MINI PROJECT ON

**KEYBOARD MACRO UTILITY**

**FINAL PROJECT REPORT**

submitted by

**AKASH AGRAWAL(B15303)**

**RIYANSH GOYAL(B15329)**

**RAJANISH KUMAR UPADHAYAY(B15126)**

**AKASH KATH(B15105)**

for course CS-307

**System Practicum**



**SCHOOL OF COMPUTING AND ELECTRICAL ENGINEERING**

**INDIAN INSTITUTE OF TECHNOLOGY MANDI**

**MAY 2018**

**Problem Statement**

The purpose of the project is to modify the Linux kernel keyboard device driver to implement a keyboard macro management utility. We are required to assign, modify delete display macros on the fly by the user

Not a module but change in drivers

At reboot

**System Design**

**How to use our Utility**

1. First download the Linux kernel version 4.16.8 from [here](https://www.kernel.org/).
2. Compile the linux kernel you have downloaded. Instructions can be found [here](https://www.cyberciti.biz/faq/debian-ubuntu-building-installing-a-custom-linux-kernel/).
3. Go to the folder where you have downloaded the kernel.
4. Open the terminal and change present working directory to /linux-4.16.8/drivers/input/keyboard.

Command: cd linux-4.16.8/drivers/input/keyboard

1. Replace the contents of the file atkbd.c with our modified atkbd.c file.
2. Now change present working directory to linux-4.16.8

Command: cd ../../..

1. Now type the commands :

sudo make

sudo make modules\_install install

1. Now reboot into new kernel.

Command: sudo reboot.

**How to assign a macro:**

Follow the following steps:

1. Press the key combination “Left Shift” + “Esc”.
2. Now type the new macro you want to use/store.
3. Now again press the key combination “Left Shift” + “Esc”.

Now the macro is appended to the macro list. For displaying macro follow the steps in next section “How to Display Macro”

**How to Display macro:**

The macros are stored in the order in which you have assigned them. Now to use the macros follow the steps:

1. Press the key combination “Esc” + NumKey where NumKey corresponds to the number of macro you watnt to use

For example: Suppose you have stored 3 macros. Now you want to use the second macro you have stored. Then you have to press the key combination “Esc” + “2” and the second macro will be executed.

**How to edit a macro:**

For editing a macro follow the steps:

1. Press the key combination “Left Ctrl” + “Left Shift”.
2. Now press the macro number you want to edit.
3. Press the new macro you want to store.
4. Now again press the key combination “Left Ctrl” + “Left Shift”.

Now the macro has been edited. You can use it now (No need to reboot the system).

**How to delete a macro**

For deleting a macro one need to follow these steps:

1. Press the key combination “Left Ctrl” + “Right Shift”.
2. Press the macro number you want to delete.

The macro will be deleted.

**Test Cases/Performance**

Limitations

Conclusions

**References:**

[1] <https://www.cyberciti.biz/faq/debian-ubuntu-building-installing-a-custom-linux-kernel/>

[2] Robert Love, Linux Kernel Development (3rd Edition), Addison-Wesley Professional

[3] Jonathan Corbet, Allessandro Rubini & Greg Kroah-Hartman, Linux Device Drivers (3rd Edition), O'Reilly

[4] <https://whatis.techtarget.com/definition/macro>, 27/05/2018

[5]<https://elixir.bootlin.com/linux/v4.16.8/source/drivers/input/keyboard/atkbd.c> , 26/05/2018

[6] <https://www.infradead.org/~mchehab/kernel_docs_pdf/linux-input.pdf>, 20,05,2018