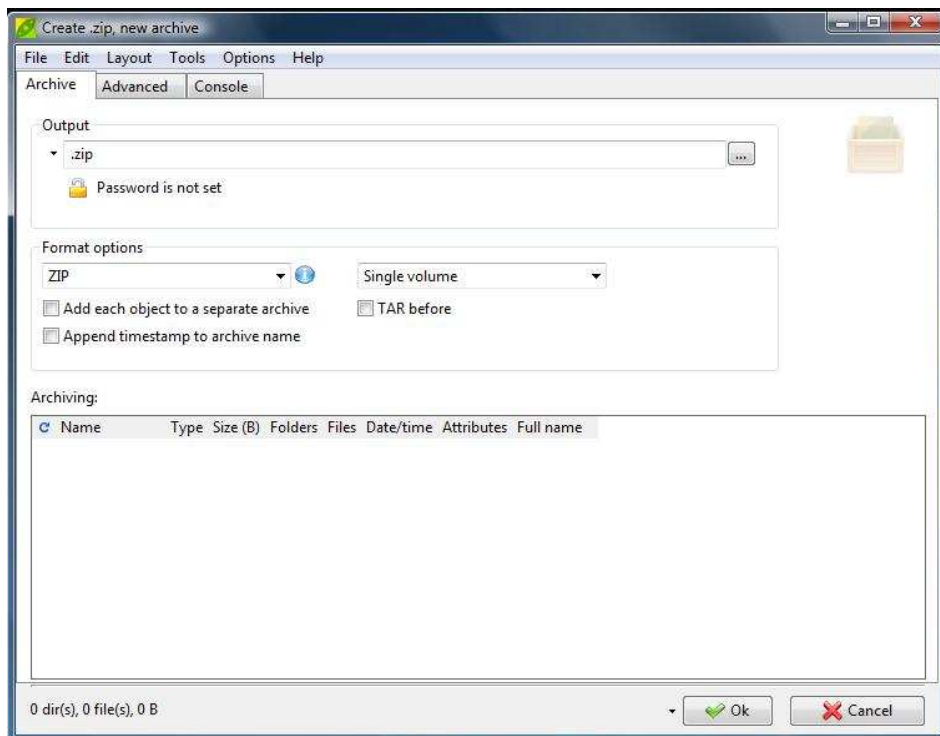
### 4.1 User Interfaces

One of PeaZip's advantages is its user interfaces, as they are extremely functional, easy to use and can be handled even by users with very little knowledge and experience on using computer systems. PeaZip's User Interfaces include:

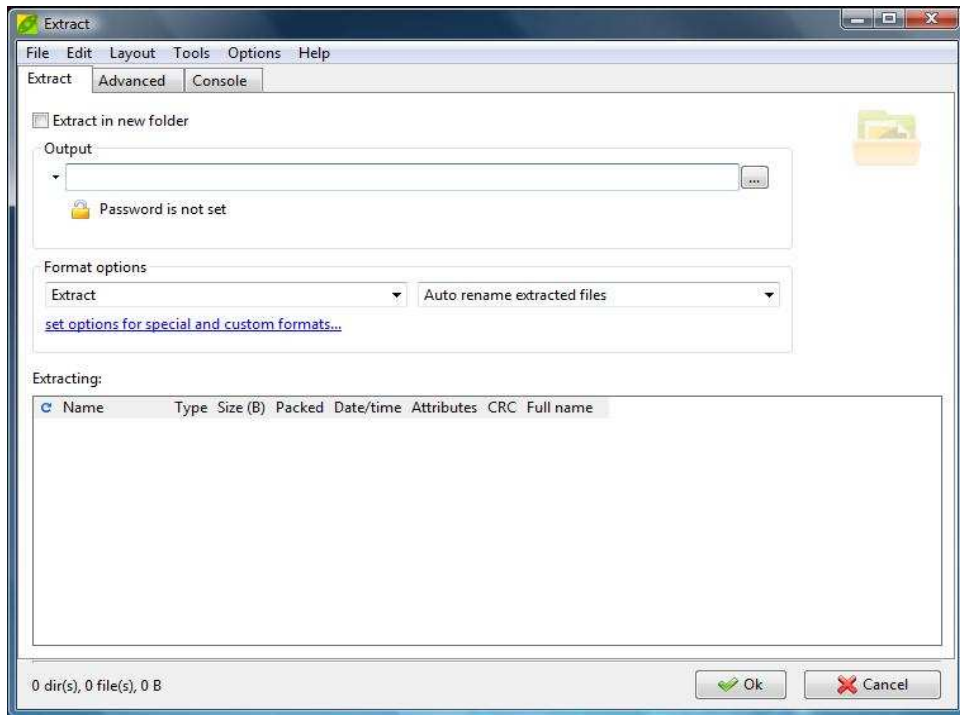
- File manager Interface:



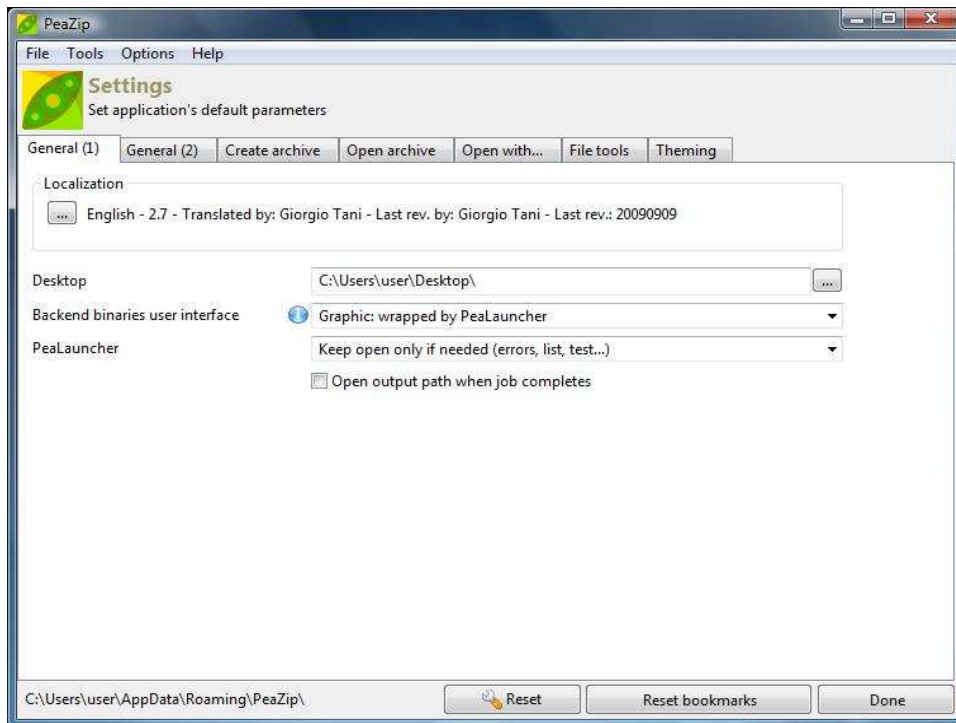
- Create archive Interface:



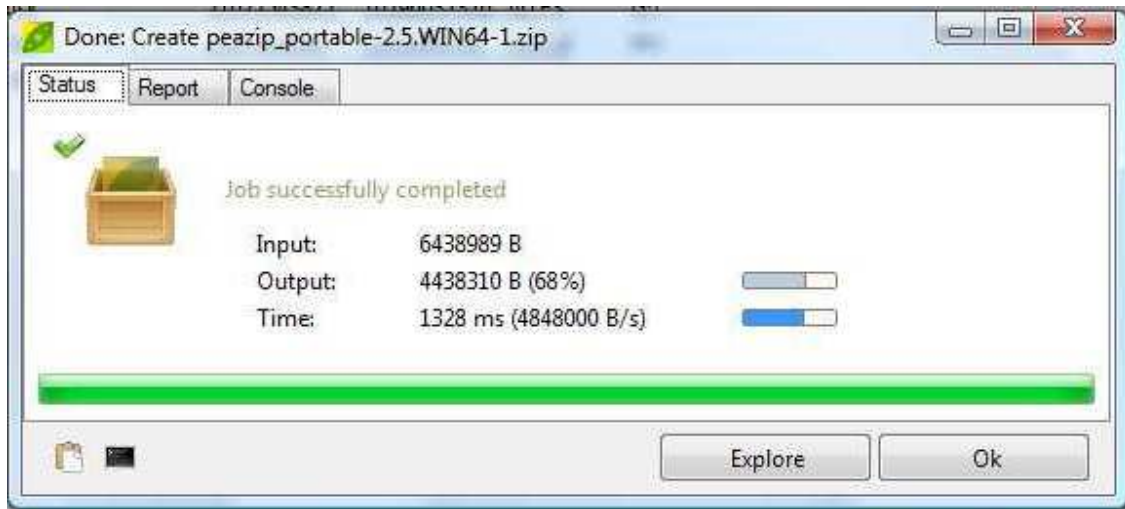
- Extraction Interface:



- Settings Interface:



- Graphic display of information and currently executed functions' progress window (PeaLauncher):



Moreover, it supports keyboard shortcuts. Here ensues a list of them:

### File manager's keyboard shortcuts

File/archive browser supports following keyboard shortcuts; some functions are format-specific and will be ignored if not supported for the current archive type.

#### Functional keys:

- F1 - help
- F2 - browse desktop / Ctrl+F2 browse user's home / Shift+F2 browse computer's root / Ctrl+Shift+F2 browse archive root, if browsing inside an archive (otherwise browse computer's root)
- F3 - recursive search / Ctrl+F3 non recursive search (search here)
- F4 - up one level
- F5 - refresh
- F6 - toggle browse/flat view
- F7 - browse most recently visited item (Ctrl, second, Shift, third)
- F8 - browse first item in bookmarks list (Ctrl, second, Shift, third)
- F9 - set password/keyfile
- F10 - menu
- F11 - set advanced filters
- F12 - create keyfile or random password

#### Navigation:

- Toggle browse mode / flat view mode - \* or F6
- Go to computer system's or archive's root - Ctrl+R
- Search (in this folder and subfolders) - F3
- Search in this folder only - Ctrl+F3

Browse most recently visited item - F7  
Browse first item in bookmarks list - F8  
Open directory/archive - < or Enter or double click on the folder/archive  
Up one level - > or Ctrl+U or click on blue arrow icon or F4  
Go to object's path - Ctrl+P (useful in flat view and search/filter mode)  
Go back in history - Ctrl+B or Backspace  
Forward in history - Ctrl+F

**Extract:**

Extract all content - Ctrl+A  
Extract displayed content - Ctrl+D  
Extract selected content - Ctrl+S  
Extract to new folder (functions same as previous ones) - Ctrl+Alt+A/D/S  
Extract selected - Ctrl+Enter  
Extract selected to new folder - Shift+Enter

Note: "extract selected" extracts the entire selected archive(s) if browsing the file system, and selected object(s) if browsing an archive.

**Extract and open / preview (on selected objects):**

Extract and open with PeaZip - Ctrl+Z  
Extract and open with default application - Ctrl+O  
Extract and open with ... - Ctrl+W  
Preview (functions same as previous ones) - Ctrl+Alt+Z/O/W  
Preview selected - Enter or double click

**File Tools (when browsing the file system):**

Compare selected object with... - =  
Checksum and hash of selected objects - ?

**Modify:**

Quick delete / Delete form archive - Del  
Secure delete (files only) - Shift+Del  
Refresh - F5 or icon in first column of titles' bar  
Cut - Ctrl+X  
Copy - Ctrl+C  
Paste - Ctrl+V  
Cancel current selection and clear clipboard - Esc

**File manager's mouse controls:**

**Double click:** preview selected object with associated application  
**Right click:** activate file/archive browser's context menu;  
**Middle button click:** extract selected object(s)

**Keyboard shortcuts for archive extraction and creation**

### Operations:

Archive / Extract (as Ok button) - Ctrl+Alt+Enter  
Cancel (as Cancel button) - Shift+Backspace

### In extraction layout:

Toggle extract to new folder on/off - Shift+N

### In archiving layout:

Change archive type to 7Z - Shift+7  
Change archive type to BZip2 - Shift+B  
Change archive type to GZ - Shift+G  
Change archive type to 7Z self extracting - Shift+S  
Change archive type to TAR - Shift+T  
Change archive type to ZIP - Shift+Z

### File tools:

Checksum/hash selected files - ?  
Compare selected file with... - =

### Archive layout-related:

Add file(s) - Ctrl+A  
Add folder - Ctrl+F  
Add from search dialog (drag to archive) - (context menu only)  
Load archive's layout - Ctrl+L  
Save archive's layout - Ctrl+S  
Open object with default application - Ctrl+O or Enter or doubleclick  
Open object with ... - Ctrl+W  
Explore object's path - Ctrl+E  
Remove selected object from archive's layout - Cancel or Ctrl+R or Ctrl+Backspace  
Refresh - F5 or refresh icon on the left of layout's titles row

### Mouse controls for archive extraction and creation:

**Double click:** open selected object with associated application or browse folder

**Right click:** activate "create layout" context menu

## 4.2 Hardware Interfaces

For PeaZip's installation and use, requirements are almost zero. It can run on any computer system, regardless of the type of operating system used. The only thing PeaZip requires, as far as hardware is concerned, is an x-86 compatible CPU, due to some performance critical sections written in ASM.

## 4.3 Software Interfaces

PeaZip is compatible with:

- All 64-bit versions of Microsoft Windows
- All 32-bit Microsoft Windows(95/98/NT/2000/XP/Vista)
- All POSIX(all versions of Linux/all versions of BSD/all UNIX-like operating systems)

Moreover, PeaZip is available as source code that is compatible with almost any operating system. It is obvious, that PeaZip is independent from the operating system of the computer system on which it runs.

To conclude, all needed software invoked by the frontend is included in PeaZip packages (available under suitable licenses, as open source or royalty free) so no custom package is needed to be installed to make PeaZip work (with the possible exception of some standard gtk/gdk related libraries needed to run PeaZip, Gwrap and Pea binaries, which may be missing in some computer systems, but are well known, trustable and widely available).

## 4.4 Communications Interfaces

PeaZip is not a web application, thus its installation and use does not require any communication interfaces' feature. However, connection to the Internet would be considered useful for users, as, through it, they would be able to access on-line help and information about PeaZip.

# 5. Other Nonfunctional Requirements

## 5.1 Performance Requirements

Do not exist.

## 5.2 Safety Requirements

This application should function even in cases of wrong data insertion or wrong settings. In case of error it should provide users with appropriate help messages.

## 5.3 Security Requirements

Extraction (this feature is described in previous chapters)of the content of encrypted(locked) archives through PeaZip, shouldn't be allowed without inserting the correct password and (if existing) keyfile for authentication. Moreover, recovering the password and the keyfile that one PeaZip user has inserted or set to an archive(this feature is described in previous chapters)by any other user of the computer system or the application, through the application itself or in general the computer system. Finally, no data remains from data that have been selected to be securely deleted should be left in the storing area of the computer system after the end of the procedure of secure deletion (described in previous chapter), in case of selection of this feature.



## 5.4 Software Quality Attributes

Any user should be able to use PeaZip without any specific knowledge or experience over using computer systems, by reading user manuals(help documents, requirements specification document, mini tutorials) and seeing messages and warnings that the application provides with.

# 6. Appendix

## Appendix A: Definitions, Acronyms and Abbreviations

- **(Application)Frontend:** The visible, user entry part of an application. Front-end and back-end are generalized terms that refer to the initial and the end stages of a process. The front-end is responsible for collecting input in various forms from the user and processing it to conform to a specification the back-end can use. The front-end is a kind of interface between the user and the back-end.
- **GUI:** Graphical User Interface
- **Tutorials:** A tutorial is a method (usually documents that refer to the topic) of transferring knowledge about a topic and may be used as a part of learning (this topic).
- **Developers:** Programmers/Program creators
- **POSIX:** Portable Operating System Interface for UNIX. It is the name of a family of related standards specified by the IEEE to define the application programming interface (API), along with shell and utilities interfaces for software compatible with variants of the UNIX operating system, although the standard can apply to any operating system.
- **CPU:** Central Process Unit
- **ASM:** Assembly Programming Language
- **Gtk/Gdk:** Computer graphics libraries
- **MIPS:** Millions of Instructions per Second. A unit for measuring the execution speed of a computer system's CPU.
- **Root directory:** In computer file systems, the root directory is the first or top-most directory in a hierarchy.
- **Home directory:** In computer file system, home directory is the directory including current computer system's user's personal files and archives.
- **Checksum:** A fixed-size datum computed from an arbitrary block of digital data for the purpose of detecting accidental errors that may have been introduced during its transmission or storage.
- **Hash:** Typically, a list of hashes [http://en.wikipedia.org/wiki/Hash\\_function](http://en.wikipedia.org/wiki/Hash_function) of the data blocks in a file or set of files.

### Appendix B: Analysis Model

