

ledit is a simple image editor that allows users to open, edit, and save bitmap images. It is implemented in C using the gfx graphics tool and can be compiled and run on Linux using the gcc compiler.

The main function reads the user's input and performs the corresponding image editing operations. The available operations are:

- E (edit): Opens the specified bitmap file and a window on the screen. If the file exists, its contents are drawn on the window.
- F (filter): Applies the specified filter to the image. The available filters are:
 - cp: copy/paste
 - bl: blur
 - gr: grayscale
 - br: brighten
- U (undo): Discards the last operation.
- R (redo): Repeats the last operation.
- V (view): Views the image on the window.
- S (save): Saves the file.
- X (exit): Exits the program.

To support undo and redo, the main function uses a stack to store the operations performed on the image. It maintains two stack pointers: one to keep track of the current position in the stack, and the other to keep track of the maximum position reached for redo.

The edit function reads the contents of the specified bitmap file into the original image and the editing buffer. It then opens a window on the screen and displays the image on it. The edit function in the leedit image editor has the following behavior:

- It opens the specified bitmap file and reads its contents into the original image and the editing buffer.
- If the file does not exist, it gives an error message and returns.
- It opens a window on the screen with the size of the image (128x128 pixels).
- It copies the image from the editing buffer to the viewing buffer and draws it on the screen.

The filter function applies the specified filter to the image in the editing buffer. The available filters are implemented in separate functions: copy_paste, blur, grayscale, and

brighten.

- `copy_paste(int x, int y)`: This function copies the top left part of the image from (0,0) to (20,20) and pastes it starting from (x,y). It updates the editing buffer and the stack pointers to reflect the changes.
- `blur()`: This function blurs the image by setting the red, green, blue components of each pixel value to the average of its 4 neighbour pixels. It updates the editing buffer and the stack pointers to reflect the changes.
- `grayscale()`: This function converts the image to grayscale by setting each pixel value to the average of its red, green, blue components. It updates the editing buffer and the stack pointers to reflect the changes.
- `brighten()`: This function changes the brightness of the image by incrementing the red, green, blue components of each pixel. It updates the editing buffer and the stack pointers to reflect the changes. Pixels can have values between 0 and 255.

The undo function updates the stack pointer to discard the last operation. If the stack is empty, it gives an error message.

The redo function updates the stack pointer to repeat the last operation. If the stack pointer exceeds the valid operations on the stack, it gives an error message.

The view function applies all filters stored on the stack to the image in the editing buffer and displays it on the screen. The view function in the ledit image editor has the following behavior:

- It applies all filters stored on the stack to the image in the editing buffer.
- It displays the contents of the editing buffer on the screen.

The save function applies all filters stored on the stack to the image in the editing buffer and writes it to the specified file in the correct format. It then closes the file.