THE AMERICAN UNIVERSITY IN CAIRO

الجامعة الأمريكية بالقاهرة

CSCE 345/3401- Operating Systems

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Project I: Disk Analyzer for Linux

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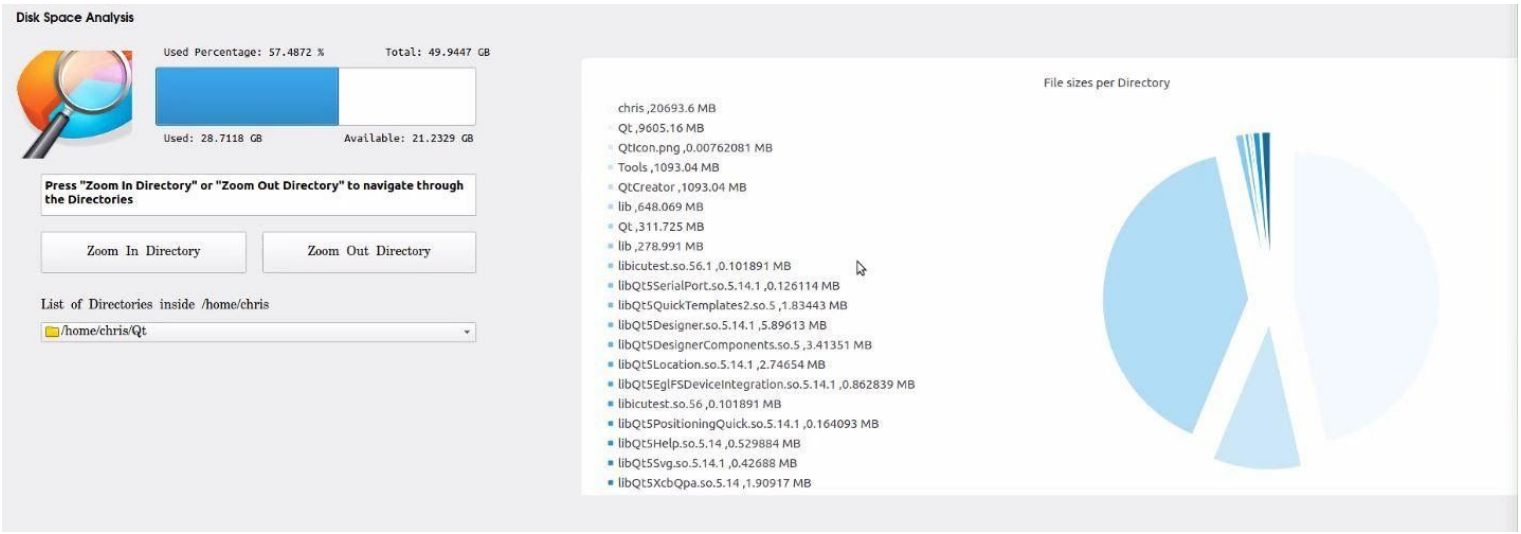

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Code Description:

We created a vector of node struct which is located in the header file where we stored the files and directory information; the name; name of the file or directory, path, size , type; F for file and D for directory, and parent of each file and directory. Then we created a recursion function “listdir” that lists all the subdirectories and files under a given directory by going through all the files and directory of a given path, which in our case would be mainly the root. The name is the path to the directory, ans: vector of node objects to store details of files or dir. lastSlash: To avoid redundant '/' in path. We tested our backend code and integrated this code with the QT code that has a mainwindow header and cpp file controlling the mainwindow user interface where we used a pie chart and combo box that displays the sizes of specific parts of the disk that the user wants to know. Also, there’s a feature where the user can go out and in any of the directories as much as he wants and it shows the folders, and files sizes each time. We connected the combo box with the pie chart that when the user chooses a certain directory to zoom in it the pie chart uses this directory and displays the content of it along with their sizes and the same thing happens when the user zooms out. Moreover, we made use of the libraries brought with Qt and we didn’t have to use any external libraries brought from somewhere else to make our code more readable and use less space.

Challenges:

We weren’t sure at the beginning what **data structure** to use.We thought of using a static array; however, it would be very effecient since we’ll have to allocate a huge

number of indexes at the beginning of the program,then we decided to use vectors because we'll just need to add the file when needed and we don't have to allocate space for it before.Time Management was one of the challenges we have faced during the project. It was hard for us to communicate during these conditions; Zoom meetings were a bit hectic since internet connection was poor, and we have to start a new meeting every 45 minutes. In addition to integrating the c++ code with the QT code was problematic since we faced many errors but we finally managed to debug and fix the errors as well as merging our work that we did separately. Another issue was not being able to access the lab that led to a huge issue and facing difficulty installing Linux on our machines. Using QT for the first time but we managed to watch tutorials online that helped us implement our code.

Survey of Disk Usage:

1-Disk Usage Analyzer OR also known as "Baobab"

This Disk usage analyzer is a good program and it performs what it says;however, it doesn't offer anything more than that. A disadvantage for example is that there is no way to directly open a folder unless you do it manually from the directories File manager.

2- xdiskusage

Such Disk Usage Analyzer is basic and very simple;yet, it has so much better performance and presentability than many other similar programs. It uses a tree model to present the partitions/directories. The main pitfall of this program is that it doesn't have good graphics but it is lightweight, which definitely can make up for it. The user

can choose whether to download the executable file and run it straight away or download the source code and compile it.

3- Linux Ncurses Disk Usage- command-line tool

This tool offers many options for what a user expects in a Linux disk usage analyzer. The Best Advantage about this program is that it is very lightweight and very fast.Moreover, it saves great bandwidth in general. However, it is not a graphical friendly program for a normal user. This means that the program needs someone who's got some background information and knows how to use commands in linux.

References:

https://www.youtube.com/watch?v=I96uPDifZ1w

https://www.youtube.com/watch?v=MHn3ZTWcyXk