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Rollback and Backup Solution for Ubuntu

Greetings!

I wish to take on the development of a Rollback and Backup solution for Ubuntu. This suite of tools would allow the user to take backups of specific partitions or entire hard disks, in addition to being able to take snapshots of the system state for restoration at a later time.

The tool would benefit a vast majority of Ubuntu users. Ubuntu currently lacks a tool such as this, and hence a user-friendly front-end to the tool would help many non-tech users in performing simple backup or rollbacks to their system.

Deliverables

Required

1. Improved python bindings to DAR[1] and a custom backend to perform partition-level backups.

2. An improved Gtk+ GUI based on HomeUserBackup[2] for allowing the user to take backups and create rollbacks in the DAR format.

3. Create a command line tool that may be invoked before system start-up to perform a "rescue effort".

Optional

4. Create a Backup Daemon that ensures backups/rollbacks are taken at regular intervals based on preferences of the user.

5. Create an extension to the GUI, that would allow writing the backup or rollback files onto media such as CD-ROMs, DVDs or USB Drives.

6. Non-code deliverables include documentation and tutorials that will elaborate on the usage of the tools developed.

Project Details

The project will be fundamentally written in Python, and C will be used only when necessary.

The first step in implementing the project would be to create a package, that would provide a set of functions for retrieving files and packaging them to create the backup, in other words, form the back-end of the application. To achieve this, the python bindings to DAR will be improved and fine-tuned for our specific purpose. Since backup is planned to be on the partition-level, relevant code from the PartImage[3] project will also be included in the package.

For rollback purposes, it is important to first identify which files and folders are critical to the functioning of the system. Those files and folders in addition to customization added by the user, and some state information would comprise of a rollback.

After the back-end is ready, a Gtk+ GUI for HomeUserBackup that uses the backend just created will be prepared to allow the user to actually create or restore backups and rollbacks.

Another important front-end tool would be the one that can be invoked before the system boots, so that previously taken rollbacks or backups can be restored in case of a crash. This component may have to be coded in C and ncurses.

The optional deliverables in this proposal are beyond the scope and time frame of the Summer of Code program, but they are things that I would like to work on after the program concludes.

Project Schedule

The project is planned to be split across 5 major Phases:

1. **Analysis** (May 23 - June 20):
   This phase involves interaction with the mentor to estimate the exact requirements. The exact composition of a rollback will be determined in this phase. Project infrastructure such as code repository and website may also be setup.

2. **Development Part I** (June 21 - July 10):
   This phase will involve the development of improved python bindings to DAR and PartImage, that will enable the creation of a python package that creates backups and rollbacks in the DAR format.

3. **Development Part II** (July 11 - July 31):
   This phase involves the development of a Gtk+ frontend to the package created in the previous stage, based on ideas already floated by the HomeUserBackup project (excluding the Daemon for regular backup reminders, which is a part of the optional deliverables).

4. **Development Part III** (August 1 - August 10):
   This phase involves extension of the front-end created previously. The front-end can be invoked before system start-up to restore backups or rollbacks as required. This part may be have to be coded in C and ncurses.

5. **Testing and Wrap-Up** (August 11 - August 21):
   This phase involves thorough testing every aspect of the finished tool. The tool would also be packages appropriately for inclusion in Ubuntu.

Bio

I am a second-year undergraduate at the Malaviya National Institute of Technology, Jaipur, India. I am pursuing my B.Tech. in Computer Engineering at the institute. I have been passionate about computers since my childhood and have been a free software advocate for around 2 years now.

I am an active developer in several open source projects, the most prominent of which are GNU Parted[4] and PHP-GTK 2[5]. My involvement in both these projects has brought me an in-depth knowledge of C, Gtk+ as well as general programming principles, which I believe are essential requirements for this project. This also means that I am very comfortable and experienced with the open-source development methodology and environment, and hence will have no trouble merging in with the Ubuntu team.

I was offered CVS commit access to both the PHP and GNU Parted repositories within a month of my involvement with them, and I believe this goes to show the quality and timeliness of my coding efforts.

I have been dabbling around with Python for a few months. Although I don't have any professional Python experience, I learn fast! I don't think you'll find me lacking in any technical skills required for this project.

I would love to continue offering my services as a developer to Ubuntu even after the Summer of Code program concludes. I plan to take full responsibility for the maintenance of the tools that I create, and add more features to it, as mentioned in the optional deliverables of this proposal. I will strive to be an asset to the Ubuntu team.

You can find more details about me and the projects that I am currently involved in, at my website. Please don't hesitate to contact me if any part of this proposal is not clear to you.

Thank you for considering this proposal, and for your time!

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[1] http://dar.linux.free.fr/#pres
[2] https://wiki.ubuntu.com/HomeUserBackup
[3] http://www.partimage.org/Main_Page
[4] http://www.gnu.org/software/parted/
[5] http://gtk.php.net/

My CV   : http://www.kix.in/soc/resume.pdf
My Website : http://www.kix.in/

The latest version if this proposal is available at:
http://www.kix.in/soc/ubuntu-backup.pdf