Name : Muhammad Ishraf Shafiq Zainuddin

ID : 200342741

Lab Assgn : 8

C Code

References : https://app.schoology.com/assignment/1629062801/info

: https://gist.github.com/trevortomesh/46ffd772a26a8e0ffddef7daf6f63a0a

: https://gist.github.com/trevortomesh/505ef6e4e2f778047a324fa37168b138

```
#include <X11/Xlib.h> //Using X Library (Xlib)
#include <stdio.h>       //compiling against xlib : gcc hello.c -L/usr/X11R6/lib -lX11 -o hello
#include <stdlib.h>
#include <string.h>

int main(void)
{
        Display *d; //Declaring display, window, and XEvent
        Window w;
        XEvent e;
        Colormap screen_colormap;
        XColor red, green, blue, black, purple, cyan, magenta, rainbow; //Declaring color
        const char *msg = "What a wonderful world ~";
        int s;

        d = XopenDisplay(NULL); //Open Display
        if (d == NULL)
        {
                fprintf(stderr, "Cannot open display\n"); //Print if display cannot be open
                exit(1);
        }
```

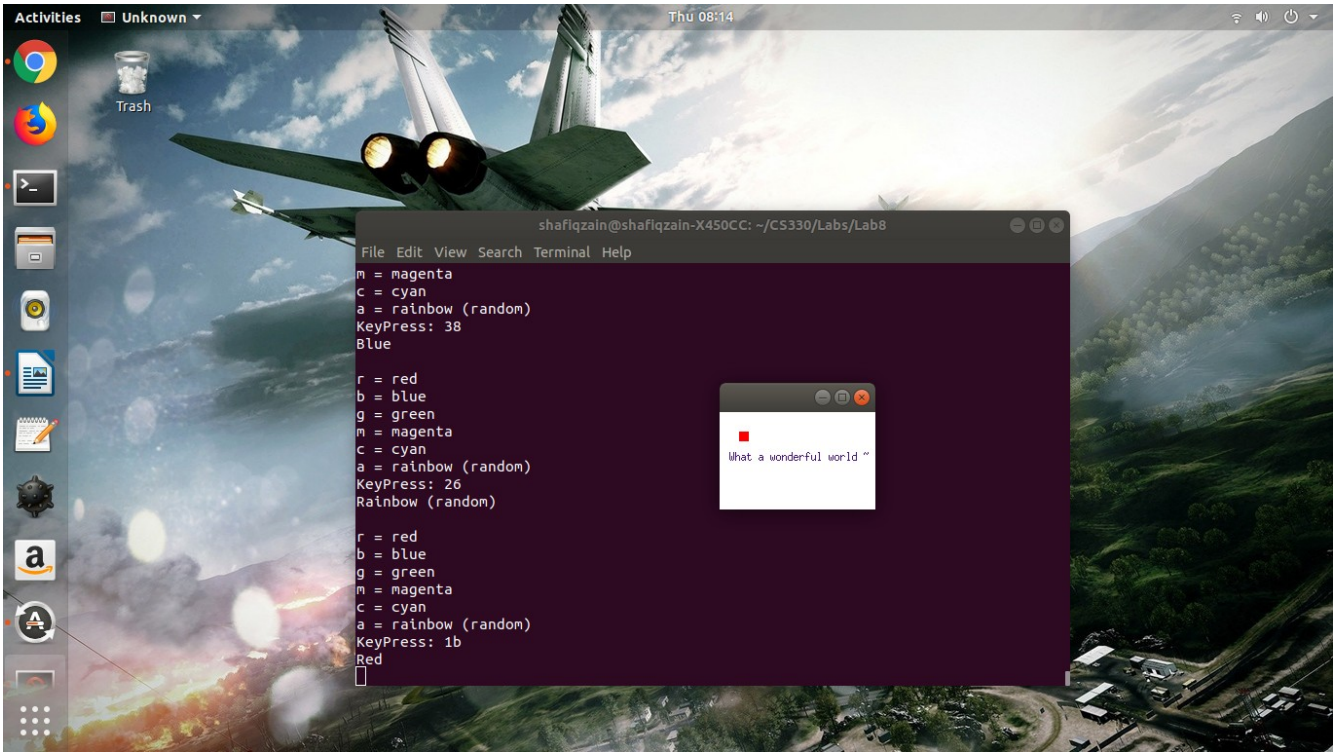
```
s = DefaultScreen(d);
w = XCreateSimpleWindow(d, RootWindow(d, s), 10, 10, 100, 100, 1, BlackPixel(d, s),
                        WhitePixel(d, s)); //Creating window properties (size, position)
XSelectInput(d, w, ExposureMask | KeyPressMask);
XMapWindow(d, w);

screen_colormap=DefaultColormap(d,s);
XAllocNamedColor(d, screen_colormap, "red", &red, &red); //AllocRed
XAllocNamedColor(d, screen_colormap, "blue", &blue, &blue); //AllocBlue
XAllocNamedColor(d, screen_colormap, "green", &green, &green); //AllocGreen
XAllocNamedColor(d, screen_colormap, "cyan", &cyan, &cyan); //AllocCyan
XAllocNamedColor(d, screen_colormap, "magenta", &magenta, &magenta); //AllocMagenta
XAllocNamedColor(d, screen_colormap, "rainbow", &rainbow, &rainbow); //AllocRandom

while(1)
{
        XNextEvent(d, &e); //XNextEvent

        if(e.type == Expose)
        {
                XDrawString(d, w, DefaultGC(d, s), 10, 50, msg, strlen(msg));
                XFillRectangle(d, w, DefaultGC(d, s), 20, 20, 10, 10);
        }

        printf("\nr = red \nb = blue \ng = green \nm = magenta \nc = cyan \na = rainbow
(random) \n"); //Print guide for keycode (color)
```

```
if(e.type == KeyPress)
{
        printf("KeyPress: %x\n", e.xkey.keycode); //Printing keycode to the terminal

        if (e.xkey.keycode == 0x1b) //Detecting keycode (color)
        {
                printf("Red \n");
                XSetForeground(d, DefaultGC(d,s), red.pixel);
                XFillRectangle(d, w, DefaultGC(d, s), 20, 20, 10, 10);
        }

        else if (e.xkey.keycode == 0x2a) //Detecting keycode (color)
        {
                printf("Green \n");
                XSetForeground(d, DefaultGC(d,s), green.pixel);
                XFillRectangle(d, w, DefaultGC(d, s), 20, 20, 10, 10);
        }

        else if (e.xkey.keycode == 0X38) //Detecting keycode (color)
        {
                printf("Blue \n");
                XSetForeground(d, DefaultGC(d,s), blue.pixel);
                XFillRectangle(d, w, DefaultGC(d, s), 20, 20, 10, 10);
        }


        else if (e.xkey.keycode == 0X36) //Detecting keycode (color)
```

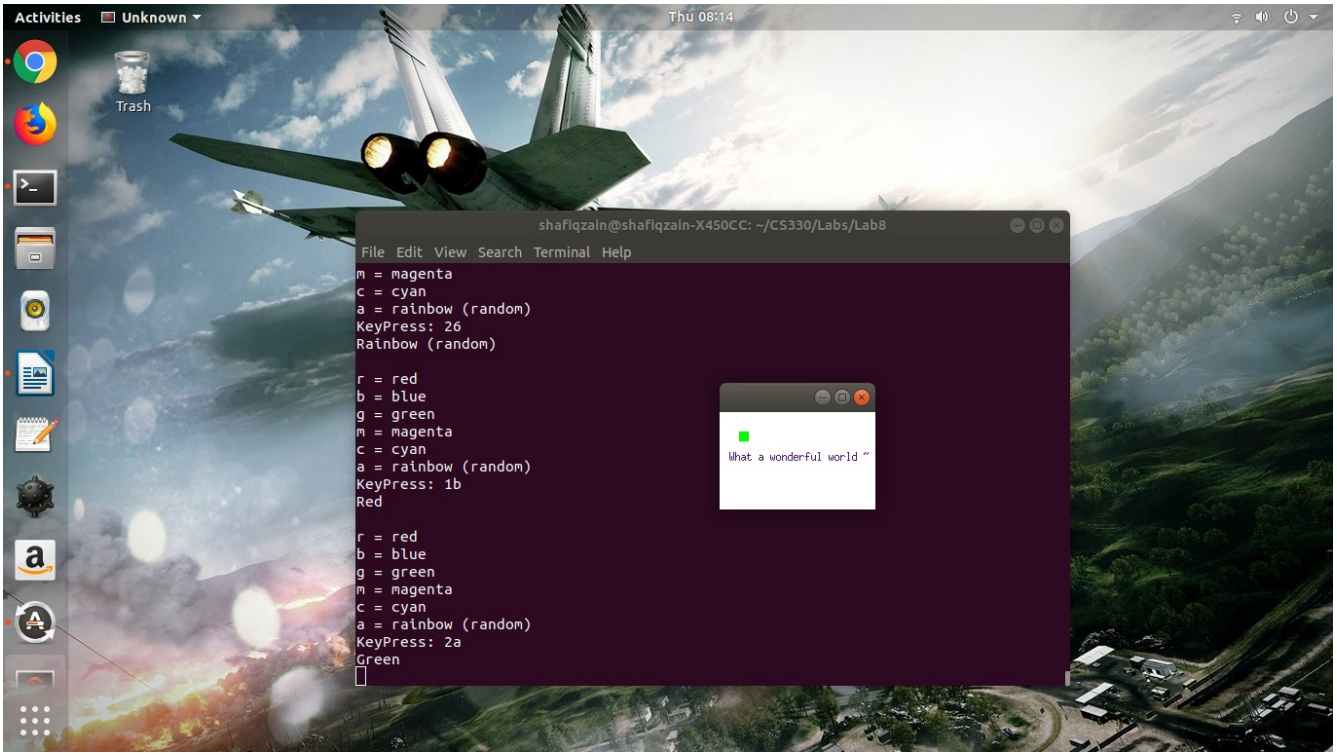
```
                {
                        printf("Cyan \n");
                        XSetForeground(d, DefaultGC(d,s), cyan.pixel);
                        XFillRectangle(d, w, DefaultGC(d, s), 20, 20, 10, 10);
                }

                else if (e.xkey.keycode == 0x3a) //Detecting keycode (color)
                {
                        printf("Magenta \n");
                        XSetForeground(d, DefaultGC(d,s), magenta.pixel);
                        XFillRectangle(d, w, DefaultGC(d, s), 20, 20, 10, 10);
                }

                else if (e.xkey.keycode == 0X26) //Detecting keycode (color)
                {
                        printf("Rainbow (random) \n");
                        XSetForeground(d, DefaultGC(d,s), rainbow.pixel);
                        XFillRectangle(d, w, DefaultGC(d, s), 20, 20, 10, 10);
                }

                else //Detecting keycode (other than designated keycode)
                        printf("Error~ Please try again XD \n");

        }
    }

    XcloseDisplay(d); //Close Display
    return 0;
}
```

Screenshot

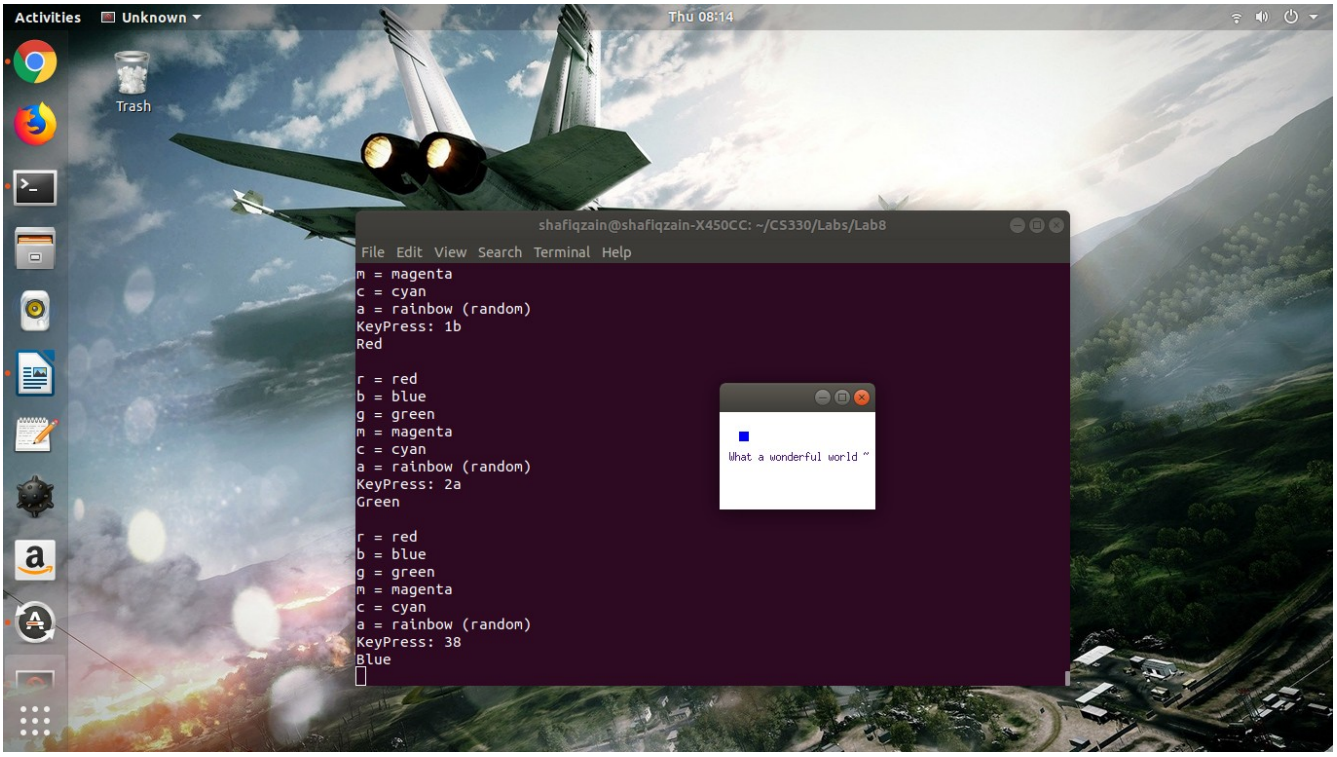
(1) Red



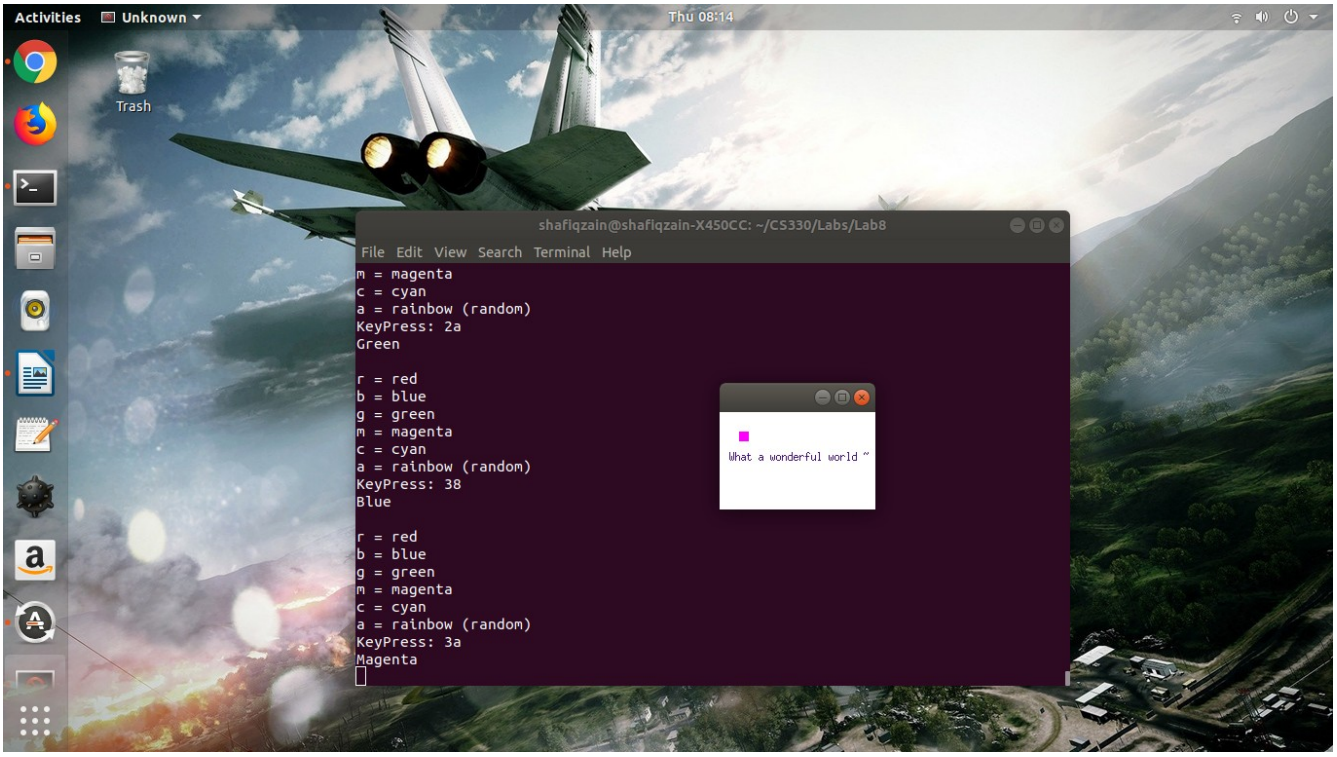
(2) Green



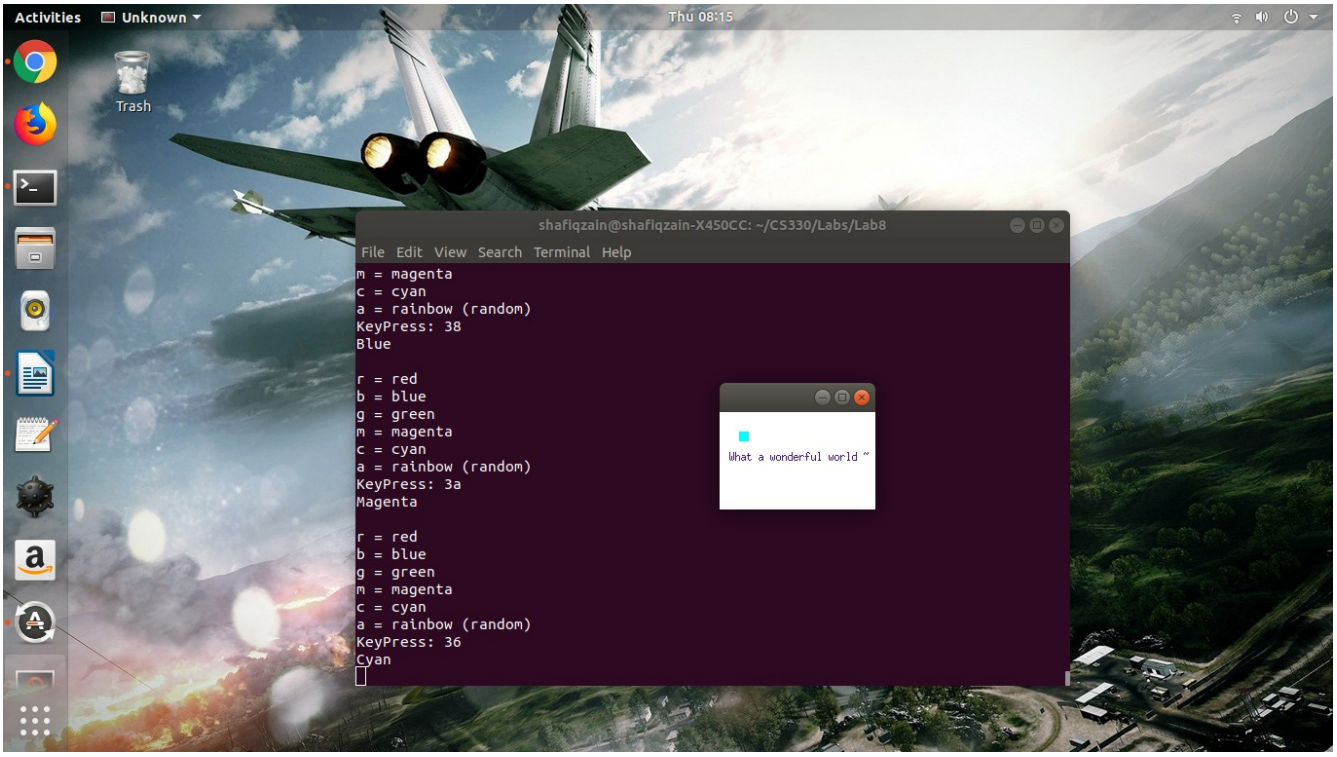
(3) Blue



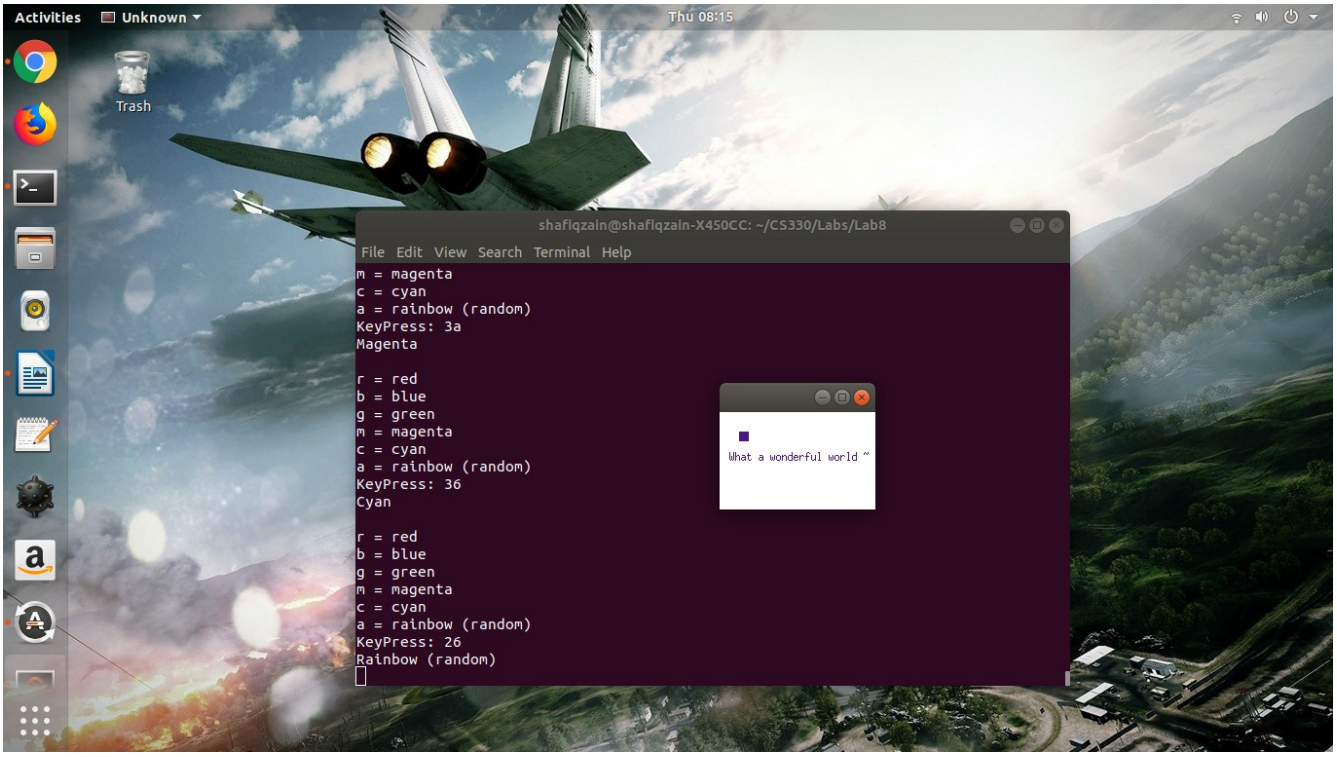
(4) Magenta



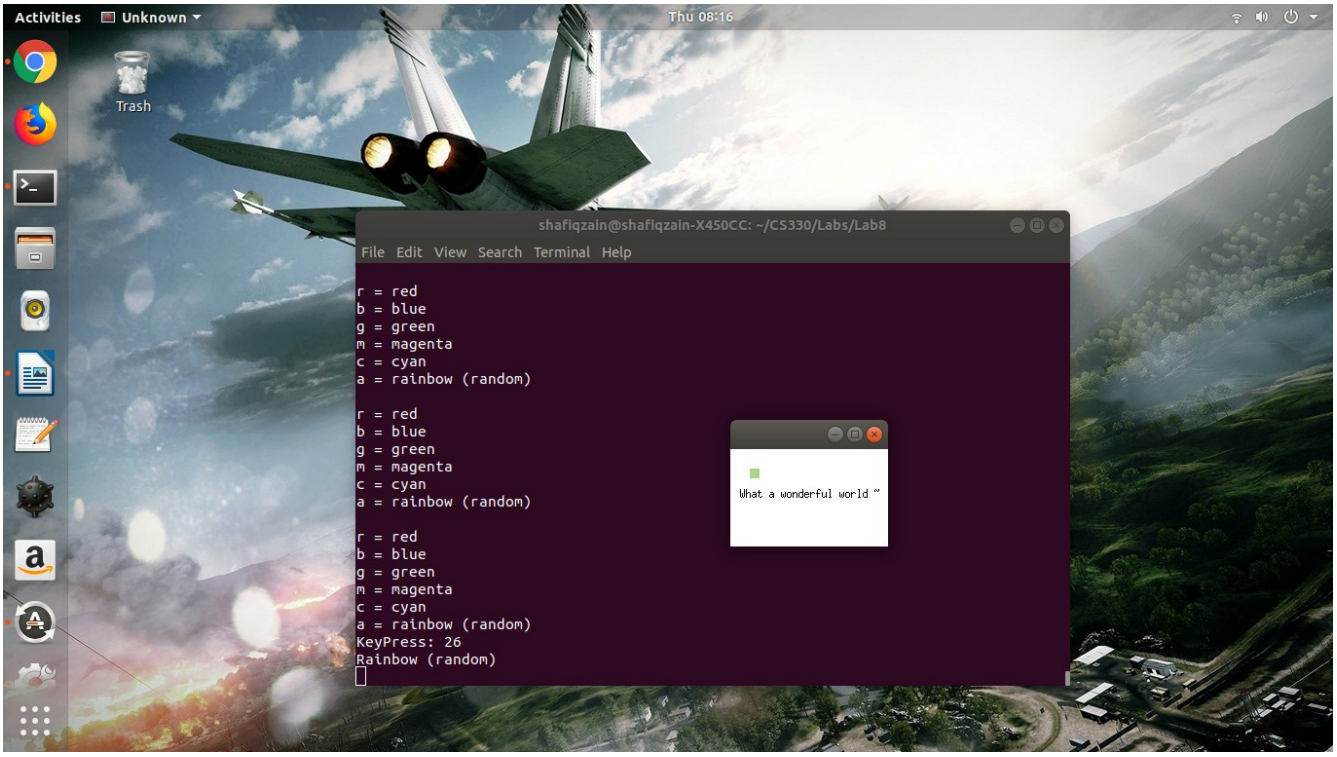
(5) Cyan



(6) Rainbow (random)



(7) Rainbow (random)



(8) Rainbow (random)